

**From:** MACHIRI, Sandra  
**Sent:** Wed, 19 Jun 2024 12:28:56 +0000  
**To:** Voegeli, Chris (CDC/IOD/OC); ESCAMILLA, Tania  
**Cc:** Latinovic, Ljubica  
**Subject:** Introduction to Tanya Escamilla from PAHO

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Dear Chris,

I hope this email finds you well.

I am writing to introduce you to Tanya Escamilla, the Communications Specialist in Health Emergencies and also the Infodemic Management Focal Point at Pan American Health Organization (PAHO) based in Washington, D.C. I believe it would be beneficial to connect Tanya's team to your area of work in CDC.

In copy is Ljubica Latinovic who is our RCCE-IM focal person for capacity building at WHO HQ.

Please let me know if you need further support in any of the potential collaborations. I look forward to hearing about the exciting possibilities that may arise from this connection.

Best regards,

**Sandra Varaidzo Machiri**

Technical Officer for Infodemic Management  
Community Readiness and Resilience Unit,  
Country Readiness Strengthening Department,  
WHO Health Emergency Program  
World Health Organization, Geneva, Switzerland

[machiris@who.int](mailto:machiris@who.int) | WhatsApp/Signal: (b) (6)

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**From:** PURNAT, Tina  
**Sent:** Thu, 21 Apr 2022 00:01:35 +0000  
**To:** Surangani Abeyesekera  
**Cc:** James Angus Thomson (jthomson@unicef.org); Voegeli, Christopher (CDC/DDID/NCIRD/OD); ISHIZUMI, Atsuyoshi; Wilhelm, Elisabeth (CDC/DDPHSIS/CGH/GID); Ryan, Nessa (CDC/DDPHSIS/CGH/GID); Abad, Neetu S. (CDC/DDPHSIS/CGH/GID)  
**Subject:** Invitation to curate a lecture for upcoming vaccine demand comprehensive training - 3.2 Social listening and integrated analysis to produce insights and recommendations

Dear Surani and I,

Thank you for your contributions to shaping the upcoming comprehensive training.

We have identified you to curate a lecture on the following topic at the comprehensive training.

**Title: 3.2 Social listening and integrated analysis to produce insights and recommendations**

**Curator: Tina Purnat (WHO) and Surani Abeyesekera (UNICEF)**

**Interested contributors: Angus Thomson, Chris Voegeli, Atsu Ishizumi, Elisabeth Wilhelm, Nessa Ryan, Neetu Abad**

As discussed on today's comprehensive training call, we are sharing with you several key pieces of guidance, documents and deadlines related to building out a topic for the training.

Find here linked the topic assignments:

<https://1drv.ms/w/s!AtPoc3YQw0ufgeZwA5mEZwSNWTQZ1w?e=mdo6ld>

You will find your lecture folder numbered here:

<https://1drv.ms/u/s!AtPoc3YQw0ufgeFQvAb90Qc05TclrA?e=sudyoQ>

### **What does a curator do?**

The curators (aka lead lecturer/s) are subject matter experts charged with the task of developing a lecture on the above-named topic that is organization-neutral and includes extremely practical tips and tricks for participants on how to apply this area of work to their jobs to promote vaccine demand and assist in COVID-19 recovery. Curators curate, meaning they do not try to aim for encyclopedic coverage of a topic, but focus on core concepts and will have the discretion to choose what to include into the final lecture. Curators are expected to communicate with interested contributors and consider contributions for inclusion, but curators have the final say what is included in the lecture.

Curators don't necessarily need to present the lecture themselves – but they can identify a suitable lecturer. Voices from diverse parts of the world are highly encouraged.

There are some curators who have not been briefed about the training yet, and Tina and Lis will approach them in a two step process: first introduce them to training and get buy-in, and second step is connecting them to interested contributors.

**What do interested contributors in this topic who have resources, slides, or content to provide, do to support the curator?**

- \* CCed in this email are individuals and organizations who are interested contributors to this topic.
- \* Interested contributors can directly upload any content in folder #3 Additional resources and materials, but do so ASAP for consideration by the curator
- \* The curator will be in contact with you for any additional discussions on shaping this lecture (email, chat, conference call), but the curator has the final call on lecture content
- \* Remember, all uploaded resources and materials will be made available to all participants, but the live lecture content will be covering the most essential elements
- \* Tina and Lis will ensure that any submissions for resources and case examples via Google Forms and Slides will be shared with appropriate curators

**What should the final outputs be?**

Every topic has its own folder. In each folder, there are templates for each item below with a README file with more details (please read). If you're in doubt about the scope of your lecture, talk to Tina and Lis.

Find your folder here: <https://1drv.ms/u/s!AtPoc3YQw0ufgeFQvAb90Qc05TclrA?e=sudyoQ>

**Curators will be asked to upload the following by deadline of May 13, but providing sooner is preferred:**

1. Video consent (everyone) and DOI (all non-UN staff)
  - \* All contributors who will be speaking (such as in case studies or in video clips) will need to upload video consent
  - \* This allows us to use video during training and for repackaging content later for use in learning modules and platforms
  - \* We will use WHO processes to review, document and use
2. PPT lecture (Curator to develop a lecture in form of a slide deck using the template)
  - \* Make as many slides as you think is appropriate, at minimum for a 20-minute lecture (final length TBD)
  - \* Where possible, include lecture notes and links to resources on each slide
  - \* It is important to use the template—it will assist in consistency and utility when used for live lectures and adapted for use later on in other forms (don't worry, template will be beautified, we promise)
  - \* Every single slide and resource will be packaged in the full toolbox; nothing will be lost
3. Additional resources and materials (All curators and contributors can upload here)
  - \* All contributors and curators are encouraged to upload additional slides, resources, materials, guidance, tools, templates for consideration on this topic here ASAP
  - \* You can also upload into other topic "additional resources and materials" folders ASAP
4. Interactive exercise support material (Curator to develop and upload materials for exercise accompanying lecture)
  - \* Aim for a 20-minute group exercise, which can be as simple or complex as you'd like
  - \* Use template for guidance on what exercise support materials are needed



5. Quiz assessment questions (Curator to develop 3 assessment questions to accompany lecture)
- \* Use the PPT template to simply add three questions and multiple choice responses, bolding the correct answer

Then, once curators have notified Tina and Lis that all this is complete, Tina and Lis to work with beta readers to review all lectures. (See below.)

We are looking for volunteers to be "beta readers" to be extra eyes on all materials developed including PPTs, toolbox content and lecture materials to proofread, ensure consistency, no redundancy and clarity of language and formatting. This is an essential component of ensuring a seamless participant experience. The time commitment is 1-3 hours. Please add your name in this table

<<https://1drv.ms/w/s!AtPoc3YQw0ufgeZwA5mEZwSNWTQZ1w?e=mdo6ld>> to sign yourself up as a beta reader for a specific lecture. During beta reading, if it is noted that there is repetition or were lectures are very similar, we may condense together. (We don't expect a lot of this to happen.)

#### **Coming up next:**

- \* Before May 9:
  - \* All co-organizing partners post call for applications on website and on networks and social media channels where possible
  - \* Core facilitation team identified, recruited and onboarded (Tina, Lis, Catherine, Atsu, Daiva)
  - \* All lecture curators work on lectures and are supported by core facilitation team
  - \* Coaches are identified, recruited and onboarded
  - \* Further planning for English and French-speaking cohorts underway (final schedule dependent on final applicant pool)
- \* Week of May 9:
  - \* We expect all submissions for applications for training by May 8.
  - \* Evaluations for applicants will occur the week of May 9
  - \* Take first pass review of all PPT lectures and the facilitation team follows up on any that are not close to completion
  - \* We expect final submissions of all PPT lectures by May 13 (we cannot extend this deadline)
- \* Week of May 16:
  - \* Send out email notice to applications (successful and unsuccessful)
  - \* Analysis and profiling of successful applicants pool, split into cohorts by language and time zone and split into simulation exercise groups
  - \* Summary PPT for partners to use on applicant to be circulated with partners
  - \* Press release by GAVI being drafted
  - \* Volunteers beta readers will be assigned lectures for a very rapid review this week so that all materials are ready for the contractor to start processing immediately
- \* Week of May 23:
  - \* We expect to onboard the company contracted to support training organization (this gives them less than 3 weeks to organize, condense and translate all content, set up LMS, provide outreach to successful applicants)
  - \* Two workstreams of company underway: setting up LMS, production schedule of running training, and processing of content and translation into French
  - \* Planning of all group exercises and recruitment of appropriate facilitators
  - \* Planning of trainee assessment by week and implementation of assessments
  - \* Plan and set up training section of demandhub.org for rapid posting of all materials during the training



- \* Week of May 30:
  - \* Coach onboarding scheduled
- \* Week of June 6:
  - \* Host welcome event on June 11 (all onboarding, kickoff of simulation exercise)
  - \* Facilitator onboarding scheduled
  - \* Final check-in with all lecturers
  - \* Bilingual, multi-screen sharing dress rehearsal and troubleshooting
  - \* Finalize run of show preparation and review Zoom room/Slido/Miro boards and assign responsibility for production of each session
- \* Week of June 13:
  - \* Start the training!
  - \* You all are welcome to join for any session—schedule will be shared with you previous week

Sincerely,

Tina Purnat and Elisabeth Wilhelm  
For the comprehensive training organizing team

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Tina D Purnat  
Team Lead for Infodemic Management  
High Impact Events Preparedness Unit  
Department for Epidemic and Pandemic Preparedness and Prevention (EPP)  
Preparedness Division, WHO Emergency Programme (WPE/WHE)  
World Health Organization, Geneva, Switzerland

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[www.linkedin.com/in/tinadpurnat](http://www.linkedin.com/in/tinadpurnat) <<http://www.linkedin.com/in/tinadpurnat>> | @tdpurnat |

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Best regards,

Tina

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Tina D Purnat  
Team Lead for Infodemic Management  
High Impact Events Preparedness Unit  
Department for Epidemic and Pandemic Preparedness and Prevention (EPP)  
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@tdpuernat |

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**From:** NIKISINS, Sergejs  
**Sent:** Wed, 7 Aug 2024 14:54:00 +0000  
**To:** Voegeli, Chris (CDC/IOD/OC)  
**Cc:** TAM, John SL [ABCT]; HERAUD, Jean-michel  
**Subject:** Invitation to join a Workstream 5B to update the WHO Public Health Research Agenda for influenza.  
**Attachments:** DOI\_EN\_Form\_Influenza Research Agenda Stream Member.docx

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Dear Chris,

We are pleased to invite you to join a Workstream to update the WHO Public Health Research Agenda for influenza, and contribute to **STREAM 5B Promoting the development and application of modern public health tools (Sub-stream 5B Risk communication, community engagement, infodemic management).**

**Kindly fill in and sign the DoI form (attached) and return it at your earliest convenience.**

Please find the slides and minutes of the six conducted Stream 5B meetings here: [Meetings Stream 5B](#)

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All relevant files of the 5B Stream are stored in the dedicated WHO MS Teams Channel: [WHO PUBLIC HEALTH RESEARCH AGENDA FOR INFLUENZA - 2024 UPDATE | Stream 5B Channel | Microsoft Teams](#)

The Latest developments & 5B stream research questions are summarized here: [https://docs.google.com/document/d/1IPxZV3usRweXs9yRX4LBA-FPTdpZRB1vu\\_TM\\_V5cCv8/edit](https://docs.google.com/document/d/1IPxZV3usRweXs9yRX4LBA-FPTdpZRB1vu_TM_V5cCv8/edit)

Kind regards,  
Jean-Michel, John, Sergejs

---

Dr. Sergejs Nikisins  
Technical Officer  
Global Influenza Programme



Epidemic and Pandemic Preparedness and Prevention

WHO Emergency Programme

**World Health Organization**

Geneva

Mobile: (b) (6)

## **DECLARATION OF INTERESTS FOR WHO EXPERTS**

WHO's work on global health issues requires the assistance of external experts who **may have interests related to their expertise**. To ensure the highest integrity and public confidence in its activities, WHO requires that experts serving in an advisory role disclose any circumstances that could give rise to a potential conflict of interest related to the subject of the activity in which they will be involved.

All experts serving in an advisory role must disclose any circumstances that could represent a **potential conflict of interest** (i.e., any interest that may affect, or may reasonably be perceived to affect, the expert's objectivity and independence). You must disclose on this Declaration of Interests (DOI) form any financial, professional or other interest relevant to the subject of the work or meeting in which you have been asked to participate in or contribute towards and any interest that could be affected by the outcome of the meeting or work. You must also declare relevant interests of your immediate family members (see definition below) and, if you are aware of it, relevant interests of other parties with whom you have substantial common interests and which may be perceived as unduly influencing your judgement (e.g. employer, close professional associates, administrative unit or department). Please note that not fully completing and disclosing all relevant information on this form may, depending on the circumstances, lead WHO to decide not to appoint you to WHO advisory bodies/functions in the future.

Please complete this form and submit it to WHO Secretariat if possible at least 4 weeks but no later than 2 weeks before the meeting or work. You must also promptly inform the Secretariat if there is any change in this information prior to, or during the course of, the meeting or work. All experts must complete this form before participation in a WHO activity can be confirmed. Please note that not fully completing and disclosing all relevant information on this form may, depending on the circumstances, lead WHO to decide not to appoint you to WHO advisory bodies/functions in the future.

Answering "Yes" to a question on this form does not automatically disqualify you or limit your participation in a WHO activity. Your answers will be reviewed by the Secretariat to determine whether you have a conflict of interest relevant to the subject at hand. One of the outcomes listed in the next paragraph can occur depending on the circumstances (e.g. nature and magnitude of the interest, timeframe and duration of the interest).

The Secretariat may conclude that no potential conflict exists or that the interest is irrelevant or insignificant. If, however, a declared interest is determined to be potentially or clearly significant, one or more of the following three measures for managing the conflict of interest may be applied. The Secretariat (i) allows full participation, with public disclosure of your interest; (ii) mandates partial exclusion (i.e., you will be excluded from that portion of the meeting or work related to the declared interest and from the corresponding decision making process); or (iii) mandates total exclusion (i.e., you will not be able to participate in any part of the meeting or work).

All potentially significant interests will be **disclosed** to the other participants at the start of the activity and you will be asked if there have been any changes. A summary of all declarations and actions taken to manage any declared interests will be **published** in resulting reports and work products. Furthermore, if the objectivity of the work or meeting in which you are involved is subsequently questioned, the contents of your DOI form may be made available by the Secretariat to persons outside WHO if the Director-General considers such disclosure to be in the best interest of the Organization, after consulting with you. Completing this DOI form means that you agree to these conditions.

If you are unable or unwilling to disclose the details of an interest that may pose a real or perceived conflict, you must disclose that a conflict of interest may exist and the Secretariat may decide that you be totally recused from the meeting or work concerned, after consulting with you.

Name:  
Institution:  
Email:

### **Date and title of meeting or work, including description of subject matter to be considered (if a number of substances or processes are to be evaluated, a list should be attached by the organizer of the activity):**

Informal Expert group on influenza research agenda review to update the WHO Public Health Research Agenda for Influenza.

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*Please answer each of the questions below. If the answer to any of the questions is "yes", briefly describe the circumstances on the last page of the form.*

*The term "you" refers to yourself and your immediate family members (i.e., spouse (or partner with whom you have a similar close personal relationship) and your children). "Commercial entity" includes any commercial business, an industry association, research institution or other enterprise whose funding is significantly derived from commercial sources with an interest related to the subject of the meeting or work. "Organization" includes a governmental, international or non-profit organization. "Meeting" includes a series or cycle of meetings.*

## EMPLOYMENT AND CONSULTING

*Within the past 4 years, have you received remuneration from a commercial entity or other organization with an interest related to the subject of the meeting or work?*

- 1a Employment Yes ☐ No ☐
- 1b Consulting, including service as a technical or other advisor Yes ☐ No ☐

## RESEARCH SUPPORT

*Within the past 4 years, have you or has your research unit received support from a commercial entity or other organization with an interest related to the subject of the meeting or work?*

- 2a Research support, including grants, collaborations, sponsorships, and other funding Yes ☐ No ☐
- 2b Non-monetary support valued at more than US \$1000 overall (include equipment, facilities, research assistants, paid travel to meetings, etc.) Yes ☐ No ☐

Support (including honoraria) for being on a speakers bureau, giving speeches or training for a commercial entity or other organization with an interest related to the subject of the meeting or work?

## INVESTMENT INTERESTS

*Do you have current investments (valued at more than US \$5 000 overall) in a commercial entity with an interest related to the subject of the meeting or work? Please also include indirect investments such as a trust or holding company. You may exclude mutual funds, pension funds or similar investments that are broadly diversified and on which you exercise no control.*

- 3a Stocks, bonds, stock options, other securities (e.g., short sales) Yes ☐ No ☐
- 3b Commercial business interests (e.g., proprietorships, partnerships, joint ventures, board memberships, controlling interest in a company) Yes ☐ No ☐

## INTELLECTUAL PROPERTY

*Do you have any intellectual property rights that might be enhanced or diminished by the outcome of the meeting or work?*

- 4a Patents, trademarks, or copyrights (including pending applications) Yes ☐ No ☐
- 4b Proprietary know-how in a substance, technology or process Yes ☐ No ☐

## PUBLIC STATEMENTS AND POSITIONS (during the past 3 years)

- 5a As part of a regulatory, legislative or judicial process, have you provided an expert opinion or testimony, related to the subject of the meeting or work, for a commercial entity or other organization? Yes ☐ No ☐
- 5b Have you held an office or other position, paid or unpaid, where you represented interests or defended a position related to the subject of the meeting or work? Yes ☐ No ☐

## ADDITIONAL INFORMATION

- 6a If not already disclosed above, have you worked for the competitor of a product that is the subject of the meeting or work, or will your participation in the meeting or work enable you to obtain access to a competitor's confidential proprietary information, or create for you a personal, professional, financial or business competitive advantage? Yes ☐ No ☐
- 6b To your knowledge, would the outcome of the meeting or work benefit or adversely affect interests of others with whom you have substantial common personal, professional, financial or business interests (such as your adult children or siblings, close professional colleagues, administrative unit or department)? Yes ☐ No ☐
- 6c Excluding WHO, has any person or entity paid or contributed towards your travel costs in connection with this WHO meeting or work? Yes ☐ No ☐



6d Have you received any payments (other than for travel costs) or honoraria for speaking publicly on the subject of this WHO meeting or work? Yes ☐ No ☐

6e Is there any other aspect of your background or present circumstances not addressed above that might be perceived as affecting your objectivity or independence? Yes ☐ No ☐

7. **TOBACCO OR TOBACCO PRODUCTS** (answer without regard to relevance to the subject of the meeting or work)

Within the past 4 years, have you had employment or received research support or other funding from, or had any other professional relationship with, an entity directly involved in the production, manufacture, distribution or sale of tobacco or tobacco products or representing the interests of any such entity?

Yes ☐ No ☐

**EXPLANATION OF "YES" RESPONSES:** If the answer to any of the above questions is "yes", check above and briefly describe the circumstances on this page. If you do not describe the nature of an interest or if you do not provide the amount or value involved where relevant, the conflict will be assumed to be significant.

| Nos. 1 - 4:<br>Type of interest, question number and category (e.g., Intellectual Property 4.a copyrights) <u>and</u> basic descriptive details. | Name of company, organization, or institution | Belongs to you, a family member, employer, research unit or other? | Amount of income or value of interest (if not disclosed, is assumed to be significant) | Current interest (or year ceased) |
|--------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------|--------------------------------------------------------------------|----------------------------------------------------------------------------------------|-----------------------------------|
|                                                                                                                                                  |                                               |                                                                    |                                                                                        |                                   |

**Nos. 5-6: Describe the subject, specific circumstances, parties involved, time frame and other relevant details**

**CONSENT TO DISCLOSURE.** By completing and signing this form, you consent to the disclosure of any relevant conflicts to other meeting participants and in the resulting report or work product.

**DECLARATION.** I hereby declare on my honour that the disclosed information is true and complete to the best of my knowledge.

Should there be any change to the above information, I will promptly notify the responsible staff of WHO and complete a new declaration of interests form that describes the changes. This includes any change that occurs before or during the meeting or work itself and through the period up to the publication of the final results or completion of the activity concerned.

Date: \_\_\_\_\_

Signature \_\_\_\_\_

**From:** PURNAT, Tina  
**Sent:** Mon, 16 May 2022 14:10:10 +0000  
**To:** PURNAT, Tina  
**Subject:** Invitation to join paper on outcomes of the WHO burden of infodemics conference  
**Importance:** High

Dear colleagues,

I'm pleased to share with you the draft paper on the outcomes of the WHO burden of infodemic conference which took place last November. We intend to submit it to JMIR infodemiology.

Please find it here: <https://1drv.ms/w/s!AtPoc3YQw0ufgcdyRxGMpgsp0vB1OQ?e=AHMJSn>

We would like to invite you to join us as a coauthor on this paper. To this point, we would like to invite you to:

- Provide comments on the paper draft, and insert them into the document at this link: <https://1drv.ms/w/s!AtPoc3YQw0ufgcdyRxGMpgsp0vB1OQ?e=AHMJSn>
- If you agree to be coauthor, please add your degree, institutional affiliation and your ORCID ID in the paper. We will reorganize the paper as per journal format requirements afterwards.
- Those of you who do not have ORCID ID, it is mandatory for submission in JMIR. You can register an account and generate an ID here: <https://orcid.org/>

We would appreciate your response by Tuesday, 24 May, EOB, following which we will proceed with submission to JMIR.

Best regards,

Tina

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Tina D Purnat  
Team Lead for Infodemic Management  
High Impact Events Preparedness Unit  
Department for Epidemic and Pandemic Preparedness and Prevention (EPP)  
Preparedness Division, WHO Emergency Programme (WPE/WHE)  
World Health Organization, Geneva, Switzerland

[purnatt@who.int](mailto:purnatt@who.int) | WhatsApp/Signal: (b) (6) | [www.linkedin.com/in/tinadpurnat](https://www.linkedin.com/in/tinadpurnat) | @tdpurnat |

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**From:** PURNAT, Tina  
**Sent:** Tue, 26 Oct 2021 03:50:41 +0000  
**To:** Voegeli, Christopher (CDC/DDID/NCHHSTP/DHP)  
**Subject:** Invitation to the 5th WHO Infodemic Management Conference (CONF)

Dear Christopher Voegeli,

With a week left to go until the start of the 5<sup>th</sup> WHO infodemic management conference, we are sharing with you the provisional meeting documents. They include discussion documents for Session 1 on November 2.

Some housekeeping:

- After review of declarations of interest, your participation has been confirmed for the conference. You will shortly receive a calendar invitation which will be updated with a ZOOM link prior to the conference.
- This OneDrive folder will shortly be populated with working documents and will be kept updated during the conference. Please bookmark it for reference during conference. <https://1drv.ms/u/s!AtPoc3YQwDuIqgZs-54Z5A3ciQomozA?e=jvW7sN>
- Please especially note the following documents:
  - Document #3, provisional programme with more detailed time schedule of meeting
  - Document #8, background discussion document for Session 1

Thank you very much for taking the time to participate, and please reach out if you have any questions.

Kind regards,

Tina Purnat

Team Lead for Infodemic Management  
High Impact Events Preparedness Unit, Department of Infectious Hazards Preparedness  
Division of Emergency Preparedness, World Health Organization, Geneva, Switzerland

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**From:** SANTESSO, Gabriela  
**Sent:** Mon, 27 Feb 2023 15:54:35 +0000  
**To:** Voegeli, Chris (CDC/DDID/NCIRD/ISD)  
**Subject:** INVITATION / WHO Technical Consultation on Building a Global University Curriculum for Infodemic Management / Belgrade, Serbia, 21-22 March 2023  
**Attachments:** 3. Confidentiality Undertaking.pdf  
**Importance:** High

Dear Doctor Voegeli,

Could kindly also complete and sign the Confidentiality Undertaking and send it back to me.

Please also confirm if you will attend both the technical consultation (21-22 March) and the optional workshop (23 March).

With many thanks in advance.

Best regards,  
Gabriela

---

**From:** SANTESSO, Gabriela  
**Sent:** Friday, February 10, 2023 6:04 PM  
**To:** [QQO2@cdc.gov](mailto:QQO2@cdc.gov)  
**Cc:** CAZACU, Ofelia <[cazacuo@who.int](mailto:cazacuo@who.int)>  
**Subject:** INVITATION / WHO Technical Consultation on Building a Global University Curriculum for Infodemic Management / Belgrade, Serbia, 21-22 March 2023  
**Importance:** High

Dear Doctor Voegeli,

The World Health Organization Epidemic and Pandemic Preparedness and Prevention Department, and the WHO Regional Office for Europe, have pleasure in inviting you to participate in the

"WHO Technical Consultation on Building a Global University Curriculum for Infodemic Management"

to be held in Belgrade, Serbia, from 21 to 22 March 2023.

The technical consultation will be followed by an optional workshop on designing immersive infodemic management training simulations on 23 March 2023.

To this purpose, kindly find herewith attached:

1. Your Invitation Letter
2. Declaration of Interests (DOI) for WHO Experts (deadline for submission Wednesday 15 February)
3. Annex A - Guidance to Experts in Connection with the Completion of WHO DOI Forms
4. Annex B - Code of Conduct for WHO Experts
5. Confidentiality Undertaking (deadline for submission Wednesday 15 February)

6. Concept Note
7. Provisional Agenda
8. WHO Declaration of Consent (deadline for submission Wednesday 15 February)

Participants are expected to arrive in Belgrade a day before the consultation (March 20) and leave a day after (March 23), if they will only be participating in the technical consultation.

Optional workshop participants are expected to leave on March 24.

Please be informed that costs related to your participation in this technical consultation will be at your own expense.

We kindly remind you to book your flights and hotel accommodation as soon as possible.

Thank you in advance.

With my best regards,

Gabriela Santesso  
Assistant Team  
WHO/HQ/WPE/EPP/IEP

**WORLD HEALTH ORGANIZATION**  
**CONFIDENTIALITY UNDERTAKING**

1. The World Health Organization (WHO), through its Department for Epidemic and Pandemic Preparedness and Prevention (EPP), has access to certain Infodemic Management information related to Public Health Emergencies to which it considers to be proprietary to itself or to parties collaborating with it (the “**Information**”).
2. WHO is willing to provide the Information to the Undersigned, or arrange for the provision of the Information to the Undersigned, whether during or in relation to a meeting or a telephone conference, or through an internet-based collaborative workspace, or for a contractual arrangement, or otherwise (the “**Activities**”), for the purpose of the WHO TECHNICAL CONSULTATION ON BUILDING A GLOBAL UNIVERSITY CURRICULUM FOR INFODEMIC MANAGEMENT, BELGRADE, SERBIA, 21-22 MARCH 2023 AND 23 MARCH 2023 (the “**Purpose**”), provided that the Undersigned undertakes to treat the Information as confidential and proprietary, to use the Information only for the aforesaid Purpose and to disclose it only to persons who have a need to know for the Purpose and are bound by like obligations of confidentiality and non-use as are contained in this Undertaking.
3. The Undersigned undertakes to regard the Information as confidential and proprietary to WHO or parties collaborating with WHO, and agrees to take all reasonable measures to ensure that the Information is not used, disclosed or copied, in whole or in part, other than as provided in paragraph 2, except that the Undersigned shall not be bound by any such obligations of confidentiality and restrictions on use, if and to the extent he/she is clearly able to demonstrate that the Information:
  - a. was known to him/her prior to any disclosure by or for WHO to the Undersigned (as evidenced by written records or other competent proof);
  - b. was in the public domain at the time of disclosure by or for WHO to the Undersigned;
  - c. becomes part of the public domain through no fault of the Undersigned; or
  - d. becomes available to the Undersigned from a third party not in breach of any legal obligations of confidentiality (as evidenced by written records or other competent proof).
4. The Undersigned further undertakes not to use the Information for any benefit, gain or advantage, including but not limited to trading or having others trading in securities on the Undersigned’s behalf, giving trading advice or providing Information to third parties for trade in securities.
5. If requested to do so, the Undersigned agrees to return to WHO any and all copies of the Information.
6. The obligations of the Undersigned shall not cease on termination of the Activities.

7. Any dispute arising from or relating to this Undertaking, including its validity, interpretation, or application, shall, unless amicably settled, be subject to conciliation. In the event the dispute is not resolved by conciliation within thirty (30) days, the dispute shall be settled by arbitration. The arbitration shall be conducted in accordance with the modalities to be agreed upon by the Undersigned and WHO or, in the absence of agreement within thirty (30) days of written communication of the intent to commence arbitration, with the rules of arbitration of the International Chamber of Commerce. The Undersigned and WHO shall accept the arbitral award as final.
8. Nothing in this Undertaking, and no disclosure of Information to the Undersigned pursuant to its terms, shall constitute, or be deemed to constitute, a waiver of any of the privileges and immunities enjoyed by WHO under national or international law, or as submitting WHO to any national court jurisdiction.

**Acknowledged and Agreed:**

Signature: \_\_\_\_\_

Name: \_\_\_\_\_

Title: \_\_\_\_\_

Date: \_\_\_\_\_



**From:** SANTESSO, Gabriela  
**Sent:** Sun, 26 Feb 2023 21:04:59 +0000  
**To:** Voegeli, Chris (CDC/DDID/NCIRD/ISD)  
**Subject:** INVITATION / WHO Technical Consultation on Building a Global University Curriculum for Infodemic Management / Belgrade, Serbia, 21-22 March 2023  
**Attachments:** 1. Declaration of Interests Form (1).pdf, 1. DOI\_EN\_AnnexA Guidance.pdf, 2. DOI\_EN\_AnnexB Code of conduct for WHO experts.pdf, 3. Confidentiality Undertaking.pdf, 4. Concept Note.pdf, 5. Provisional Agenda.pdf, WHO\_declaration\_of\_consent\_named subjects\_english.pdf, VOEGELI Christopher - LOI.pdf  
**Importance:** High

Dear Doctor Voegeli,

Following our invitation here below, I would be most grateful if you could kindly confirm if you will attend the technical consultation and the optional workshop.

Should you participate, kindly complete and sign the documents herewith attached and return a complete scanned copy to me as soon as possible.

With many thanks in advance.

Best regards,

Gabriela

---

**From:** SANTESSO, Gabriela  
**Sent:** Friday, February 10, 2023 6:04 PM  
**To:** OQO2@cdc.gov  
**Cc:** CAZACU, Ofelia <cazacuo@who.int>  
**Subject:** INVITATION / WHO Technical Consultation on Building a Global University Curriculum for Infodemic Management / Belgrade, Serbia, 21-22 March 2023  
**Importance:** High

Dear Doctor Voegeli,

The World Health Organization Epidemic and Pandemic Preparedness and Prevention Department, and the WHO Regional Office for Europe, have pleasure in inviting you to participate in the

"WHO Technical Consultation on Building a Global University Curriculum for Infodemic Management"

to be held in Belgrade, Serbia, from 21 to 22 March 2023.

The technical consultation will be followed by an optional workshop on designing immersive infodemic management training simulations on 23 March 2023.

To this purpose, kindly find herewith attached:

1. Your Invitation Letter
2. Declaration of Interests (DOI) for WHO Experts (deadline for submission Wednesday 15 February)
3. Annex A - Guidance to Experts in Connection with the Completion of WHO DOI Forms

4. Annex B - Code of Conduct for WHO Experts
5. Confidentiality Undertaking (deadline for submission Wednesday 15 February)
6. Concept Note
7. Provisional Agenda
8. WHO Declaration of Consent (deadline for submission Wednesday 15 February)

Participants are expected to arrive in Belgrade a day before the consultation (March 20) and leave a day after (March 23), if they will only be participating in the technical consultation. Optional workshop participants are expected to leave on March 24.

Please be informed that costs related to your participation in this technical consultation will be at your own expense.

We kindly remind you to book your flights and hotel accommodation as soon as possible.

Thank you in advance.

With my best regards,

Gabriela Santesso  
Assistant Team  
WHO/HQ/WPE/EPP/IEP

## **DECLARATION OF INTERESTS FOR WHO EXPERTS**

WHO's work on global health issues requires the assistance of external experts who **may have interests related to their expertise**. To ensure the highest integrity and public confidence in its activities, WHO requires that experts serving in an advisory role disclose any circumstances that could give rise to a potential conflict of interest related to the subject of the activity in which they will be involved.

All experts serving in an advisory role must disclose any circumstances that could represent a **potential conflict of interest** (i.e., any interest that may affect, or may reasonably be perceived to affect, the expert's objectivity and independence). You must disclose on this Declaration of Interests (DOI) form any financial, professional or other interest relevant to the subject of the work or meeting in which you have been asked to participate in or contribute towards and any interest that could be affected by the outcome of the meeting or work. You must also declare relevant interests of your immediate family members (see definition below) and, if you are aware of it, relevant interests of other parties with whom you have substantial common interests and which may be perceived as unduly influencing your judgement (e.g. employer, close professional associates, administrative unit or department). Please note that not fully completing and disclosing all relevant information on this form may, depending on the circumstances, lead WHO to decide not to appoint you to WHO advisory bodies/functions in the future.

Please complete this form and submit it to WHO Secretariat if possible at least 4 weeks but no later than 2 weeks before the meeting or work. You must also promptly inform the Secretariat if there is any change in this information prior to, or during the course of, the meeting or work. All experts must complete this form before participation in a WHO activity can be confirmed. Please note that not fully completing and disclosing all relevant information on this form may, depending on the circumstances, lead WHO to decide not to appoint you to WHO advisory bodies/functions in the future.

Answering "Yes" to a question on this form does not automatically disqualify you or limit your participation in a WHO activity. Your answers will be reviewed by the Secretariat to determine whether you have a conflict of interest relevant to the subject at hand. One of the outcomes listed in the next paragraph can occur depending on the circumstances (e.g. nature and magnitude of the interest, timeframe and duration of the interest).

The Secretariat may conclude that no potential conflict exists or that the interest is irrelevant or insignificant. If, however, a declared interest is determined to be potentially or clearly significant, one or more of the following three measures for managing the conflict of interest may be applied. The Secretariat (i) allows full participation, with public disclosure of your interest; (ii) mandates partial exclusion (i.e., you will be excluded from that portion of the meeting or work related to the declared interest and from the corresponding decision making process); or (iii) mandates total exclusion (i.e., you will not be able to participate in any part of the meeting or work).

All potentially significant interests will be **disclosed** to the other participants at the start of the activity and you will be asked if there have been any changes. A summary of all declarations and actions taken to manage any declared interests will be **published** in resulting reports and work products. Furthermore, if the objectivity of the work or meeting in which you are involved is subsequently questioned, the contents of your DOI form may be made available by the Secretariat to persons outside WHO if the Director-General considers such disclosure to be in the best interest of the Organization, after consulting with you. Completing this DOI form means that you agree to these conditions.

If you are unable or unwilling to disclose the details of an interest that may pose a real or perceived conflict, you must disclose that a conflict of interest may exist and the Secretariat may decide that you be totally recused from the meeting or work concerned, after consulting with you.

Name:  
Institution:  
Email:

**Date and title of meeting or work, including description of subject matter to be considered (if a number of substances or processes are to be evaluated, a list should be attached by the organizer of the activity):**

---

*Please answer each of the questions below. If the answer to any of the questions is "yes", briefly describe the circumstances on the last page of the form.*

*The term "you" refers to yourself and your immediate family members (i.e., spouse (or partner with whom you have a similar close personal relationship) and your children). "Commercial entity" includes any commercial business, an industry association, research institution or other enterprise whose funding is significantly derived from commercial sources with an interest related to the subject of the meeting or work. "Organization" includes a governmental, international or non-profit organization. "Meeting" includes a series or cycle of meetings.*

## EMPLOYMENT AND CONSULTING

*Within the past 4 years, have you received remuneration from a commercial entity or other organization with an interest related to the subject of the meeting or work?*

- 1a Employment Yes ☐ No ☐
- 1b Consulting, including service as a technical or other advisor Yes ☐ No ☐

## RESEARCH SUPPORT

*Within the past 4 years, have you or has your research unit received support from a commercial entity or other organization with an interest related to the subject of the meeting or work?*

- 2a Research support, including grants, collaborations, sponsorships, and other funding Yes ☐ No ☐
- 2b Non-monetary support valued at more than US \$1000 overall (include equipment, facilities, research assistants, paid travel to meetings, etc.) Yes ☐ No ☐

Support (including honoraria) for being on a speakers bureau, giving speeches or training for a commercial entity or other organization with an interest related to the subject of the meeting or work?

## INVESTMENT INTERESTS

*Do you have current investments (valued at more than US \$5 000 overall) in a commercial entity with an interest related to the subject of the meeting or work? Please also include indirect investments such as a trust or holding company. You may exclude mutual funds, pension funds or similar investments that are broadly diversified and on which you exercise no control.*

- 3a Stocks, bonds, stock options, other securities (e.g., short sales) Yes ☐ No ☐
- 3b Commercial business interests (e.g., proprietorships, partnerships, joint ventures, board memberships, controlling interest in a company) Yes ☐ No ☐

## INTELLECTUAL PROPERTY

*Do you have any intellectual property rights that might be enhanced or diminished by the outcome of the meeting or work?*

- 4a Patents, trademarks, or copyrights (including pending applications) Yes ☐ No ☐
- 4b Proprietary know-how in a substance, technology or process Yes ☐ No ☐

## PUBLIC STATEMENTS AND POSITIONS (during the past 3 years)

- 5a As part of a regulatory, legislative or judicial process, have you provided an expert opinion or testimony, related to the subject of the meeting or work, for a commercial entity or other organization? Yes ☐ No ☐
- 5b Have you held an office or other position, paid or unpaid, where you represented interests or defended a position related to the subject of the meeting or work? Yes ☐ No ☐

## ADDITIONAL INFORMATION

- 6a If not already disclosed above, have you worked for the competitor of a product that is the subject of the meeting or work, or will your participation in the meeting or work enable you to obtain access to a competitor's confidential proprietary information, or create for you a personal, professional, financial or business competitive advantage? Yes ☐ No ☐
- 6b To your knowledge, would the outcome of the meeting or work benefit or adversely affect interests of others with whom you have substantial common personal, professional, financial or business interests (such as your adult children or siblings, close professional colleagues, administrative unit or department)? Yes ☐ No ☐
- 6c Excluding WHO, has any person or entity paid or contributed towards your travel costs in connection with this WHO meeting or work? Yes ☐ No ☐

6d Have you received any payments (other than for travel costs) or honoraria for speaking publicly on the subject of this WHO meeting or work? Yes ☐ No ☐

6e Is there any other aspect of your background or present circumstances not addressed above that might be perceived as affecting your objectivity or independence? Yes ☐ No ☐

7. **TOBACCO OR TOBACCO PRODUCTS** (answer without regard to relevance to the subject of the meeting or work)

Within the past 4 years, have you had employment or received research support or other funding from, or had any other professional relationship with, an entity directly involved in the production, manufacture, distribution or sale of tobacco or tobacco products or representing the interests of any such entity?

Yes ☐ No ☐

**EXPLANATION OF "YES" RESPONSES:** If the answer to any of the above questions is "yes", check above and briefly describe the circumstances on this page. If you do not describe the nature of an interest or if you do not provide the amount or value involved where relevant, the conflict will be assumed to be significant.

| Nos. 1 - 4:<br>Type of interest, question number and category (e.g., Intellectual Property 4.a copyrights) <u>and</u> basic descriptive details. | Name of company, organization, or institution | Belongs to you, a family member, employer, research unit or other? | Amount of income or value of interest (if not disclosed, is assumed to be significant) | Current interest (or year ceased) |
|--------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------|--------------------------------------------------------------------|----------------------------------------------------------------------------------------|-----------------------------------|
|                                                                                                                                                  |                                               |                                                                    |                                                                                        |                                   |



**Nos. 5-6: Describe the subject, specific circumstances, parties involved, time frame and other relevant details**

**CONSENT TO DISCLOSURE.** By completing and signing this form, you consent to the disclosure of any relevant conflicts to other meeting participants and in the resulting report or work product.

**DECLARATION.** I hereby declare on my honour that the disclosed information is true and complete to the best of my knowledge.

Should there be any change to the above information, I will promptly notify the responsible staff of WHO and complete a new declaration of interests form that describes the changes. This includes any change that occurs before or during the meeting or work itself and through the period up to the publication of the final results or completion of the activity concerned.

Date: \_\_\_\_\_

Signature \_\_\_\_\_

## Annex A

### Guidance to Experts in Connection with the Completion of WHO DOI Forms

*Should be sent with the DOI form*

The following table provides guidance to experts as to the type and extent of information that experts should disclose as they complete WHO Declaration of Interest Form.

| Type of Interest in Relation to subject of meeting or work | Examples of Information Required                                                                                                                                                                                                                                                                                                                                                                      |
|------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Expert's employment or that of an immediate family member  | Indicate:<br><br>a. name of employer<br>b. title and function<br>c. period of employment                                                                                                                                                                                                                                                                                                              |
| Consulting work                                            | Indicate:<br><br>a. name of contracting party<br>b. period of consultancy<br>c. nature / subject of consultancy<br>d. amount of income earned per consultancy                                                                                                                                                                                                                                         |
| Research support                                           | Indicate:<br><br>a. source of the support<br>b. amount of support<br>c. whether support provided to expert personally, immediate family member or institution to which the expert is affiliated<br>d. subject matter of research supported<br>e. expert's role in the conduct of the research supported ( <i>e.g. head of research team, director of programme, scientist part of a larger team</i> ) |
| Investments                                                | Indicate whether investment in any single company is valued at:<br><br>a. the nature of the investment ( <i>e.g. stock, bonds, partial or total ownership interest etc</i> )<br>b. more than \$5,000<br>c. provide the name of the company                                                                                                                                                            |

.../...

## Annex A

|                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
|---------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Intellectual Property           | <p>Describe:</p> <ul style="list-style-type: none"><li>a. nature and object of the IP</li><li>b. whether IP is still protected</li><li>c. relevant licensing arrangements relating to the IP</li><li>d. whether royalties are being paid</li></ul>                                                                                                                                                                                                                                                                                                   |
| Public Statements and Positions | <p>Describe:</p> <ul style="list-style-type: none"><li>a. fora in which public position taken (<i>e.g. court, parliamentary committee etc.</i>)</li><li>b. year concerned</li><li>c. in brief, the position held</li><li>d. the capacity in which the statement was made or position taken (<i>e.g. Mr. Smith in his capacity as president of ABC society</i>)</li><li>e. indicate for how long approximately the position taken has been held or defended, if applicable</li><li>e. whether there is a public record of the position held</li></ul> |
| Unfair or Competitive Advantage | <ul style="list-style-type: none"><li>a. state whether information obtained as a result of participation in the advisory body or activity could provide you with an unfair competitive advantage and/or a clear actual and direct financial or pecuniary benefit.</li><li>b. Explain how you would propose to mitigate this concern.</li></ul>                                                                                                                                                                                                       |
|                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |

## **Annex B**

### **Code of Conduct for WHO Experts**

*Should be sent with the DOI form*

WHO values and relies upon the normative and technical advice that is provided by leading subject matter experts in the context of its advisory/technical committees, meetings and other similar processes. Such advice contributes to the formulation of public health policies and norms that are promulgated by WHO for the benefit of its Member States.

In order to ensure the integrity of such processes, thereby contributing to their credibility in the eyes of WHO's stakeholders, it is critical that experts appointed by WHO to render technical or normative advice

- a. fully and honestly disclose all relevant interests and biases on the DOI Form that may give rise to real or perceived conflicts of interest. Such disclosure must also be made orally to all fellow expert committee, meeting or group members at the outset i.e. unless this is done by the Chairperson or Secretariat.
- b. spontaneously report any material changes to their disclosed interest on an on-going basis during the period in which the expert serves the Organization;
- c. respect the confidential nature of committee or meeting deliberations or of the advisory function assigned by WHO and not make any public statements regarding the work of the committee or meeting or regarding the expert's advice without prior consent from WHO;
- d. undertake not to engage in activities that may bring reputational harm to the WHO process that they are involved in;
- e. undertake to represent their views in a personal and individual capacity with the best interest of WHO in mind as opposed to representing the views of their employers, other institutions or governments.
- f. actively and fully participate in discussions and deliberations within the relevant advisory group, committee or meeting.

**WORLD HEALTH ORGANIZATION**  
**CONFIDENTIALITY UNDERTAKING**

1. The World Health Organization (WHO), through its Department for Epidemic and Pandemic Preparedness and Prevention (EPP), has access to certain Infodemic Management information related to Public Health Emergencies to which it considers to be proprietary to itself or to parties collaborating with it (the “**Information**”).
2. WHO is willing to provide the Information to the Undersigned, or arrange for the provision of the Information to the Undersigned, whether during or in relation to a meeting or a telephone conference, or through an internet-based collaborative workspace, or for a contractual arrangement, or otherwise (the “**Activities**”), for the purpose of the WHO TECHNICAL CONSULTATION ON BUILDING A GLOBAL UNIVERSITY CURRICULUM FOR INFODEMIC MANAGEMENT, BELGRADE, SERBIA, 21-22 MARCH 2023 AND 23 MARCH 2023 (the “**Purpose**”), provided that the Undersigned undertakes to treat the Information as confidential and proprietary, to use the Information only for the aforesaid Purpose and to disclose it only to persons who have a need to know for the Purpose and are bound by like obligations of confidentiality and non-use as are contained in this Undertaking.
3. The Undersigned undertakes to regard the Information as confidential and proprietary to WHO or parties collaborating with WHO, and agrees to take all reasonable measures to ensure that the Information is not used, disclosed or copied, in whole or in part, other than as provided in paragraph 2, except that the Undersigned shall not be bound by any such obligations of confidentiality and restrictions on use, if and to the extent he/she is clearly able to demonstrate that the Information:
  - a. was known to him/her prior to any disclosure by or for WHO to the Undersigned (as evidenced by written records or other competent proof);
  - b. was in the public domain at the time of disclosure by or for WHO to the Undersigned;
  - c. becomes part of the public domain through no fault of the Undersigned; or
  - d. becomes available to the Undersigned from a third party not in breach of any legal obligations of confidentiality (as evidenced by written records or other competent proof).
4. The Undersigned further undertakes not to use the Information for any benefit, gain or advantage, including but not limited to trading or having others trading in securities on the Undersigned’s behalf, giving trading advice or providing Information to third parties for trade in securities.
5. If requested to do so, the Undersigned agrees to return to WHO any and all copies of the Information.
6. The obligations of the Undersigned shall not cease on termination of the Activities.



7. Any dispute arising from or relating to this Undertaking, including its validity, interpretation, or application, shall, unless amicably settled, be subject to conciliation. In the event the dispute is not resolved by conciliation within thirty (30) days, the dispute shall be settled by arbitration. The arbitration shall be conducted in accordance with the modalities to be agreed upon by the Undersigned and WHO or, in the absence of agreement within thirty (30) days of written communication of the intent to commence arbitration, with the rules of arbitration of the International Chamber of Commerce. The Undersigned and WHO shall accept the arbitral award as final.
8. Nothing in this Undertaking, and no disclosure of Information to the Undersigned pursuant to its terms, shall constitute, or be deemed to constitute, a waiver of any of the privileges and immunities enjoyed by WHO under national or international law, or as submitting WHO to any national court jurisdiction.

**Acknowledged and Agreed:**

Signature: \_\_\_\_\_

Name: \_\_\_\_\_

Title: \_\_\_\_\_

Date: \_\_\_\_\_

## **Provisional scope and purpose**

### **Introduction**

During the COVID-19 pandemic the World Health Organization has established Infodemic management as a new concept and area of concentrated interventions to mitigate the consequences emitting from an evolving information ecosystem and how individuals and communities interact with it. Infodemiology the scientific discipline underpinning Infodemic management, has seen a growth spurt since early 2020. At the same time, WHO has trained over 1,400 infodemic managers from all fields of public health infused with best practice approaches and applying evidence-informed interventions based on latest operational research. This work is framed by a WHO public health research agenda for managing infodemics<sup>1</sup> and a WHO competency framework for Infodemic managers.<sup>2</sup>

WHO now builds the Infodemic management preparedness capabilities for the future by developing a global university curricula to teach and train the science and practice of Infodemic management. Today's students in the field of public health are forming the workforce to respond to infodemics and the challenges it poses to countries and communities during health emergencies.

### **Aim, objectives and expected results**

The aim of the meeting is to convene Deans from public health university programmes, public health and professionals' associations, and representatives of Ministry of Health to develop a global teaching curriculum for infodemic management.

The objectives are

- Frame the need for academic and professional training for Infodemic management
- Take stock of current university and training efforts
- Define the capabilities and capacities needed in an Infodemic workforce
- Propose integration the curricula in existing university teaching programmes

Expected results

---

<sup>1</sup> <https://www.who.int/publications/i/item/9789240019508>

<sup>2</sup> <https://www.who.int/publications/i/item/9789240035287>

- Infodemic teaching modules defined
- Pilot universities identified to enter WHO collaborating center process

### **Participants**

- 20 deans of public health university programmes from the global south and north
- Public health and professional associations such as EUPHA, APHA, ASPHER, EPIET etc.
- Ministry of Health or National Health Institute representatives

### **Schedule**

Global curriculum meeting: 21-22 March 2023

Optional workshop: 23 March 2023, side-event workshop on designing immersive infodemic management training simulations

## **Provisional Agenda**

### **Day 1 – Tuesday, 21 March 2023**

#### **Session 1: Current State of Play in Infodemic Management Training Programmes**

Welcome

Setting the scene – WHO competency framework for infodemic management and training programmes on infodemic management during emergencies

Discussion by three discussants: university education, continuing education, field epidemiology

Plenary discussion - questions for discussion related to the background document on competencies, capabilities and capacities and health professional profiles

- What are the elements that should be included in the node under discussion?
- Is there anything missing, should be removed or changed in the mapping?

### **Day 2 – Wednesday, 22 March 2023**

#### **Session 2: Mainstreaming Infodemic Management Skills into Training Programmes**

Discussion by three discussants: credentialing and certification

Plenary discussion - questions for discussion related to the background document on credentialing and mainstreaming of skills and competencies into training programmes

- What are the elements that should be included in the node under discussion?
- Is there anything missing, should be removed or changed in the mapping?

Summary of meeting deliberations

Outputs

- Recommendations on education in infodemic management for health
- Establishment of network for global curriculum on infodemic management

Follow up meeting

### **Day 3 – Thursday, 23 March 2023**

#### **Session 3: Experience Sharing on Immersive Simulation World Design and Training Delivery**

Delivery of in-person mass immersive infodemic insights generation simulation to the School of Medicine, University of Belgrade (public, mass teaching exercise)

#### Workshop discussion by participating educators

- Learning from WHO's global infodemic manager trainings: Designing online and offline immersive worlds for teaching infodemic management
- Mapping of considerations on design: competencies, design, implementation and evaluation components

#### Outputs

- Recommendations on designing immersive worlds and simulations for teaching cross-functional and cross-disciplinary infodemic management skills

#### Follow up meeting





I hereby consent to the worldwide use of my name, likeness, biography, picture and/or clinical details related to my person, as depicted in the following photograph(s), video and/or sound recordings (the "Media") made for or by the World Health Organization ("WHO"), 20 Avenue Appia, 1211 Geneva 27, Switzerland, as well as in publicity concerning the same, for the following subject(s):

In providing this consent, I declare, acknowledge and agree that:

- I am of the legal age of consent and I have the full legal power and authority to complete this Declaration, or, if I am a minor (below the legal age of consent) or otherwise legally prevented from signing this Declaration, it is made on my behalf by my parent(s) or legal guardian(s) listed below.
- I have read this Declaration in its entirety, or it has been read (or translated) to me in its entirety, and I have had the opportunity to ask questions about it.
- My name will appear in connection with the Media.
- My consent is voluntary. I can withdraw my consent at any time by contacting WHO in writing. Any such withdrawal will not apply to Media that have already been disseminated under this Declaration.
- All rights to the Media are vested in WHO, which for the duration of the applicable rights has the unrestricted, sublicensable and worldwide right to use my name, likeness, biography, picture, and/or clinical details related to my person as depicted in the Media in any manner whatsoever, without any obligation to seek any further authorization from me or inform me thereof. That use may include, without limitation, editing, duplication, licensing to any third party, and distribution in all media now known or later developed including, without limitation, WHO and third-party advocacy materials, publications, television programmes, films, videos and websites.
- I will not receive any payment in consideration for the foregoing.

I agree not to hold WHO, its employees, or its agents liable for any use or dissemination of the Media in accordance with this Declaration.

By signing below, I confirm that I fully understand and accept all of the above.

Signature: ..... Date: .....

Name: ..... Place: .....

Name of Parent(s) or Legal Guardian(s) or person signing on behalf of the subject:

\_\_\_\_\_

For internal use only: Visual description of the subject for reference



**World Health  
Organization**

**Explanation that can be provided to subject**

WHO uses photos and video to document and promote public health issues. When we take a photo or video of someone, we require you to provide your consent to be photographed or filmed. In signing this consent form, you are agreeing to the use of your likeness and the information that you have provided us, for use by WHO in connection with its work on public health.



Tel. direct: +41 22 791 2615  
Fax direct:  
E-mail: [purnam@who.int](mailto:purnam@who.int)

In reply please  
refer to: WPE/EPP/IEP

Dr Christopher Voegeli  
Behavioral Scientist  
Acting Vaccine Confidence and Demand Lead  
National Center for Immunization  
and Respiratory Diseases  
Immunization Services Division  
Centers for Disease Control and Prevention  
Atlanta, Georgia  
Etats-Unis d'Amérique

9 February 2023

Dear Doctor Voegeli,

**WHO Technical Consultation on  
Building a Global University Curriculum for Infodemic Management  
Belgrade, Serbia  
21-22 March 2023 and 23 March 2023**

The World Health Organization Epidemic and Pandemic Preparedness and Prevention Department, and the WHO Regional Office for Europe, have pleasure in inviting you to participate in the above-mentioned consultation, to be held in Belgrade, Serbia, from 21 to 22 March 2023. The meeting will be followed by an optional workshop on designing immersive infodemic management training simulations on 23 March 2023.

The aim of the meeting is to convene deans from public health university programmes, public health and professionals' associations, and representatives of Ministries of Health to develop a global teaching curriculum for infodemic management.

The objectives of the meeting are:

1. Frame the need for academic and professional training for Infodemic management
2. Take stock of current university and training efforts
3. Define the capabilities and capacities needed in an Infodemic workforce
4. Propose integration of the curricula in existing university teaching programmes

The expected outcomes of the meeting are:

1. Infodemic teaching modules defined
2. Pilot universities identified to enter WHO collaborating center process

Your participation is contingent on receipt and assessment by WHO of a "Declaration of Interests (DoI) for WHO Experts", which is enclosed for you to complete. Please read the form carefully as it explains what is being requested and how the information reported by you will be used. As stated in the instructions, we will review the information submitted by you to assess whether you have any appreciable real, potential or apparent conflict of interest. If it is deemed to exist, we will revert to you to discuss a proposed course of action. You are therefore kindly requested to fill out, sign and return the form to Mrs Ofelia Cazacu ([ofelia.cazacu@who.int](mailto:ofelia.cazacu@who.int)) as soon as possible. Please note that the original signed copy should be submitted during the meeting.

Please also find attached a "Code of Conduct for WHO Experts" (Annex B) for your information, and a "Guidance for Experts" document (Annex A), which may be useful in completing the Declaration of Interest form.

We draw your attention to the fact that WHO does not take responsibility for visa applications, and that it is your responsibility to obtain any visa and verify the travel requirements with regards to testing and vaccinations that may be necessary for this travel. Upon receipt of this invitation, please verify with the nearest Serbian Embassy or Consulate whether you are required to have a visa for Serbia.

Please be informed that costs related to your participation in this technical consultation will be at your own expense. We kindly remind you to book your flights and hotel accommodation as soon as possible.

This meeting will be held at **Hotel Metropole Palace** in Belgrade. The working language of the meeting will be English. Please find attached for your information the Scope & Purpose of the meeting and a provisional agenda for this meeting.

We would be most grateful if you could kindly **confirm your attendance** to this meeting by 15 February 2023. For any further information and/or queries on the content of the conference, please do not hesitate to contact Mrs Tina Purnat (purnatt@who.int). Should you have any administrative queries, please contact Mrs Ofelia Cazacu (cazacuo@who.int) and Mrs Gabriela Santesso (santessog@who.int).

I do hope it will be possible for you to participate in this consultation and I look forward to hearing from you.

Yours sincerely,



Dr Sylvie Briand  
Director  
Epidemic and Pandemic Preparedness and Prevention  
WHO Health Emergencies Programme

ENCLS: 5

**From:** KARAM, Elsa Maria  
**Sent:** Wed, 26 Oct 2022 11:30:00 +0000  
**To:** Undisclosed recipients:  
**Subject:** Joint Monthly Trend Report - September  
**Attachments:** Joint Monthly Trends Report\_September 2022.docx.pdf

Good morning/ afternoon/ evening,

Attached is the Monthly Infodemic Trends in Africa report from September 2022.

Key trends last month were as follows:

#### **Ebola**

1. Vaccines & Treatments
2. Transmission & Origin

#### **COVID-19**

2. Vaccines
3. COVID-19 impact on vaccine-preventable diseases

#### **Trends to Watch**

1. Drought

Please do not hesitate to send any questions or feedback that I can assist with, and points of contact for each contributing organization can be found on the final page of the report.

Warm regards,

Elsa and the AIRA team

**Elsa Maria Karam**

Social Listening Analyst

[Africa Infodemic Response Alliance \(AIRA\)](#)



WHO - Regional Emergency Hub  
Tel: +254 748196402





## Public Health Infodemic Trends in ESAR – September 2022

**Scope:** This report presents operational recommendations based on online and offline community feedback trends analysis around COVID-19 and other key public health issues in the East and Southern African Region (ESAR) for the month of September 2022.

It aims to enable evidence-based decision-making at regional and national levels.

### Key Themes

#### **EBOLA**

- 1- Vaccines & Treatments
- 2- Transmission & Origin

#### **COVID-19**

- 1- Vaccines
- 2- COVID -19 impact on Vaccine-preventable diseases

#### **Issues to watch**

Drought

## EBOLA is not real

*Burundi, Kenya, Rwanda, South Sudan Uganda*



- False claims that **Ebola isn't real**, and that governmental authorities are using it to generate profit and attract international donors has also generated high engagement on social media.
- Online users generally talk about governmental authorities taking advantage of the Ebola crisis to receive international development aid from UN agencies and donor countries, but also to shift the power dynamics within the country.

For example:

*"This is the plan of putting Muhoozi into power. It's not real Ebola disease."*

*"The World Health Organization doesn't give any aid to Uganda if there's no Ebola in Uganda, Museveni and his ministers are faking it."*

- The most prominent narrative highlights the likelihood that the disease was transferred to the first patient via the consumption of a bat, however, many individuals are still questioning the origin of the disease and their questions have gone largely unanswered.

For example:

*"So where did that 1st suspect get ebola from, we need to know!! Did it fall on him or her like rain? Stop coming and tell us out of nowhere someone has ebola!! How, where and when did that person catch ebola?"*

- Users have also claimed that the Ebola cases started in the interior of Uganda based on a lab leak that may have been purposeful.

For example:

*"Of course they got Ebola from the lab so that someone can get loans. Remember after nyege nyege and the oil pipeline. We're lucky that Ebola drugs exist."*

## Recommendations

- Consistently **promote accurate information** regarding ebola symptoms, transmission, and mitigation methods as communities have expressed confusion about the disease. (Viral Facts content on ebola symptoms and transmission [here](#)).
- **Utilize social science research** to determine community-specific barriers and enablers for responses to the ebola outbreak to enable tailoring of RCCE.
- **Reinforce national community feedback** mechanisms created as part of the pandemic response to monitor and address emerging concerns regarding other outbreaks to enable rapid response and to limit adverse effects such as increased stigma, risky behaviors, delayed access to health services, and noncompliance with public health recommendations.
- **Listen to and strengthen collaboration with community activists** to develop appropriate messaging on how to communicate risk, promote prevention and access to care, and counter stigma and discrimination.

### COVID-19 *Kenya, South Africa*



- Concerns that people experiencing “**long-COVID**” are actually experiencing the long lasting side effects of the COVID-19 vaccines have increased.
- A false claim that **vaccine shedding** has an impact on the menstrual cycle has quickly drawn the attention of a large audience. Over 200 individuals have claimed on social messaging apps that they have experienced some sort of menstrual irregularity or complication after all levels of exposure to vaccinated people
  - Some communities in the ESAR region continued to claim that **Ivermectin** helps cure COVID-19 as the use of Ivermectin as prophylaxis for COVID-19 has led to a 92% reduction in mortality rate.
- Online users have been sharing a “prospective observational study” that reportedly has shown that the use of **Ivermectin** as prophylaxis for COVID-19 has led to a **92% reduction** in mortality rate in a dose-response manner. Ivermectin has been compared to vaccines in public narratives.
- The push against the way media outlets are reporting on Ivermectin can have a significant impact on overall public trust for health issues. If individuals on social messaging apps are



garnering trust regarding medical issues, these can often go unchecked and potentially become misleading, whether purposeful or unintentional. The information shared here seems to be accurate and vetted, yet the post most often shared finishes with the line “...most mass media journalists are accomplices and stakeholders of the current situation. Blood is on their hands.”

## **Recommendations**

- **DEBUNK: IVERMECTIN NOT ON ESSENTIAL MEDICINES LIST**

Twitter EN: <https://twitter.com/viralfacts/status/1556917668749377536>

Facebook EN: <https://www.facebook.com/viralfacts/videos/589832822669240>

- **DEBUNK: COVID-19 VACCINE SHEDDING & MENSTRUATION**

Twitter EN: <https://twitter.com/viralfacts/status/1574646046487085056>

Facebook EN: <https://www.facebook.com/viralfacts/videos/1503083476772119>

- Reassure the public through messages raising awareness on scientific evidence around ivermectin use for COVID-19.
- Continue to address real COVID-19 side effects with [updated material](#) that is relevant to the specific concerns of long-covid
- Amplify fact-based information to show the positive impact of vaccines, reminding users that minor side effects can occur following vaccination but that risk of severe harm is far more likely to happen due to COVID-19 infection.
- Utilize social and behavioral research and community feedback to better understand community perceptions and inform response activities, particularly for outbreaks in new countries or districts that may not have recently been exposed.

## **Drought**

*Ethiopia, Madagascar, Kenya, South Sudan, Tanzania*



Concerns regarding the drought in the Horn of Africa continue to circulate on social media.

An article from Reuters focused on the situation in Northern Kenya where the lack of water is impacting livestock and fueling hunger.

Activists in the region have called for interventions on climate change that could help with the current crisis. Concerns regarding the risk of education gaps due to the drought were analyzed in an article by the Guardian.

For example:

*“Food that we need the most, even if you are going to opt for a cash*

*distribution we will still buy food with the money. We hope that the evaluation response you are currently conducting will be quick."*

*"we respect your support, but due to high number of beneficiaries your intervention is insignificant for instance out of 12,000 Affected HHs you select and target only 625 HHs "*

*" Due to lack of availability of FSP in our locality we are forced to travel a long distance, why not give us the money/cash in Hand".*

*The cattle are dying because we haven't got any rain and our people are moving with them from place to place looking for grass to keep them alive. So many of them have lost weight and Farmers are not making gains in their investments.*

## **Recommendations**

- Identify and understand the coping mechanisms of different community groups within the affected populations and promote community health and well-being through community-driven strategies that address unsafe and risky behaviors.
- Use secondary data or conduct assessments to understand the causes of malnutrition among the affected populations (e.g. food access, poverty, social & cultural norms, disease, conflict, etc.) to inform behavior change strategies (USAID perception survey from Kenya available [here](#))
- Engage with pastoralist communities to maintain the health of their livestock, including accessing veterinary services on time
- Share community feedback insights with relevant Technical Working Groups at country and regional levels such as MoH, RCCE WG, East Africa Cash WG and AAP Horn of Africa Drought Response WG.

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## **Methodology**

The report is based on online social listening feedback from UNICEF ESARO and AIRA, online and offline community feedback provided by a partner network that contributes to the ESAR RCCE Community Feedback Sub-Working Group, and radio listening feedback from UN Global Pulse. Monitored online channels include Facebook, Twitter, Instagram, digital news, and WhatsApp messages forwarded to the researchers. Online and offline information is also obtained through the feedback form that RCCE partners fill out on a monthly basis and can be collected from partner feedback mechanisms including hotlines, community meetings, community feedback via volunteers, and partner staff. Currently, radio audio data is collected from five radio stations in South Africa by UN Global Pulse. For each trend, the report specifies the countries in which relevant content was tracked. This information may nonetheless be circulating in other African countries not mentioned in this report.

### **Report Focal Points**

[Africa Infodemic Alliance \(AIRA\)](#) • [UN Global Pulse](#) • [African Field Epidemiology Network \(AFENET\)](#) • [RCCE ESAR Community Feedback Group](#) • [RCCE Collective Service ESAR](#) • [UNICEF ESAR](#)



**From:** ISHIZUMI, Atsuyoshi  
**Sent:** Tue, 15 Mar 2022 15:16:09 +0000  
**To:** PURNAT, Tina; YAU, Brian; Catherine BERTRAND-FERRANDIS; Konne, Nuadum Muriel (CDC/DDPHSIS/CGH/GID); Wilhelm, Elisabeth (CDC/DDPHSIS/CGH/GID); Voegeli, Christopher (CDC/DDID/NCIRD/OD)  
**Subject:** Measuring infodemic management capacity in countries  
**Attachments:** Qualitative questions for assessing IM capacity\_draft\_15Mar22.docx

Hi everyone,

A team at WHO working on [Universal Health and Preparedness Review](#) (UHPR) recently contacted us about including IM capacity indicators in pilot reviews they are planning in a few countries. Specifically, they asked us to provide input into primary data collection for assessing IM capacity at the country level (via key informant interviews or focus group discussions). Tina, Lis, and I met to brainstorm some questions that could potentially be added to data collection tools – attached is a draft of what we plan to share with the UHPR team.

Before finalizing, we wanted to share with you all for comments and feedback – could you please review the attached doc? For WHO folks, please use [this link](#) to directly add your comments. I would appreciate it if you could kindly review by **22 March (next Tuesday)**. It's only a few pages so hopefully won't take too long to review 😊

Please let me know if you have any questions and thank you in advance!

Kind regards,  
Atsu

## Assessing Infodemic Management Capacity at the Country Level: Potential Questions to Include in Qualitative Data Collection Tools

### Background

Infodemic management (IM) refers to the science and practice of understanding and addressing infodemics. Although IM requires a whole-of-society approach and should involve many other actors beyond health authorities, it is important that ministries of health are equipped with sufficient IM capacities as they play an important role in disseminating high quality health information, assessing the impact of infodemics on health behaviors, and developing evidence-based IM interventions. Recent data from the third round of WHO's Global Pulse Survey suggest that countries are increasingly establishing capacities for infodemic management, with 56% of the surveyed countries indicating that they have IM capacities in Ministry of Health.<sup>1</sup>

To further build on this evidence and gain a better understanding of IM capacities at the country level, a follow-up assessment using exploratory qualitative methods may be beneficial. This document provides a bank of potential questions that would help us gather in-depth insights into a country's IM capacities, particularly designed for key informant interviews (KII) or focus group discussions (FGD).

### Considerations for organizing Key Informant Interviews or Focus Group Discussions

The number of participants that one should interview will vary depending on the country. As a general rule, KIIs and FGDs should be administered until data saturation is reached. To achieve data saturation, it is important that the profiles of KII/FGD participants are varied as much as possible – since IM is a relatively new function that is still being defined in many countries, restricting interviews to people with similar professional backgrounds may result in skewed or biased perspectives. IM professionals may work in various departments, including but not limited to external communications, behavioral insights, emergency preparedness, or immunization.

The questions listed below are meant to serve as a guide and will likely require rewording or rephrasing based on the country context. It also may not be necessary to ask all questions, depending on who is being interviewed. Additionally, some of the close-ended questions (such as the ones under background and introduction) may be more appropriate for pre-interview questionnaire or screening tool used for recruiting participants.

### Potential questions to include in data collection tools

| Domain                      | Potential questions                                                                                                                                            |
|-----------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Background and introduction | <ul style="list-style-type: none"><li>Do you or anyone else in your organization track, monitor, assess, and/or respond to the infodemic in any way?</li></ul> |

<sup>1</sup> WHO. (2022, February 7). *Third round of the global pulse survey on continuity of essential health services during the COVID-19 pandemic*. [https://www.who.int/publications-detail-redirect/WHO-2019-nCoV-EHS\\_continuity-survey-2022.1](https://www.who.int/publications-detail-redirect/WHO-2019-nCoV-EHS_continuity-survey-2022.1)

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|--------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                                        | <ul style="list-style-type: none"> <li>• If so, please briefly describe your role in your organization's infodemic management (IM).</li> <li>• How long have you been involved in this role?</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| Organizational structure and relationships             | <ul style="list-style-type: none"> <li>• Where in your organization's overall structure does the IM function sit? (e.g., emergency operations center, external communications, immunization program)</li> <li>• Is IM a routine function that was pulled into the COVID-19 emergency response, or a function that was stood up just for the response?</li> <li>• How is the IM function connected to other parts of the response?</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| Team overview, composition, and size                   | <ul style="list-style-type: none"> <li>• How big is your organization's IM function in terms of number of staff?</li> <li>• Do all staff work on IM fulltime? If not, what proportion of them do?</li> <li>• What types of skillsets or expertise does the IM team have?</li> <li>• How would you define the team's main objectives or priority areas?</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| Infodemic management insights generation and reporting | <p>Overview</p> <ul style="list-style-type: none"> <li>• How does the IM team define infodemic management insights?</li> <li>• What are the different steps of the IM team's process to generate insights? Please provide a brief overview of the process from start to finish.</li> <li>• What is the regular reporting rhythm? (e.g., weekly or monthly production of reports)</li> <li>• Does the team report IM insights outside of the regular rhythm in response to urgent or ad-hoc requests? If so, please explain.</li> </ul> <p>Data collection and analysis</p> <ul style="list-style-type: none"> <li>• Please describe how the IM team collects data to inform insights development. <ul style="list-style-type: none"> <li>○ Probe: How often are data collected?</li> <li>○ Probe: What data sources or data inputs does the team use? Please list all if possible.</li> </ul> </li> <li>• Please describe how the IM team analyzes data to develop insights. <ul style="list-style-type: none"> <li>○ Probe: Does the team triangulate or synthesize insights derived from different data sources? If so, how?</li> <li>○ Probe: Does IM team classify themes, narratives, or information voids that they identify based on level of risk or urgency? If so, please describe how this is done.</li> <li>○ Probe: Do you perform disaggregated analyses for specific population(s)? If so, how is this done (e.g., which specific populations, how are data disaggregated)</li> </ul> </li> </ul> <p>Recommendations</p> <ul style="list-style-type: none"> <li>• Please describe how the recommendations developed based on the IM insights are reported. <ul style="list-style-type: none"> <li>○ Probe: In what format are the recommendations reported? (e.g., written report, verbally presented)</li> <li>○ Probe: Who is the intended audience of these recommendations i.e., whose actions are the recommendations supposed to inform?</li> </ul> </li> </ul> |

|                           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
|---------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Monitoring and evaluation | <ul style="list-style-type: none"> <li>• Please describe how the insights and recommendations developed by the IM team are used to inform interventions or other programmatic actions.               <ul style="list-style-type: none"> <li>○ Probe: Who uses the IM insights and recommendations (anyone other than the intended audience mentioned earlier?)</li> <li>○ Probe: Have specific IM interventions (e.g., communication materials, behavior change strategies) been developed or adapted based on the team's recommendations? If so, please explain.</li> <li>○ Probe: Are these IM interventions monitored or evaluated? If yes, how?</li> </ul> </li> <li>• Is the use of IM insights for emergency response or programs assessed or evaluated in any way? If so, please describe how this is done.               <ul style="list-style-type: none"> <li>○ Probe: Are outputs or actions following the IM recommendations tracked in any way? If so, please explain.</li> </ul> </li> <li>• How does the IM team assess the limitations of their current work?</li> <li>• Are there any process improvements that the IM function or team has made over time? Please describe if so.</li> </ul> |
| Miscellaneous             | <ul style="list-style-type: none"> <li>• How do you demonstrate the value of IM to your manager?</li> <li>• If you could wave a magic wand, what would you change about your organization's IM work?</li> <li>• How is the IM function in your organization funded?</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |



**From:** PURNAT, Tina  
**Sent:** Sun, 12 Mar 2023 21:12:49 +0000  
**To:** amy.rowland@emory.edu; Voegeli, Chris (CDC/DDID/NCIRD/ISD); (b) (6) @sent.com; TUF@mailbox.sc.edu; alauff@tephinet.org; Claire Jennings (TEPHINET) (cjennings@tephinet.org); ashish.joshi@memphis.edu; mperlmangabel@health.nyc.gov; lguerraucelli@health.nyc.gov; ianb@illinois.edu; pellanda@ufcspa.edu.br; maral@ufcspa.edu.br; raul.melo@upe.br; info@mediacouncil.or.ke; hkazoor; (b) (6) @gmail.com; peter@healthenabled.org; deepthi.ganapathy@iimb.ac.in; (b) (6) @gmail.com; victorhoe@um.edu.my; elil@sunway.edu.my; spprng@nus.edu.sg; Haitham Bashier (hbashier@globalhealthdev.org); kadrih@ksau-hs.edu.sa; (b) (6) @hotmail.com; xheladin.dracini@umed.edu.al; robert.otok@aspher.org; (b) (6) @yahoo.com; SREENATH, Ravi Shankar; (b) (6) @yahoo.com; (b) (6) @gmail.com; caterina1.rizzo@opbg.net; neville.calleja@um.edu.mt; elena.petelos@maastrichtuniversity.nl; ef.kotronia; rrosario@ese.uminho.pt; henrique.lopes@sharen.pt; luis.lapao@nms.unl.pt; (b) (6) @gmail.com; Susana.Barragan@ecdc.europa.eu; diaslan@hacettepe.edu.tr; Elena.Musi@liverpool.ac.uk; s.rawaf@imperial.ac.uk; Catherine BERTRAND-FERRANDIS; PETIT, Laurent; DUNCAN, Benjamin Paul; Noha Salah (b) (6) @gmail.com; (b) (6) @gmail.com  
**Cc:** NGUYEN, Tim; CAZACU, Ofelia; (b) (6) @gmail.com; (b) (6) @gmail.com; STANOJEVIC, Irena; SANTESSO, Gabriela  
**Subject:** Meeting documents - Ahead of the WHO meeting on global curriculum on infodemic management, 21023 March, Belgrade

Dear colleagues,

I'm writing to share the meeting documents with you for the upcoming meeting on WHO infodemic management curriculum.

**Meeting documents can be found in this folder** (be sure to bookmark it):

<https://1drv.ms/f/s!AtPoc3YQw0ufgu8Unbrb1LM6aWq1ZQ?e=cfHof8>

Please note the following:

- **Document 4 – provisional programme.** Note that the we have designed the meeting to be as participatory as possible. We have therefore suggested discussant roles for some participants. I will follow up in a separate email with information in this.
- **Ahead of the meeting, you may wish to refer to:**
  - **Document 7** – a brief background document on the evolution of infodemic management and teaching since 2020
  - **Document 8** – discussion document, which will feed into discussion at the meeting
- We will share any missing documents ahead of the meeting as they are ready.

Kindly refer any logistics, flight, hotel, etc questions to Gabriela and Ofelia – and I can answer any questions on the background documents.

**Please also note that we've created a WhatsApp group to help you connect** and share information and hints/questions about Belgrade. You can reach the organizing team here with any burning questions. You can join through this link: <https://chat.whatsapp.com/lw2DBVWahLrlauATLzZA0u>

We look forward to meeting you in Belgrade!



Best regards,

Tina

-----  
Tina D Purnat  
Team Lead for Infodemic Management  
High Impact Events Preparedness Unit  
Department for Epidemic and Pandemic Preparedness and Prevention (EPP)  
Preparedness Division, WHO Health Emergencies Programme (WPE/WHE)  
World Health Organization, Geneva, Switzerland

[purnatt@who.int](mailto:purnatt@who.int) | WhatsApp/Signal: (b) (6)  
[LinkedIn profile](#) | [Google Scholar profile](#) | [@tdpurnat](#) |

Sign up for the WHO infodemic management News Flash: <https://bit.ly/flashsubscribe>

**From:** NIKISINS, Sergejs  
**Sent:** Fri, 16 Aug 2024 11:27:23 +0000  
**To:** David Scales; Thomas Abraham; Christine Cool; TULLOCH, Olivia; iballalai; thomas; Keenan Duggal; Romer, Dan; David Scales; James (Jim) Duggan; jim.duggan@nuigalway.ie; Duggan, James; MACHINGAIDZE, Chiedza; External Partner - alawaidy, salah; MORAN, Thomas; VON HARBOU, Kai; HERAUD, Jean-michel; TAM, John SL [ABCT]; Voegeli, Chris (CDC/IOD/OC); Constanze Rossmann  
**Subject:** Minutes: Stream 5B - TC-7 (15 August)  
**Attachments:** Stream5B\_Minutes\_Meeting7\_August15th\_SNK.docx

**CAUTION:** This email originated from outside of the organization. Do not click links or open attachments unless you recognize the sender and know the content is safe.

Dear Colleagues,  
Please find the minutes of yesterday's TC attached for your reference.  
Please note the Action point:

- **The group is to continue to provide ONLINE feedback on research recommendations before the next meeting (ideally by Monday EOB):**

[https://docs.google.com/document/d/1lPxZV3usRweXs9yRX4LBA-FPTdpZRB1vu\\_TM\\_V5cCv8/edit](https://docs.google.com/document/d/1lPxZV3usRweXs9yRX4LBA-FPTdpZRB1vu_TM_V5cCv8/edit)

Minutes also, via the link [Stream5B\\_Minutes\\_Meeting7\\_August15th\\_SNK.docx](#).

Kind regards,

Sergejs

**From:** NIKISINS, Sergejs

**Sent:** Tuesday, August 13, 2024 1:48 PM

**To:** David Scales (b) (6) @gmail.com>; Thomas Abraham (b) (6) @gmail.com>; Christine Cool <christine.cool@undp.org>; TULLOCH, Olivia <tullocho@who.int>; iballalai <iballalai@terra.com.br>; thomas <thomas@hku.hk>; Keenan Duggal <keenand@princeton.edu>; Romer, Dan <dan.romer@appc.upenn.edu>; David Scales <das9289@med.cornell.edu>; James (Jim) Duggan <jim.duggan@insight-centre.org>; jim.duggan@nuigalway.ie <jim.duggan@nuigalway.ie>; Duggan, James <james.duggan@universityofgalway.ie>; MACHINGAIDZE, Chiedza <machingaidzec@who.int>; External Partner - alawaidy, salah (b) (6) @gmail.com>; MORAN, Thomas <morant@who.int>; VON HARBOU, Kai <vonharbouk@who.int>; HERAUD, Jean-michel <heraudj@who.int>; TAM, John SL [ABCT] <john.sl.tam@connect.polyu.hk>; Chris Voegeli <oqo2@cdc.gov>; Constanze Rossmann <constanze.rossmann@ifkw.lmu.de>

**Subject:** Stream 5B - TC-7 (15 August)

**When:** Thursday, August 15, 2024 2:30 PM-3:30 PM.

**Where:** Microsoft Teams Meeting

**Please note the time change for TC-7**

**Microsoft Teams**

[Join the meeting now](#)

Meeting ID: (b) (6)

Passcode: (b) (6)

Dear Colleagues, Stream-5B members,

We are pleased to invite you to attend TC of the Expert group on influenza research agenda review - Stream 5: Promoting the development and application of modern public health tools (Sub-stream 5B: Social Media Tools and Risk Communication)

**The meeting time is 3 pm CET (Geneva, Switzerland).**

**If your Outlook doesn't support the time function, please double-check your calendars**

Please assess all relevant documents on WHO Teams Channel [WHO PUBLIC HEALTH RESEARCH AGENDA FOR INFLUENZA - 2024 UPDATE | Stream 5B Channel | Microsoft Teams](#)

Let us know if you have any access issues.

Kind regards,

John, Jean-Michel, Sergejs

---

## Microsoft Teams [Need help?](#)

### [Join the meeting now](#)

Meeting ID: (b) (6)

Passcode: (b) (6)

---

### Join on a video conferencing device

Tenant key: (b) (6)

Video ID: (b) (6)

[More info](#)

For organizers: [Meeting options](#)

---

## WHO PUBLIC HEALTH RESEARCH AGENDA FOR INFLUENZA – 2024 UPDATE

### STREAM 6: Risk communication, community engagement & infodemic management

WHO MS Teams Channel [WHO PUBLIC HEALTH RESEARCH AGENDA FOR INFLUENZA - 2024 UPDATE | Stream 5B Channel | Microsoft Teams](#)

7<sup>th</sup> TC / 15 August 2024

**Attended:** Thomas Abraham, Keenan Duggal, Daniel Romer, John Tam, Sergejs Nikisins, Isabella Ballalai, Jean-Michel Heraud, Chris Voegeli

**Chair:** Thomas Abraham

**Rapporteur:** Keenan Duggal

The meeting recording is available [via the link](#).

#### Agenda

- Work through the Google document to familiarize the group with what we have so far and continue the process of revising/adding/removing research recommendations.

#### Minutes

##### Big picture discussion points:

- Discussion to shift group structure from Sub-stream 5B to an entirely new Stream 6
  - o The consensus appears to be that we should make this shift
- Considerations for when we present to the larger task force:
  - o We will need to explain the rationale and intended focus for each new recommendation and for departures from the 2017 recommendations.
  - o Specifically, we ought to emphasize LLMICs as settings requiring further research
- On the matter of how specific vs. generalizable, our recommendations should be:
  - o We should look at principles that apply across the board and then look if there are potential variations in LLMICs or for influenza that require specification
    - Not just LLMIC context-specific but also community-specific (micro-level analyses).
  - o Consensus: recommendations should be generalizable with disclaimers of the need to analyze what is unique about different contexts.

##### Line-by-line discussion of research recommendations:

- 1.1:
  - o How broad should we be?
    - Answer: we can be broad for some (e.g., for 1.1), and specific for others (e.g., vaccination uptake)
- 1.4:



- Longitudinal studies are needed, not just one baseline study
  - Explicitly add phrasing “longitudinal.”
- Stratify by high income and LLMICs
- **New recommendation:**
  - Analyze how different community engagement frameworks facilitated risk communication during the COVID-19 pandemic?
    - We could potentially combine this with 1.6?
    - There are currently no questions in our document about the types of community engagement that effectively inform risk communication.
- 2.1:
  - Lots of people don’t like vaccines in general – this isn’t necessarily influenza-vaccine specific?
  - Expand to include misinformation pertaining to prevention and treatment
  - This recommendation is likely highly context-specific:
    - High trust in vaccines in Brazil
      - The population of Brazil largely wanted to be vaccinated during Covid-19
    - Korea: vaccination rate is close to 90% for all vaccines
      - Level of trust
      - Communication targeted towards trust in medical professionals
    - Cost is important in decision-making
- 2.2:
  - We should explicitly label the focus here on the Covid-19 pandemic
- 2.4:
  - The focus of this recommendation does not just have to be on social media
    - Misinformation is also picked up by other platforms (e.g., podcasts, newsletters, mass media)

#### **Action Points**

- The group to continue to providing feedback on research recommendations before the next meeting (ideally within the next two days).
- Keenan and Thomas to provide a more formalized draft for review at the next meeting.

#### **End of Minutes**



**From:** Jon Roozenbeek  
**Sent:** Fri, 16 Sep 2022 07:05:19 +0000  
**To:** Voegeli, Chris (CDC/DDID/NCIRD/ISD)  
**Subject:** Misinfo interventions overview  
**Attachments:** Roozenbeek et al - misinformation interventions overview.pdf

Hi Chris,

Here's the review paper about misinformation interventions that is now basically accepted for publication in *European Psychologist*.

Cheers!  
Jon

# Countering Misinformation: Evidence, Knowledge Gaps, and Implications of Current Interventions

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**Abstract:** Developing effective interventions to counter misinformation is an urgent goal, but it also presents conceptual, empirical, and practical difficulties, compounded by the fact that misinformation research is in its infancy. This paper provides researchers and policymakers with an overview of which individual-level interventions are likely to have an influence on the spread of, susceptibility to, or impact of misinformation. We review the evidence for the effectiveness of four categories of interventions: boosting (psychological inoculation, critical thinking, and media and information literacy); nudging (accuracy primes and social norms nudges); debunking (fact-checking); and automated content labelling. In each area, we assess the empirical evidence, key gaps in knowledge, and practical considerations. We conclude with a series of recommendations for policymakers and tech companies to ensure a comprehensive approach to tackling misinformation.

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## Introduction

Misinformation is a significant societal problem that has become an increasingly popular topic among researchers, policymakers, journalists, and the wider public. We define misinformation as any kind of false or misleading information. The latter does not necessarily have to be factually incorrect, but instead may distort facts, be stripped of relevant context, or use a logical fallacy (Roozenbeek & van der Linden, 2022). In online environments, misinformation can appear in the form of news stories and social media content, and can be spread deliberately, accidentally, or without malicious intent<sup>1</sup>.

The spread of misinformation is implicated in the resurgence of vaccine-preventable diseases, the subversion of political norms, and the amplification of social divisions (Au et al., 2021; Azzimonti & Fernandes, 2018; Loomba et al., 2021). Within each issue domain, there exist striking gaps in public understanding of these issues and concerted efforts to manipulate public opinion (Lewandowsky et al., 2017). The prevalence of misinformation, particularly online, is therefore increasingly viewed as a crisis that demands urgent action (Farkas & Schou, 2020).

However, research into how misinformation spreads from person to person (Cinelli et al., 2020; Del Vicario et al., 2016; Zollo et al., 2015), the determinants of misinformation susceptibility (Ecker, Lewandowsky et al., 2022; Pennycook & Rand, 2019; Roozenbeek, Maertens et al., 2022; Van Bavel et al., 2021), and the design and testing of interventions to counter misinformation (Cook et al., 2017; Guess et al., 2020; Lee, 2018) is growing rapidly, but remains in its infancy. A Web of Science (<https://webofscience.com/>) search for “misinformation” shows that the topic exploded in popularity among researchers only after the 2016 US presidential elections, rising from 43 academic publications per year in 2000, to 231 in 2015, and to 1,925 in 2021.

Particularly with respect to interventions aimed at countering misinformation, there are knowledge gaps regarding their influence, impact, and effectiveness. These knowledge gaps are compounded by the fact that most research is concentrated in Europe and North America as well as the broader challenges of researching online misinformation (Badrinathan, 2021; van der Linden, 2022). For example, there are conceptual challenges surrounding the definition of the problem (Freelon & Wells, 2020; Kapantai et al., 2021; Traberg, 2022), practical challenges arising from the scale of online content distribution (Traberg et al., 2022), and ethical challenges relating to interventions in free, legal speech (Nuñez, 2020).

Policy responses to tackling misinformation range from new laws prohibiting the spread of misinformation (Nuñez, 2020) to new regulatory proposals for online platforms and social media algorithms (Khan, 2021; Ulbricht & Yeung, 2022). These are perhaps the most

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<sup>1</sup> We acknowledge the diversity in the various definitions of “misinformation”, “malinformation”, “disinformation”, “fake news”, “false news”, “propaganda”, and other similar terms (Krause et al., 2020; Lazer et al., 2018; Roozenbeek & van der Linden, 2022; Tandoc et al., 2018). Our definition of misinformation is deliberately broad to be inclusive of these various terms, and to incorporate not only false but also misleading/manipulative content (Altay et al., 2021). See Freelon and Wells (2020) and Kapantai et al. (2021) for further discussion.

controversial form of intervention given the potentially adverse consequences for freedom of expression and media freedom (Bontcheva et al., 2020). Problematically, authoritarian and proto-authoritarian states have implemented laws prohibiting the spread of “false” information, which are often used to target individuals who are critical of the authorities (International Press Institute, 2022). For an overview of the actions governments around the world have taken to tackle misinformation, see Funke and Flamini (2018).

To protect such fundamental freedoms, democratic countries typically categorise misinformation as harmful but legal (or ‘lawful but awful’). Alongside interventions aimed at improving platform design and content moderation, such countries also pursue interventions that empower individuals, build societal resilience, and disincentivise manipulative behaviour. Key questions within this realm concern the efficacy of different interventions across the short and long term and among different groups; the potential for unintended consequences; the ethical, social, and political implications of different interventions; and the availability of reliable data to conduct such research.

As policymakers, tech companies, news providers, educators, and other actors are tasked with developing responses to tackle the problem, it is of key importance to assess the evidence base for existing types of anti-misinformation interventions outside of the legal/systemic realm. This paper serves to provide researchers and policymakers with an understanding of the extent to which individual-level misinformation interventions are likely to influence the spread of, susceptibility to, or impact of online misinformation.

Kozyreva et al. (2020) define four entry points for policy interventions aimed at tackling digital challenges in the real world: *laws and ethics* (such as regulations and ethical guidelines); *technology* (such as automated harmful content detection); *education* (such as digital/media literacy); and *psychology/behavioural sciences* (boosting, nudging, and technocognition). Although all four domains are important, we here focus on the two latter domains. We employ a modified version of Kozyreva et al.’s (2020) categorisation of educational, psychological, and behavioural interventions. We discuss four intervention categories: *Boosting* interventions (psychological inoculation, critical thinking, and media/digital literacy trainings), which seek to improve relevant competences and increase cognitive resistance; *nudging* interventions (accuracy prompts and social-norms interventions), which aim to guide people’s behaviour through the design of choice architectures (Kozyreva et al., 2020); *debunking* (including fact-checking); and *automated content labelling*. For each category, we assess the empirical evidence, identify key gaps in knowledge, and, where relevant, highlight practical and ethical implications.

### **Boosting Interventions**

According to Hertwig and Grüne-Yanoff (2017, p. 974), the objective of boosts is “to improve people’s competence to make their own choices”, and that the focus of boosting is on “interventions that make it easier for people to exercise their own agency by fostering existing competences or instilling new ones”, for example by improving people’s ability to recognise microtargeted advertising (Lorenz-Spreen et al., 2021). Individuals are free to



decide to disengage from boosts or not pay attention to them (as they are by nature non-mandatory and do not necessitate making changes to people's choice environment), making them unlikely to pose a significant ethical challenge or present major risks to the democratic process. For an overview, see <https://scienceofboosting.org/>.

Within the context of misinformation, boosting interventions tend to seek to reduce individual susceptibility to misinformation (van der Linden et al., 2021). Boosting interventions may not always be effective, for example because they fail to reach the relevant people (Zollo et al., 2017). In addition, although a large number of lab studies has been published in recent years investigating the effectiveness of various types of boosting interventions (see Kozyreva et al., 2020; Lorenz-Spreen et al., 2021), key open questions are to what extent effectiveness in the lab translates to the real world (Roozenbeek, van der Linden et al., 2022), and how boosting competences translates to changes in people's behaviour. We discuss three types of interventions that seek to improve people's ability to identify misinformation, and therefore can be said to fall under the boosting banner: prebunking (with a focus on psychological inoculation), critical thinking, and media and information literacy.

### **“Prebunking” and Psychological Inoculation**

The challenges associated with correcting misinformation after it has spread (see the “Debunking” section below) have prompted researchers to explore how to prevent people from falling for and sharing misinformation in the first place (van der Linden et al., 2021). Such pre-emptive approaches to tackling misinformation are commonly referred to as pre-emptive debunking, or “prebunking” (Cook et al., 2017; Traberg et al., 2022).

Although several approaches to prebunking exist (Brashier et al., 2021; Cook et al., 2017; Lewandowsky & van der Linden, 2021; Tay et al., 2021), the most common framework for prebunking is inoculation theory (Compton, 2013; McGuire, 1961). People can build attitudinal resistance against future unwanted persuasion attempts by pre-emptively exposing them to a “weakened” dose of the unwanted persuasive argument (Compton et al., 2021). Inoculation treatments consist of two core components: 1) a warning of an impending attack on one's beliefs or attitudes (i.e., a forewarning of impending manipulation), and 2) a pre-emptive refutation of this upcoming manipulation attempt (Compton, 2013). A meta-analysis (Banas & Rains, 2010) found that inoculations are generally effective at increasing attitudinal resistance against unwanted persuasion, with a mean effect size of  $d = 0.43$  (considered a moderate effect size).

There are two important distinctions within the context of inoculation interventions. The first is between *active* and *passive* inoculations (McGuire & Papageorgis, 1961; Traberg et al., 2022). With passive inoculation, people are provided with counterarguments against the unwanted persuasion attempt, usually in the form of a short piece of text or a video. With active inoculation, people generate their own counterarguments, for example by playing a game.

The second distinction is between *issue-based* and *technique-based* inoculations. Issue-based inoculations seek to inoculate people against individual persuasive attacks or examples of misinformation, for instance about fair trade (Tay et al., 2021) or climate change



(Maertens et al., 2020; van der Linden et al., 2017; Williams & Bond, 2020). In contrast, technique-based (also called logic-based) inoculations confer resistance against manipulation strategies or tactics such as logical fallacies, emotional manipulation, or conspiracy theories (Cook et al., 2017, 2018; Lewandowsky & Yesilada, 2021; Roozenbeek, van der Linden et al., 2022). Both approaches have their advantages: issue-based inoculations may be more effective than technique-based ones when it is known what misinformation people are likely to be exposed to in the near future (Zerback et al., 2021). Technique-based inoculations, on the other hand, have the benefit of applying to a wider range of misinformation, at the expense of specificity (Cook et al., 2017; 2018).

A range of inoculation interventions has been developed in recent years to counter misinformation (van der Linden, 2022). Passive inoculation interventions were found to successfully confer psychological resistance against misinformation about climate change (van der Linden et al., 2017; Williams & Bond, 2020) and COVID-19 (Basol et al., 2021), astroturfing comments (Zerback et al., 2021), vaccine conspiracies (Jolley & Douglas, 2017; Wong & Harrison, 2014), extremist propaganda (Braddock, 2019; Hughes et al., 2021), and “fake experts” (Cook et al., 2017)<sup>2</sup>.

One line of research has explored the use of short, informative videos as inoculation interventions. Lewandowsky and Yesilada (2021) found that a short video inoculated individuals against both Islamic-extremist and Islamophobic content. Similarly, Hughes et al. (2021) and Piltch-Loeb et al. (2021)<sup>3</sup> developed and tested effective inoculation videos to counter extremist propaganda and vaccine misinformation, respectively. Roozenbeek, van der Linden et al. (2022) designed five videos, each inoculating people against a different manipulation technique. They found that watching such a video significantly reduced subsequent susceptibility to the use of these techniques in social media content, including in an ecologically valid field study on YouTube. The videos can be viewed on a website created by the researchers: <https://www.inoculation.science/>.

In terms of active inoculation interventions, recent research has focused primarily on inoculation games. Such games tend to inoculate people against a set of manipulation techniques commonly used in a particular domain where misinformation is common. Cook et al. (2022), for example, created *Cranky Uncle* (<https://www.crankyuncle.com/>), a free game (and phone app) that uses cartoons and humour to foster critical thinking and fight misinformation about climate change. For further reading see Cook (2021) and Cook et al. (2022). Another example of an active inoculation intervention is *Bad News* (<https://www.getbadnews.com>), a browser game in which players strive to become a “fake news tycoon” by learning about six common manipulation techniques, such as trolling and ad hominem attacks. In a series of studies, *Bad News* was shown to significantly improve people’s ability to identify misinformation techniques, and increase their confidence in their

<sup>2</sup> We note that the findings by Cook et al. (2017) were not replicated in a recent replication using a German sample (Schmid-Petri & Bürger, 2021), in the sense that, unlike in the original study, the inoculation did not have an effect on participants’ climate-related attitudes, possibly due to lower baseline beliefs in climate misinformation.

<sup>3</sup> See this *YouTube* playlist for the videos developed by Piltch-Loeb et al. (2021): <https://www.youtube.com/playlist?list=PLYPI-AWCOGj6oNUfi7ddbBEgIL56h8I2C>

ability to do so (Basol et al., 2020; Roozenbeek, van der Linden, et al., 2020; Roozenbeek, Maertens, et al., 2021; Roozenbeek & van der Linden, 2019). Furthermore, these effects remained significant for several months post-gameplay if participants were given periodic reminders or “booster shots” (Maertens et al., 2021). Other inoculation games include *Harmony Square* (<https://harmonysquare.game>), about political disinformation and intergroup polarisation (Roozenbeek & van der Linden, 2020), *Go Viral!* (<https://goviralgame.com>), about COVID-19 misinformation (Basol et al., 2021), and *Radicalise*, about the manipulation strategies used by extremist organisations (Saleh et al., 2021).

Although inoculation interventions have several advantages, they also have numerous downsides. First, inoculations are generally somewhat lengthy, requiring both a forewarning and a pre-emptive refutation. The effectiveness of inoculations therefore relies on voluntary uptake (for example, not everyone wants to play a game). Second, it is not always possible to predict what misinformation people will be exposed to, and because inoculations generally require a degree of specificity to be effective (Zerback et al., 2021; Roozenbeek, Traberg, & van der Linden, 2022), they may not work very well if the discrepancy between the inoculation treatment and the misinformation is too large. Third, not much evidence is currently available on how inoculation interventions perform in the wild, for example on social media (but see the YouTube field study by Roozenbeek, van der Linden et al., 2022). Particularly when it comes to behaviour (e.g., people’s news-sharing decisions), more research is needed to explore to what extent inoculation interventions are effective in real-world settings. Fourth, some inoculation interventions (notably “fake news games”, see Modirrousta-Galian & Higham, 2022) appear to not only reduce belief in misinformation, but also reduce the perceived reliability of “real news”. This appears to be a fairly common side effect of misinformation interventions in general (for example the media literacy tips by Guess et al., 2020, and the warning labels by Clayton et al., 2020). It is possible that some interventions induce a more general scepticism towards *all* information, although this phenomenon does not appear to apply to information that is obviously true (Roozenbeek & van der Linden, 2019; Basol et al., 2021; Modirrousta-Galian & Higham, 2022). Finally, if the “inoculator” is perceived as an untrustworthy actor, people may disregard the inoculation intervention. Like any intervention, inoculations risk becoming politicised (Traberg et al., 2022).

## Critical Thinking

Critical thinking is typically defined as a higher-order skill that influences a person’s ability to question assumptions, analyse arguments, and evaluate the quality of the information they encounter (Duron et al., 2006). There is disagreement about whether critical thinking is a transferable skill that applies across domains or a domain-specific skill (Moore, 2014; Axelsson et al., 2021), and whether critical thinking is a skill (the *ability* to think critically) or a disposition (the *willingness* to think critically).

Various interventions to improve critical thinking have been tested. Lutzke et al. (2019), for instance, found a small effect for the effectiveness of reading a series of guidelines for evaluating online news, which improved individuals’ ability to correctly



evaluate the credibility of real and fake news about climate change on Facebook. A meta-analysis by Huber and Kuncel (2016) concluded that while university appears to foster a critical thinking disposition, specific interventions to improve critical thinking do not necessarily produce long-term incremental gains. However, many studies are small-scale or methodologically problematic; the evidence is therefore not strong enough to be conclusive (El Soufi & See, 2019; Todd & O'Brien, 2016). More large-scale, replicable, robust studies are required to advance the field.

From an ethical standpoint, boyd (2018) argues that critical thinking may be unhelpful if it encourages critical stance as a default. However, this view fails to distinguish between healthy scepticism and dysfunctional cynicism, whereby the latter is associated with lower trust in news media generally (Quiring et al., 2021). Moreover, the rhetoric of critical thinking may be adopted by those promoting conspiratorial beliefs who encourage people to “do your own research” and “ask questions” about, for example, the legitimacy of scientific evidence (Beene & Greer, 2021).

### Media and Information Literacy

Since 2007, UNESCO has championed “media and information literacy”<sup>4</sup> as an umbrella concept that incorporates competences relating to media literacy, information literacy, news literacy, and digital literacy. Each of these literacies originally developed as a separate field, but the distinction between them is becoming increasingly blurred. With a specific focus on young people, *media literacy* has pursued the twin aims of protection (from the influence of media advertising, stereotypes, and bias) and empowerment (participating in media creation and self-expression; Hobbs, 2021). In contrast, *information literacy* puts emphasis on competences for finding and evaluating information and has traditionally been taught by librarians. Similar to media literacy, *news literacy* rests on the assumption that knowledge of news production practices will equip people to evaluate content more accurately (Tully et al., 2020). Finally, *digital literacy* involves the “necessary skills and competences to perform tasks and solve problems in digital environments” (Reddy et al., 2020). Within the context of misinformation, these fields often overlap.

Media and information literacy interventions are often conceived within formal education through the provision of teacher training and lessons on media and information literacy (Nygren & Guath, 2021). For example, researchers at the University of Uppsala have developed the News Evaluator Project (<https://nyhetsvarderaren.se/in-english/>), a series of free teaching materials aimed at boosting students’ digital source criticism. Another example is Stanford University’s Civic Online Reasoning initiative (<https://cor.stanford.edu/>), which provides free, classroom-ready lessons and curricula about topics such as lateral reading (looking for information on other websites about a particular source), click restraint, and evidence evaluation. A growing body of research has found that such educational curricula are effective at increasing lateral reading and other strategies for navigating digital news

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<sup>4</sup> See: <https://www.unesco.org/en/communication-information/media-information-literacy>

environments (Craft et al., 2017; McGrew et al., 2019; Axelsson et al., 2021; Breakstone et al., 2021; Wineburg et al., 2022).

To improve the scalability of media and information literacy interventions outside of classroom settings, researchers have investigated how to deploy media and information literacy on social media (Tully et al., 2020). For example, Panizza et al. (2022) found that providing social media users with a pop-up that advised them on how to use lateral reading techniques subsequently increased use of such strategies. Another method for improving media literacy on social media involves literacy tips. A large-scale study evaluating the effectiveness of media literacy interventions in the United States and India found that providing people with media literacy tips to spot false and misleading content improved discernment of true and false news, although the intervention was only successful in India for a highly educated sample, but not for respondents from a largely rural area (Guess et al., 2020).

There are some notable challenges surrounding literacy-based interventions (some of which are shared with the critical thinking-focused interventions discussed above). First, such interventions have primarily focussed on children and young people through delivery via formal education institutions (Petranová et al., 2017). Less attention has been given to adults' media and information literacy needs and the kinds of interventions that might be effective for older age groups (Lee, 2018).

Second, although some studies from for example India (Badrinathan, 2021; Guess et al., 2020) and Pakistan (Ali & Qazi, 2021) are available, research testing media literacy interventions outside the Western world remains scarce. This is important because effective interventions in developed countries may not work as well elsewhere. Badrinathan (2021), for instance, found that a one-hour media literacy training conducted in India did not significantly improve participants' ability to identify misinformation.

Third, the design of media and information literacy interventions varies considerably. They utilise different literacy concepts and the intervention ranges from a one-off exposure to a module of lessons over many months. Moreover, researchers use a wide range of measures, which impedes comparisons between studies (Potter & Thai, 2016; Roozenbeek, Maertens et al., 2022). Such conceptual differences appear to matter. Based on a national sample of US citizens, a recent study suggests that information literacy - but not media, news, or digital literacies - significantly increases the likelihood of identifying misinformation stories (Jones-Jang et al., 2019).

Fourth, the impact of media and information literacy education is not always clear. There is a general lack of comprehensive evaluation data and "the longitudinal nature of both assessing and updating media literacy programs makes this a perennial struggle" (Bulger & Davison, 2018, p. 1). Regarding misinformation specifically, some studies find that exposure to media and information literacy education predicts resilience to political misinformation (Kahne & Bowyer, 2017), but other studies caution that media literacy endows individuals with a false sense of confidence (Bulger & Davison, 2018). For their part, social media



platforms already provide media literacy interventions for users<sup>5</sup>, but they generally fail to provide any information about their uptake or impact (Culloty et al., 2021).

## **Nudging Interventions**

Thaler and Sunstein (2008, p. 6) define nudges as “any aspect of the choice architecture that alters people’s behaviour in a predictable way without forbidding any options or significantly changing their economic incentive”. Unlike boosts, which target competences, nudges thus target behaviour. Some scholars argue that people share misinformation on social media primarily because they fail to pay sufficient attention to accuracy, for example because social media environments can be distracting (Pennycook & Rand, 2019; 2021). Researchers have therefore proposed a range of nudging interventions, so-called “accuracy nudges” (or accuracy prompts), that intend to shift people’s attention *towards* accuracy, thus reducing their propensity to share misinformation with others. Fazio (2020), for instance, found that asking people to pause for a few seconds to consider the accuracy of news headlines significantly reduced their willingness to share false news. Rathje et al. (2022a) found that motivating people to be as accurate as possible improved accuracy and reduced partisan bias in detecting false headlines.

Indeed, the potential advantages of the nudging approach are numerous: nudges are easy to implement on social media (for example, Twitter now asks people if they are sure they want to retweet an article if they have not yet read it), cost-efficient, and mostly non-intrusive. Furthermore, accuracy nudges do not require people to “opt-in” to the intervention, making them easily scalable.

Potential downsides of nudging include reactance against the intervention (for example, Mosleh et al., 2021, found that correcting people who had previously shared false news on Twitter decreased the quality and increased the toxicity of these users’ subsequent retweets; an unintended backfire effect), and a reduced effect size when implemented in real-world environments compared to the lab (DellaVigna & Linos, 2022). From an ethical standpoint, Kozyreva et al. (2020) point out that low-cost nudges may displace support for high-cost (or high-effort) measures (this is arguably the case for boosting interventions as well, and individual-level interventions more generally; see Chater & Loewenstein, 2022). Within the context of misinformation, various types of nudges have gained prominence in recent years. In our discussion, we focus on the two most prominent ones: accuracy primes and social norms interventions.

### **Accuracy Primes**

The most well-known type of accuracy nudge is the accuracy prime, which consists of asking people to evaluate whether a single (usually non-political and non-partisan) headline is

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<sup>5</sup> See for instance Facebook’s Digital Literacy Library (<https://www.facebook.com/safety/educators>) and Twitter’s ongoing media literacy collaboration with UNESCO ([https://blog.twitter.com/en\\_sea/topics/events/2019/Media-and-information-literacy](https://blog.twitter.com/en_sea/topics/events/2019/Media-and-information-literacy)).



accurate<sup>6</sup>. Doing so subtly reminds them of the importance of sharing accurate content, which should then improve the quality of their subsequent news-sharing decisions. Several experimental studies have shown that accuracy primes improve subsequent sharing discernment. A recent meta-analysis of 14 lab-based accuracy prime studies (Pennycook & Rand, 2022) found that accuracy nudges significantly improved “sharing discernment” (a measure of the quality of sharing decisions; Epstein et al., 2021; Pennycook, McPhetres, et al., 2020; Pennycook et al., 2021), although the effect size is considered small within psychological research<sup>7</sup>. In terms of field studies, Pennycook et al. (2021) found that sending a group of Twitter users who had previously shared low-quality, conservative-leaning sources such as *Breitbart* a direct message, which asked them to evaluate the accuracy of a (non-political) headline, subsequently increased the quality of the content they shared on Twitter, primarily by prompting them to share more high-quality sources such as the *New York Times* and *CNN*.

However, several replications and re-analyses of accuracy prime studies have added nuance to these findings (Pennycook & Rand, 2022; Pretus et al., 2021; Rathje et al., 2022b; Roozenbeek, Freeman, et al., 2021). Pennycook and Rand (2022) report that accuracy primes had no effect on the quality of people’s sharing decisions in 4 out of the 14 studies that were included in their meta-analysis. Roozenbeek, Freeman, et al. (2021) also initially failed to replicate the effect reported in an earlier study (Pennycook, McPhetres, et al., 2020), only finding a small effect after collecting a second round of data, at about 50% of the original study’s effect size. They also noted initial evidence of rapid decay, in the sense that the impact of the accuracy prime occurred mostly shortly after exposure, and appeared to wear off quickly afterwards. Rapid effect decay is a known phenomenon in the priming literature (Branigan et al., 1999; Trammell & Valdes, 1992), but requires further investigation within the context of accuracy primes.

Accuracy primes also appear to be moderated by political partisanship. Pretus et al. (2021) found no effect of accuracy primes on two samples, one of US conservatives and one of Spanish far-right voters. This finding was further buttressed by Rathje et al. (2022b), who re-analysed six previously published accuracy prime studies and found that the priming effect was much smaller for (US) conservatives than liberals. This apparent moderation effect is especially important in light of the well-known finding that (US) conservatives and far-right supporters appear to share more misinformation (Garrett & Bond, 2021; Grinberg et al., 2019). It is worth noting that Pennycook et al. (2021) did find an effect of accuracy primes on a predominantly conservative sample in their field study on Twitter<sup>8</sup>.

<sup>6</sup> Although various names exist for this particular type of intervention (such as “accuracy nudge”, “accuracy prompt” and “evaluation treatment”; see Pennycook & Rand, 2022), we here use “accuracy prime” to distinguish the single-headline evaluation treatment from other, similar nudging interventions that fall under the banner of accuracy prompts/nudges (see Epstein et al., 2021; Pennycook & Rand, 2022). In doing so, we follow Pennycook, McPhetres et al. (2020, p. 777), who note that this type of accuracy nudge “subtly primed [participants] to think about accuracy by being asked to rate the accuracy of a single [...] news headline”.

<sup>7</sup> Pennycook and Rand (2022) report a (most likely unstandardised) meta-analytic regression coefficient of  $b = 0.034$ , 95% CI [0.026, 0.043]. The meta-analytic Cohen’s  $d$  was not reported.

<sup>8</sup> Pennycook et al. (2021) found that the largest pre-post difference in news sharing behaviour was a post-treatment *increase* in the sharing of mainstream/high-quality news sources such as the *New York Times* and

Why this moderation effect exists (and there is some debate about this, see Pennycook & Rand, 2022) is less clear, but may have to do with the accuracy priming effect being smaller for more persuasive misinformation, and for people who generally rate misinformation as more accurate. In a 16-country study, Arechar et al. (2022) found that the accuracy prime's effect on the quality of people's sharing decisions in a given country was strongly correlated with the disconnect between the perceived accuracy of headlines and sharing intentions in that country; in other words, the priming effect was smaller (or non-significant) in countries where people generally rated misinformation as more accurate. In the United States, conservatives tend to rate misinformation as more accurate than liberals (see Roozenbeek, Maertens et al., 2022), which could signify a smaller disconnect between accuracy and sharing, thus reducing the priming effect.

### Social-Norms Nudges

Rather than emphasising accuracy, social-norms nudges draw attention to partisan or societal norms around news-sharing behaviour in order to improve the quality of people's news-sharing decisions. Social-norms nudges are relatively understudied compared to accuracy primes and other types of nudging interventions. Some social-norms nudges focus on emphasising norms around sharing misinformation in a general sense. For example, Andri and Akesson (2021) found that warning people about the abundance of false information and telling them that "most responsible people think twice before sharing articles with their network" significantly reduced the proportion of people willing to share a false news article with others. Gimpel et al. (2021) report that exposing people to injunctive (what behaviour most people approve or disapprove of) but not descriptive (what other people do in certain situations) social norms increased the likelihood of participants reporting fake news posts on social media as misinformation; a combined approach (with both injunctive and descriptive norms) had the most substantial effect.

Other social-norms nudges seek to counter specific false or equivocal beliefs. Cookson et al. (2021) found that a social-norms intervention (giving people feedback about participants' belief in anti-vaccine conspiracy theories, how much they thought other people, in this case parents from the UK, believed such conspiracies, and UK parents' *actual* levels of conspiracy belief) significantly reduced personal belief in anti-vaccine conspiracies. Ecker, Sanderson et al. (2022) report that descriptive norms reduced belief in worldview-congruent equivocal claims (e.g., about the economic impact of refugees), although a descriptive norm plus a specific refutation proved to be the most effective.

Epstein et al. (2021), on the other hand, did not find an effect of emphasising either partisan or social norms on news-sharing intentions. However, they did find that a combined intervention (social norms + literacy tips or social norms + an importance prime, i.e., priming people about the importance of sharing accurate news) positively affected the quality of sharing intentions. Overall, social-norms interventions have thus yielded promising, albeit

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CNN, more so than a post-treatment *decrease* in the sharing of misinformation/low-quality content. At a theoretical level, why accuracy primes might prompt conservative US Twitter users to share more *New York Times* headlines requires further elaboration.

preliminary results (and, importantly, are just as easy to implement on social media as accuracy primes), but are yet to be studied in real-world social media environments.

### Debunking

Debunking misperceptions after they have spread is a popular approach to tackling misinformation. Initiatives such as Snopes, FullFact and StopFake abound, and some have large numbers of followers on social media. Debunking can be fact-based (i.e., correcting a specific misperception) or logic-based, focusing on the epistemic quality of the misinformation or the manipulation techniques used to mislead (Cook et al., 2017; Vraga et al., 2020; Vraga & Bode, 2020). Some technology companies, notably Meta (formerly Facebook), use debunking, drawing on both automated (Thorne & Vlachos, 2018; Guo et al., 2022) and human-centred methodologies to moderate content on their platforms. Debunking is almost synonymous with fact-checking, but not quite: one can fact-check a story and rate it as true, whereas debunking only pertains to misinformation.

Several debunking resources have been developed in recent years. For example, researchers with JITSUVAX (<https://jitsuvax.info/>) have created a free resource for countering both the specific arguments commonly used in vaccine misinformation, and the attitudinal roots that underlie these arguments. In 2020, a group of researchers published the *Debunking Handbook*, which summarises the current state of debunking research (Lewandowsky et al., 2020). The *Handbook* notes that debunking is most effective if the following procedure is followed:

1. Lead with the fact<sup>9</sup>; make it simple, concrete, and plausible, and ensure it fits with the story being debunked.
2. Warn the audience that they are about to see misinformation, and mention it only once.
3. Explain how the misinformation is misleading.
4. Finish by reinforcing the fact, and making sure that the fact provides a plausible alternative explanation to the misinformation.

Some years ago, researchers raised concerns about potential “backfiring effects” (corrections ironically strengthening people’s belief in the original misinformation, see Nyhan & Reifler, 2010). The “illusory truth effect” states that misinformation is perceived as more accurate with repeated exposure (Ecker, Lewandowsky, et al., 2020; Fazio et al., 2015). This finding prompted concern that repeating the misinformation while correcting it may inadvertently reinforce people’s belief in it (the so-called “familiarity backfire effect”). However, more recent research has shown that such backfire effects are not reliably observed, and the risk of debunking “side effects” therefore appears to be low (Swire-Thompson et al., 2020, 2022; Wood & Porter, 2019). Overall, meta-analyses have concluded that corrective messages are generally effective at reducing belief in misinformation,

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<sup>9</sup> Swire-Thompson, Cook et al. (2021) argue that the specific correction format may play a limited role when correcting misinformation, and the *Debunking Handbook* also says that in cases where the facts are very nuanced, it may be better to lead with an explanation of why the myth is false rather than first explaining the fact.



although it is more difficult to correct misinformation about politics and marketing than about health (Chan et al., 2017; Walter et al., 2020; Walter & Murphy, 2018). In addition, debunking messages appear to be less effective when they are less detailed (Ecker, O'Reilly, et al., 2020; Paynter et al., 2019), and political beliefs and knowledge also appear to attenuate the effect (Walter & Murphy, 2018).

Nonetheless, there are several factors that limit the effectiveness of debunking. First, *who* is doing the debunking appears to matter a great deal. The perceived expertise and trustworthiness of the source affect how likely someone is to accept the correction (Benegal & Scruggs, 2018; Ecker & Antonio, 2021; Vraga & Bode, 2017; Guillory & Geraci, 2013). Furthermore, Margolin et al. (2017) found that Twitter users are significantly more likely to accept a correction by an account that they follow than a correction by a stranger, indicating that strong connections between fact-checkers and misinformation spreaders are key for the effectiveness of debunking.

Second, debunks do not appear to reach the same people as the original misinformation. Zollo et al. (2017), for example, found that debunking posts rarely penetrate conspiracy echo chambers on Facebook, and instead mostly reach users that prefer to consume science-focused content (who are unlikely to believe the misinformation to begin with). Hameleers and van der Meer (2019) showed that people engage more with fact-checks when they are congruent with prior attitudes, and avoided when they are incongruent, indicating that people have a confirmation bias when deciding what fact-checks to engage with. Furthermore, Vosoughi et al. (2018) found that content that fact-checkers had rated as true reached far fewer people than content that they had rated as false.

Third, even if corrective messages reach the people who were exposed to the original misinformation, correcting the misinformation does not always completely undo people's belief in it, a phenomenon known as the "continued influence effect" (Ecker, Lewandowsky, et al., 2020; Walter & Tukachinsky, 2020). This is thought to occur because information that was previously encoded into memory can influence one's judgments, even when more recent information discredits it (Johnson & Seifert, 1994).

Fourth, fact-checkers are faced with several political challenges. Many of the most contentious political arguments are subjective and ethical in nature and, as such, are not reducible to objective facts (Coleman, 2018). Graves (2016) argues that fact-checkers themselves are at risk of becoming politicised. For example, deciding to fact-check a politician's claim can be perceived as picking a side, and places fact-checks at the centre of political debates. There is also a suggestion that people prone to conspiracy thinking may be resistant to debunking, which makes using mainstream sources of evidence to refute conspiratorial beliefs difficult (Hayes, 2006, p. 13). Thus, interventions oriented at delegitimising the sources that produce misinformation are key to reducing their impact (Ahmed et al., 2020). Another problem is some fact-checkers' dependency on large donors. Meta, for example, funds a large-scale third-party fact-checking programme, which has been criticised for lacking transparency and for having an outsize influence over what kind of content gets throttled on social media (BMJ, 2021; Nyhan, 2017). Thus, the effectiveness of fact-checking depends in part on the cooperation of large social media companies.



Finally, the literature is somewhat mixed when it comes to the relative effectiveness of prebunking and debunking. Brashier et al. (2021)<sup>10</sup> and Tay et al. (2021), for example, both report a descriptive difference in effect size in favour of debunking when comparing pre-emptive and post-hoc misinformation corrections (although it must be noted that this difference was not significant in both studies). Jolley and Douglas (2017), conversely, found that only prebunking was effective (and debunking was not) at countering the adverse effects of exposure to anti-vaccine conspiracy theories. Similarly, Grady et al. (2021) found that pre-warnings were descriptively more effective than debunking at discouraging belief in false political news headlines. However, a direct comparison between debunking and prebunking, although scientifically interesting, is subject to limitations. Because prebunking is preventative in nature (i.e., it occurs prior to exposure to misinformation), it is not usually possible to know exactly what misinformation to prebunk (as you cannot know what misinformation people will be exposed to in the future, or in what form). In other words, a prebunk and a debunk about the same misinformation will rarely (if ever) look exactly the same, and furthermore do not have the same goal (correcting a misperception versus preventing it from taking hold).

### **Automated Content Labelling**

Online platforms have championed the use of automation to quickly label content at scale, increasingly rely on automated interventions to moderate the large volumes of content uploaded to their systems, and provide users with information to assess the credibility of information or sources (Alaphilippe et al., 2019). There are different types of content labels, for example fact-checks (e.g., “this article was rated false by independent fact-checkers”; see Brashier et al., 2021), general or specific content warnings (Clayton et al., 2020; Mena, 2019), and news credibility labels (Aslett et al., 2022). Automated content labelling typically relies on machine learning and neural network models to automate the content moderation process (Alaphilippe et al., 2019; Gorwa et al., 2020). Although specific techniques vary considerably, the overall aim is to classify content into problem categories (e.g., probable misinformation) or to match uploads against a database of problem content (e.g., known cases of misinformation); see Thorne and Vlachos (2018) and Guo et al. (2022) for an overview. Research into the effectiveness of content labels, such as smoking and alcohol warnings, has identified several necessary information processing steps (Conzola & Wogalter, 2001). The label must attract attention and maintain attention long enough so that all relevant information is noticed. The label must be understood, and the receiver’s beliefs and attitudes may influence this comprehension. Finally, the label must motivate the receiver to adopt the suggested action. Overall, Bode and Vraga (2018) found that automated corrections and

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<sup>10</sup> As noted by Lewandowsky and Yesilada (2021), the study by Brashier et al. (2021) deviated from conventional guidelines of de- and prebunking; in this study, participants were shown a label (saying “fact-checked and rated false/true”) either before or after a false or true news headline. However, in contrast to other studies (Cook et al., 2017; Jolley & Douglas, 2017) and best practice guidelines (Lewandowsky et al., 2020), no refutation of the misinformation was provided (i.e., participants were given no explanation as to why the headline might be true or false).

social corrections provided by peers were equally effective in limiting misperceptions, which suggests that human connection is not necessary for the uptake of corrections.

Nonetheless, while automated content labelling offers advantages in terms of speed and scale of implementation, there are shortcomings with respect to consistency, reliability, and proven efficacy. First, classification algorithms are developed by both social media platforms and independent researchers, but the latter are disadvantaged by their dependence on publicly available data and the limited API access offered by some platforms (Freelon, 2018). Algorithms also usually remain secret while independent researchers typically open up their methods and results to scrutiny.

Second, automated labelling can be unreliable. Without human intelligence to review algorithmic judgments, there are significant risks of over-zealous and error-prone moderation (Banchik, 2020; Mühlhoff, 2019). Moreover, platforms typically fail to provide adequate information about their own efforts to measure the efficacy of technological interventions or to enable independent researchers to verify claims about efficacy. A review of COVID-19 interventions reported by platforms to the European Commission found that the application of technological interventions was highly inconsistent. For example, in some cases, generic warning labels were applied to accurate content while no warning labels were applied to misinformation content (Culloty et al., 2021). Such inconsistencies are concerning because public understanding of platform algorithms, content moderation procedures, and the application of content labels is limited.

Third, independent research on the efficacy of (automated) content labels is mixed. Some studies observed that content labels reduced intentions to share the labelled content (Mena, 2019) while other studies observed no effects on the perceived accuracy of the labelled content (Oeldorf-Hirsch et al., 2020). Aslett et al. (2022) found that news credibility labels failed to reduce misperceptions and had a limited effect on the quality of people's news diet. The content labels applied by social media platforms tend to be general warnings that caution people about the 'disputed' nature of claims or provide generic reminders to seek authoritative information. However, previous studies have found that general warnings are less effective than specific warnings (Clayton et al., 2020; Ecker et al., 2010).

Finally, scholars note that comprehension is likely to be influenced by the design of content labels and that much more research is needed to understand effective cross-cultural design for online platforms (Saltz et al., 2021). Such platforms, of course, have the capacity to answer these questions, but to date they have declined to share relevant information about who engages with their interventions, in which circumstances, and with what outcomes.

### **Recommendations for Policymakers and Tech Companies**

In this paper, we have reviewed the evidence, knowledge gaps, and practical implications of four categories of misinformation interventions: boosting, nudging, debunking, and (automated) content labelling. We have focussed particularly on individual-level interventions with a grounding in psychological research. This categorisation is inevitably somewhat artificial. Interventions in each area overlap, and it is not always clear which interventions fall into which category.

Since 2016, misinformation research has experienced a massive boom, and many interventions have been shown to be effective at countering both the belief in and sharing of misinformation, particularly in laboratory settings. However, several open questions remain with respect to this growing body of research, which we translate into concrete recommendations for policymakers and tech companies.

First, much of the available research has focused heavily on Western Europe, North America, and Australia. Testing interventions designed for non-Western and non-English speaking countries remains complicated; for example, using online participant recruitment platforms such as Prolific Academic, Lucid or Respondi in developing countries may not yield sufficiently representative data, as samples are skewed towards highly educated city dwellers (Badrinathan, 2021). Alternative data collection methods such as phone surveys are much more difficult to conduct, and can be expensive. Importantly, what works in the West may not work elsewhere: interventions that were shown to be effective in Western countries did not yield the same results in countries such as India (Badrinathan, 2021; Guess et al., 2020) and Pakistan (Ali & Qazi, 2021). As Ali and Qazi (2021) note: the effectiveness of interventions “critically depends on how well their features and delivery are customised for the population of interest”. Similarly, automated solutions may work well in English, but are typically not highly advanced in other languages. We encourage a rethinking of how to make conducting misinformation research outside of Western and developed countries more accessible and affordable, for example by investing in the representativeness of online samples, and making it easier for researchers to recruit participants through social media platforms.

Second, efficacy in the lab does not automatically translate to real-world effectiveness. DellaVigna and Linos (2022), for example, found that nudge interventions (e.g., communications such as letters or emails designed to increase vaccine uptake or reduce missed appointments) were about 6 times less effective (in terms of effect size) when implemented in the field compared to the lab. If this reduced effectiveness carries over to misinformation interventions (and there is reason to expect this; see Roozenbeek, van der Linden et al., 2022; Pennycook et al., 2021), it is important to ensure that interventions have robust effect sizes in lab studies before implementing them in the field. However, conducting field studies can be prohibitively expensive. Roozenbeek, van der Linden et al. (2022), for example, ran an advertisement campaign on YouTube to test the efficacy of a series of inoculation videos in an ecologically valid setting, with support from Google Jigsaw. Currently, the costs of such research are simply not affordable without collaborating with donors. We therefore recommend democratising efficacy testing of misinformation interventions in real-world settings, for example by providing researchers with free (or heavily discounted) ad credits and API access for social media platforms such as TikTok, Twitter, Facebook, and YouTube.

Third, to identify the causal impacts of misinformation interventions, studies typically focus on a single type of intervention. In this paper, we have discussed the evidence underlying how these interventions work in isolation. In practice, however, interventions co-

exist in a complex media-information environment. How these interventions work alongside each other is almost impossible to assess without cooperation from the platforms on which they are implemented, and there is a clear need for further multi-disciplinary and cross-platform collaborations.

Fourth, there is a great need for more open access data. In the wake of the COVID-19 pandemic, policymakers have become more forceful in calling on platforms to limit the spread of misinformation. The European Commission has acknowledged the need for greater access to data that will allow independent researchers to better understand the role platforms play in various domains, including mis- and disinformation. The Digital Services Act (European Commission, 2022) introduces obligations for platforms to make data available to “vetted researchers” (Art. 31) and this provision is echoed in the Guidance on Strengthening the Code (Art. 8.1). Some social media platforms have made access to their data available either through APIs (e.g., Twitter) or through curated services (e.g., Facebook’s CrowdTangle). However, oftentimes data access remains problematic, and we call on platforms to improve transparency and data-sharing with researchers (Culloty et al., 2021). Greater access to platforms’ data could provide a deeper understanding of the nature of misinformation and the impact of interventions in real-world settings while also addressing the issues noted above regarding geographical gaps in research and the prohibitive costs.

Fifth, in this paper we have focused primarily on solutions that are implemented at the level of the individual. As Chater and Loewenstein (2022) rightfully point out, doing so frames the misinformation problem in individual, not systemic terms. This risks drawing attention away from policies that seek to bring about systemic change. We argue that none of the interventions discussed in this paper, either individually or taken together, are enough to comprehensively address and counter misinformation. System-level solutions, such as requiring social media companies to give insight into their platforms’ recommender algorithms (Alfano et al., 2021), are equally if not more important than individual-level interventions.

Sixth, outside of the regulatory sphere, companies such as Google and Twitter have also invested in the development and testing of misinformation interventions. Twitter, for example, ran a “prebunking” campaign to counter misinformation about election fraud ahead of the 2020 US presidential elections. Efficacy testing for this campaign was conducted internally, without input from independent researchers. To what extent the campaign contributed to a reduction in the spread of electoral misinformation is therefore not public knowledge. In addition, such experiments are often done without acquiring participants’ informed consent (Grimmelmann, 2015). We therefore recommend more transparency about tech companies’ efforts to measure the efficacy of interventions, and to enable independent researchers to verify their efficacy claims (Culloty et al., 2021). See Pasquetto et al. (2020) for a comprehensive review of how researchers and platforms may collaborate to counter misinformation.

Requiring platforms to ensure that independent experts vet misinformation interventions that they adopt, and their methods, data (privacy considerations permitting), and



conclusions are made public would be an important step forward. Ideally, however, independent experts would inform not only analyse the data collected by platforms, but also be instrumental in the design and implementation of efficacy testing. We therefore argue that all interventions must be designed and implemented with efficacy in mind. To achieve this, cooperation between academia and platforms is not enough: accountability is required.

### **Conclusion**

Misinformation exists in an evolving environment that requires continuous monitoring. In this paper, we have discussed the evidence behind four categories of anti-misinformation interventions that take place at the individual level: boosting, nudging, debunking, and automated content labelling. Solutions that are effective today may work less well tomorrow, and actors who seek to spread misinformation deliberately also adapt to a changing environment. A comprehensive approach to tackling misinformation therefore involves 1) accountability and transparency on the part of tech companies and regulatory agencies in terms of how interventions are designed and tested; 2) collaboration between researchers (academic and non-academic) and tech companies not only in terms of data sharing and API access but the whole process of intervention design, efficacy testing, and implementation; 3) ensuring that creating and testing interventions in real-world environments and in non-Western settings becomes more affordable and accessible; 4) developing further insights into how different interventions work alongside each other in the real world; and 5) incorporating both individual-level (which we have discussed in this paper) as well as system-level approaches.

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**From:** Voegeli, Christopher (CDC/DDID/NCHHSTP/DHP)  
**Sent:** Tue, 22 Feb 2022 17:43:28 +0000  
**To:** piltch-loeb@hsph.harvard.edu  
**Cc:** Savoia, Elena; Wilhelm, Elisabeth (CDC/DDPHSIS/CGH/GID); PURNAT, Tina  
**Subject:** Misinformation Interviews Connection

Good morning Rachel,

Copied in on this email are two amazing people that would be willing to sit down for an interview on misinformation response and infodemic management.

The great Lis Wilhelm led CDC's Vaccine Confidence and Demand Team and was one of the people who founded my unit. Besides setting up CDC's work in this space she has been supporting WHO's work in rolling this out to many many countries.

On that note, the second person I want to introduce you to is the wonderful Tina Purnat. She is the team lead for WHO's infodemic management team and has worked diligently to expand infodemic management capacities across the globe.

These are two of the most brilliant people I know so I have no doubt their insights will prove to be very helpful.

Chris

-

Christopher Voegeli, Ph.D., MPH

Behavioral Scientist

Email: [0002@cdc.gov](mailto:0002@cdc.gov)

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Insights Team | Lead

Vaccine Implementation and Evaluation | Vaccine Confidence and Demand Team

COVID-19 Emergency Response | Vaccine Taskforce

Centers for Disease Control and Prevention



**From:** PEREIRA IBRAHIM, Alhassan  
**Sent:** Mon, 6 Mar 2023 04:40:06 +0000  
**To:** infodemicmanagement  
**Subject:** Mpox Infodemic Insights Report (14 - 27 February 2023)  
**Attachments:** MG\_Mpox\_Infodemic\_Digital\_Insights\_Report\_9\_shared.pdf

Dear all,

We're glad to share with you the latest infodemic insights report on mpox, covering the period of 14 - 27 February 2023.

This biweekly reporting was stood up to support the Health Ops pillar of the WHO HQ Mpox IMST. This report is an intermediate analytical product feeding into generation of infodemic recommendations that will be shared with the OPS pillar separately. The methods used to generate this report, as well as the follow up risk assessment and infodemic insights recommendations generation are summarized at the end of this report, including references to the WHO public health social listening taxonomy for mpox and the risk matrix used to derive recommendations (as detailed in slides 32-36).

#### 🔍 KEY FINDINGS FOR THE PAST TWO WEEKS

##### 📌 THE ILLNESS – CONCERN ABOUT THE RESULTS OF A NEW STUDY ON RISK OF MPOX FOR INDIVIDUALS LIVING WITH ADVANCED HIV INFECTION

A prominent conversation emerged following the release of new research investigating the risk of mpox for people living with advanced HIV infection. Several users responded expressing concern for the reported findings of the study, including that mpox is allegedly an "opportunistic pathogen" and that people with advanced HIV infection, and especially low CD4 counts can experience severe forms of mpox. Posts also emphasised the finding that mpox has a mortality rate of about 15% for people with advanced HIV infection and claimed that these at-risk groups should have priority for mpox vaccines. Furthermore, the study prompted concern over whether people who do not have HIV but are immunosuppressed could also be more at risk of experiencing severe mpox symptoms (Narratives observed in Germany, USA, UK, Panama, Mexico and Chile).

##### 📌 THE INFORMATION – MISTRUST OF AUTHORITIES AND MPOX RESPONSE

Social media users continued to claim there is a lack of trust in public health authorities. In response to the announcement that mpox vaccination campaign in Chile would expand priority groups to include sex workers and people living with HIV, some users alleged that no one trusts a government health agency in Chile. Similarly, claims emerged that a public health authority in the USA should not be taken seriously following reports that a public health authority panel of experts voted to recommend the use of a two-dose mpox vaccine for adults at risk of contracting mpox. Further, users in Mexico and Colombia continued to criticise the governments for not securing mpox vaccines despite significant levels of mpox cases (Narratives observed in Chile, USA, Mexico and Colombia).

##### 📌 THE CAUSE – CONVERSATION ON STIGMA BEING ASSOCIATED WITH MPOX AND THE MSM COMMUNITY

Social media users continued to discuss whether the association between mpox and the MSM community is homophobic. In response to a high-engagement post that asked if mpox conversation decreased because mpox is spread by MSM, several users used stigmatising language towards the MSM community. While, some users claimed that it is homophobic to describe the MSM community as at "high-risk" of contracting mpox, other users argued that it was heterosexual individuals who promoted the homophobic narratives and associated stigma between mpox risk and the MSM community (Narratives observed in UK and English-language).

Full report is attached and can be shared with partners. You will find an archive of reports: [here](#)  
Wishing you all a great week.

Kind regards

**Alhassan Ibrahim**

Consultant | Infodemic Management Team

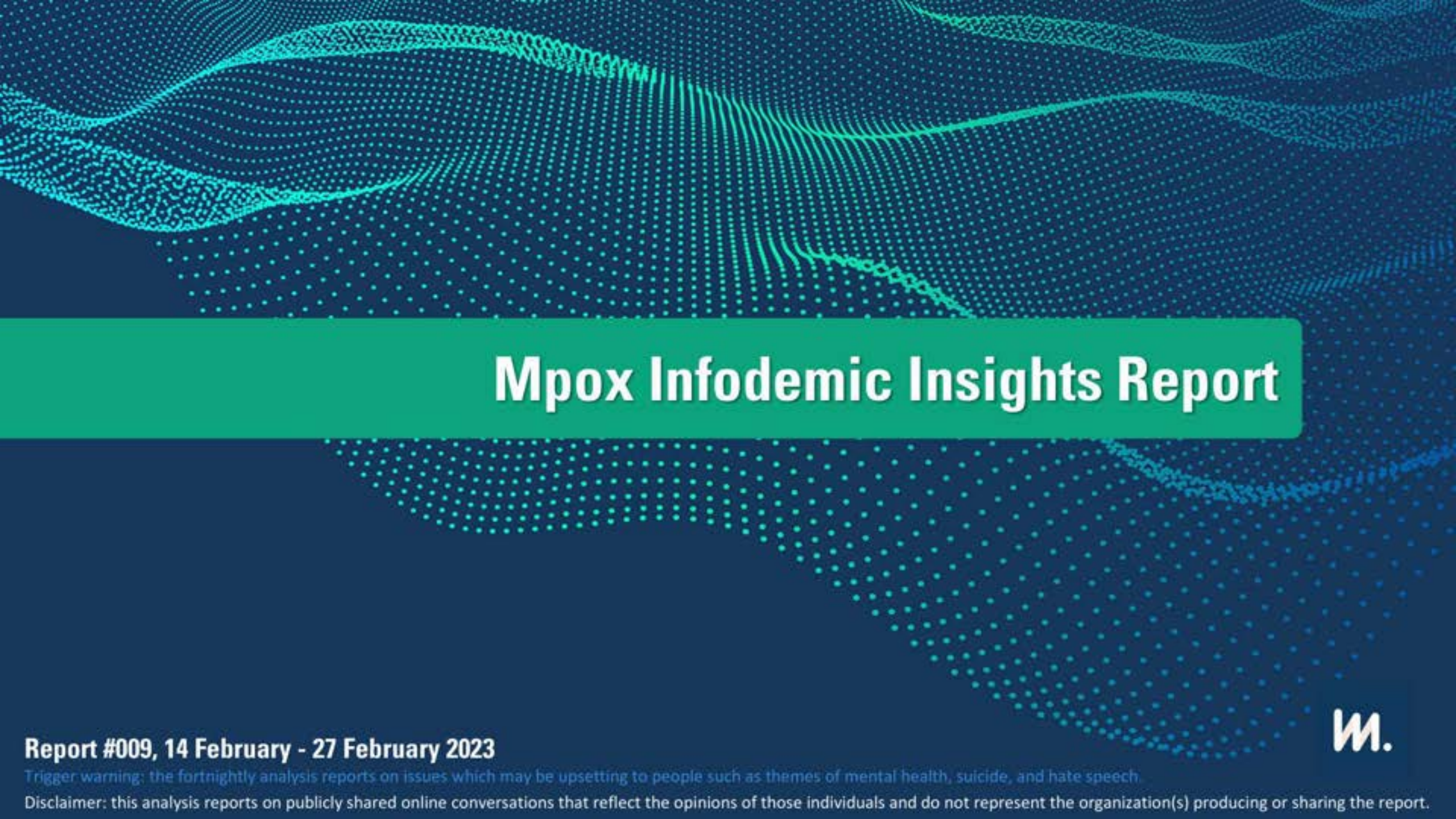
High Impact Events Preparedness

Epidemic and Pandemic Preparedness and Prevention (EPP)

Preparedness Division, WHO Emergency Programme (WPE/WHE)

World Health Organization





# Mpox Infodemic Insights Report

**Report #009, 14 February - 27 February 2023**

Trigger warning: the fortnightly analysis reports on issues which may be upsetting to people such as themes of mental health, suicide, and hate speech.

Disclaimer: this analysis reports on publicly shared online conversations that reflect the opinions of those individuals and do not represent the organization(s) producing or sharing the report.





# KEY FINDINGS

**This report is an analytical product produced in step 2 out of 3 in production of WHO recommendations to manage the infodemic related to mpox outbreak. See appendix for details.**



# MPOX INFODEMIC INSIGHTS: Key findings

14 February - 27 February 2023

## THE ILLNESS – CONCERN ABOUT THE RESULTS OF A NEW STUDY ON RISK OF MPOX FOR INDIVIDUALS LIVING WITH ADVANCED HIV INFECTION

A prominent conversation emerged following the release of new research investigating the risk of mpox for people living with advanced HIV infection. Several users responded expressing concern for the reported findings of the study, including that mpox is allegedly an "opportunistic pathogen" and that people with advanced HIV infection, and especially low CD4 counts can experience severe forms of mpox. Posts also emphasised the finding that mpox has a mortality rate of about 15% for people with advanced HIV infection and claimed that these at-risk groups should have priority for mpox vaccines. Furthermore, the study prompted concern over whether people who do not have HIV but are immunosuppressed could also be more at risk of experiencing severe mpox symptoms (Narratives observed in Germany, USA, UK, Panama, Mexico and Chile).

## THE INFORMATION – MISTRUST OF AUTHORITIES AND MPOX RESPONSE

Social media users continued to claim there is a lack of trust in public health authorities. In response to the announcement that mpox vaccination campaign in Chile would expand priority groups to include sex workers and people living with HIV, some users alleged that no one trusts a government health agency in Chile. Similarly, claims emerged that a public health authority in the USA should not be taken seriously following reports that a public health authority panel of experts voted to recommend the use of a two-dose mpox vaccine for adults at risk of contracting mpox. Further, users in Mexico and Colombia continued to criticise the governments for not securing mpox vaccines despite significant levels of mpox cases (Narratives observed in Chile, USA, Mexico and Colombia).

## THE CAUSE – CONVERSATION ON STIGMA BEING ASSOCIATED WITH MPOX AND THE MSM COMMUNITY

Social media users continued to discuss whether the association between mpox and the MSM community is homophobic. In response to a high-engagement post that asked if mpox conversation decreased because mpox is spread by MSM, several users used stigmatising language towards the MSM community. While, some users claimed that it is homophobic to describe the MSM community as at "high-risk" of contracting mpox, other users argued that it was heterosexual individuals who promoted the homophobic narratives and associated stigma between mpox risk and the MSM community (Narratives observed in UK and English-language).

### KEY FINDING CLASSIFICATION

Key findings are assigned a rating based on the potential risk to public health and the likelihood of impacting beliefs and attitudes via a reach/dissemination/at-risk population/population of focus matrix. Risk levels are depicted by colour:

- **Red** – high risk
- **Orange** - moderate risk
- **Yellow** - low risk
- **Green** – positive sentiment

Narratives are also classified as:

**Emerging:** A new narrative not previously identified, may require further analysis or development of new information materials.

**Persistent:** A narrative that continuously drives online conversations without any significant changes in volume or velocity.

**Re-emerging:** A previously identified narrative that resurfaces after being absent (or low in volume) for multiple weeks.



Emerging



Persistent



Persistent



# OPPORTUNITIES FOR ACTION: FILLING INFORMATION VOIDS

## EMERGING ISSUES

1. **THE INFORMATION** – Note allegations that the number of mpox infections within a religious community are not known because people may hide their infection due to stigma.
2. **THE ILLNESS** – Note a cohort of users responded with concern to new research that reportedly revealed that individuals living with HIV with low CD4 counts are at higher risk of severe symptoms if infected with mpox.
3. **THE ILLNESS** – Note claims that mpox is an “opportunistic pathogen”.
4. **THE ILLNESS** – Note differing claims that arose in conversation around the HIV-specific study, with some users alleging that people with advanced HIV have about a 15% mortality rate from mpox and other users asserting that the HIV-specific study identified a mortality rate from mpox of “up to 30%” for people with advanced HIV.
5. **THE TREATMENT** – Note claims that people living with HIV with less than 200 CD4 cells per microliter should be prioritised for mpox vaccines.
6. **THE INFORMATION** – Be aware of calls for a public health authority to pay attention to the new report on the risk of mpox for individuals living with advanced HIV.
7. **THE ILLNESS** – Note questions regarding whether people who are not living with HIV but are immunosuppressed could be at-risk for severe mpox symptoms.
8. **THE INTERVENTIONS** – Note claims that lack of knowledge on where to access mpox tests is a key barrier to mpox testing.
9. **THE TREATMENT** – Be aware of allegations that mpox vaccines may cause myocarditis and blood clots.
10. **THE TREATMENT** – Be aware of claims that there are no mpox vaccines available in the African continent but that a supply of mpox vaccines is expected in coming weeks.



# OPPORTUNITIES FOR ACTION: FILLING INFORMATION VOIDS

## PERSISTENT ISSUES

1. **THE ILLNESS** – Be aware of questions asking if mpox is still a concern that necessitates protection during sex.
2. **THE TREATMENT** – Some users emphasised the importance of equitable access to mpox vaccines.
3. **THE ILLNESS** – Note some users argued mpox can also be spread by skin-to-skin contact, not just through sex.
4. **THE INFORMATION** – Be aware of claims the government of Colombia's health reforms should not be trusted because the government did not distribute mpox vaccines.
5. **THE TREATMENT** – Some users hypothesised that the alleged lack of mpox vaccines resulted from mpox only impacting a minority.
6. **THE CAUSE** – Be aware of continued assertions that associating mpox with the MSM community is homophobic.
7. **THE TREATMENT** – Note continued criticism of the governments of Mexico and Colombia for reportedly failing to provide mpox vaccines.
8. **THE INFORMATION** – Note some users continued to express frustration with lack of guidance provided by the government of Mexico on mpox.

# OPPORTUNITIES FOR ACTION: FILLING INFORMATION VOIDS

## RE-EMERGING ISSUES

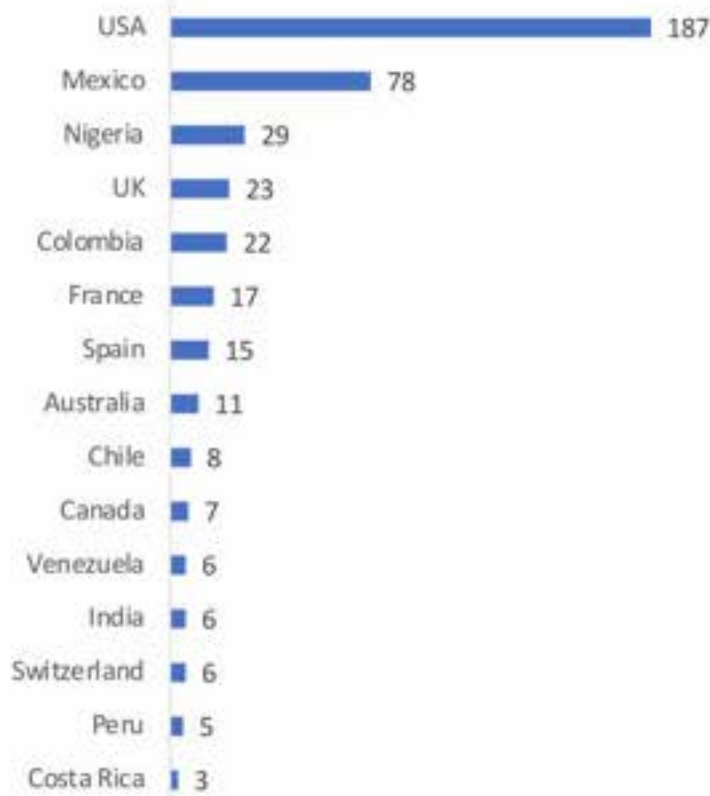
1. **THE ILLNESS** – Note that users continued to discuss HIV as an underlying condition that increases the risk of severe symptoms if infected with mpox.
2. **THE ILLNESS** – Note questions asking if one can develop immunity from mpox after mpox infection.
3. **THE ILLNESS** – Note claims that 1% of mpox infections result in ocular complications.
4. **THE ILLNESS** – Some users claimed the risk of children becoming infected with mpox is low.
5. **THE TREATMENT** – Note allegations that mpox vaccines are an example of “true capitalist conspiracy”.
6. **THE CAUSE** – Note claims that discussion of mpox declined after mpox cases were identified in children and animals.
7. **THE CAUSE** – Be aware of allegations that it was primarily heterosexual people that furthered the claim that the association of mpox with the MSM community is homophobic.



# Top Questions

14 February - 27 February 2023

## Volume of questions on mpox by country



### *MPOX IMMUNITY*

Does anyone know if you develop mpox immunity after infection? ([Twitter](#), Mexico) – 1 engagement

### *MPOX LATEST INFORMATION*

Is there anything known about mpox? ([Twitter](#), Mexico) – 460 engagements

### *PREVENTATIVE MEASURES*

Does mpox remain a reason to only have protected sex? ([Twitter](#), Canada) – 109 engagements

### *VACCINES*

Why are there still no mpox vaccines available in Colombia? ([Twitter](#), Colombia) – 205 engagements

Does Colombia already have mpox vaccines? ([Twitter](#), Colombia) – 37 engagements

# FORTNIGHTLY OVERVIEW

## MOST POPULAR TOPICS (BY VOLUME)

- **#1 VACCINE** (GLOBAL, EXCL. UK/USA, ES, EN), **SPREAD (COMMUNITY CONTEXTS)** (FR)
- **#2 SPREAD (COMMUNITY CONTEXTS)** (GLOBAL, EXCL. UK/USA, EN), **VACCINE** (FR)

## RISING TOPICS (BY VELOCITY)

- **#1 RISK (AGE)** (GLOBAL, EXCL. UK/USA, EN), **SEVERITY OF DISEASE (COMPLICATIONS)** (ES), **SPREAD (TRAVEL)** (FR)
- **#2 SEVERITY OF DISEASE (COMPLICATIONS)** (GLOBAL, EXCL. UK/USA, EN), **PPE** (EXCL. UK/USA), **INEQUALITIES IN INTERVENTION ACCESS/USE** (ES), **SPREAD (COMMUNITY CONTEXTS)** (FR)

## SPOTLIGHT ON: CONVERSATIONS FROM SOUTH AMERICA & AFRICA

- A prominent narrative which emerged was users expressing concern over the increasing number of cases seen in both South America and Africa. Conversation in South America focused on the rise in cases in Mexico, Columbia and Panama, whilst in Africa users discussed the cases in Nigeria.
- In conversation in African, there were questions surrounding the prevalence of mpox, as many users asked: “what happened to mpox?” and questioned the existence of the virus due to the lack of discussion surrounding it. One user suggested it was because of the association with the LGBTQI+ community that people stopped talking about it.
- Similarly, stigma towards LGBTQI+ community was also seen in conversation from South America, with users speculating that increase in mpox cases stemmed from gay sex.
- Further, there was significant discussion within South American conversation on the risk that those who live with HIV are at a higher risk of mortality if they contract mpox, according to a newly published study. Several users urged that mpox becomes increasingly lethal if you already have HIV.

# SOCIAL LISTENING DATA





# Top topics by volume

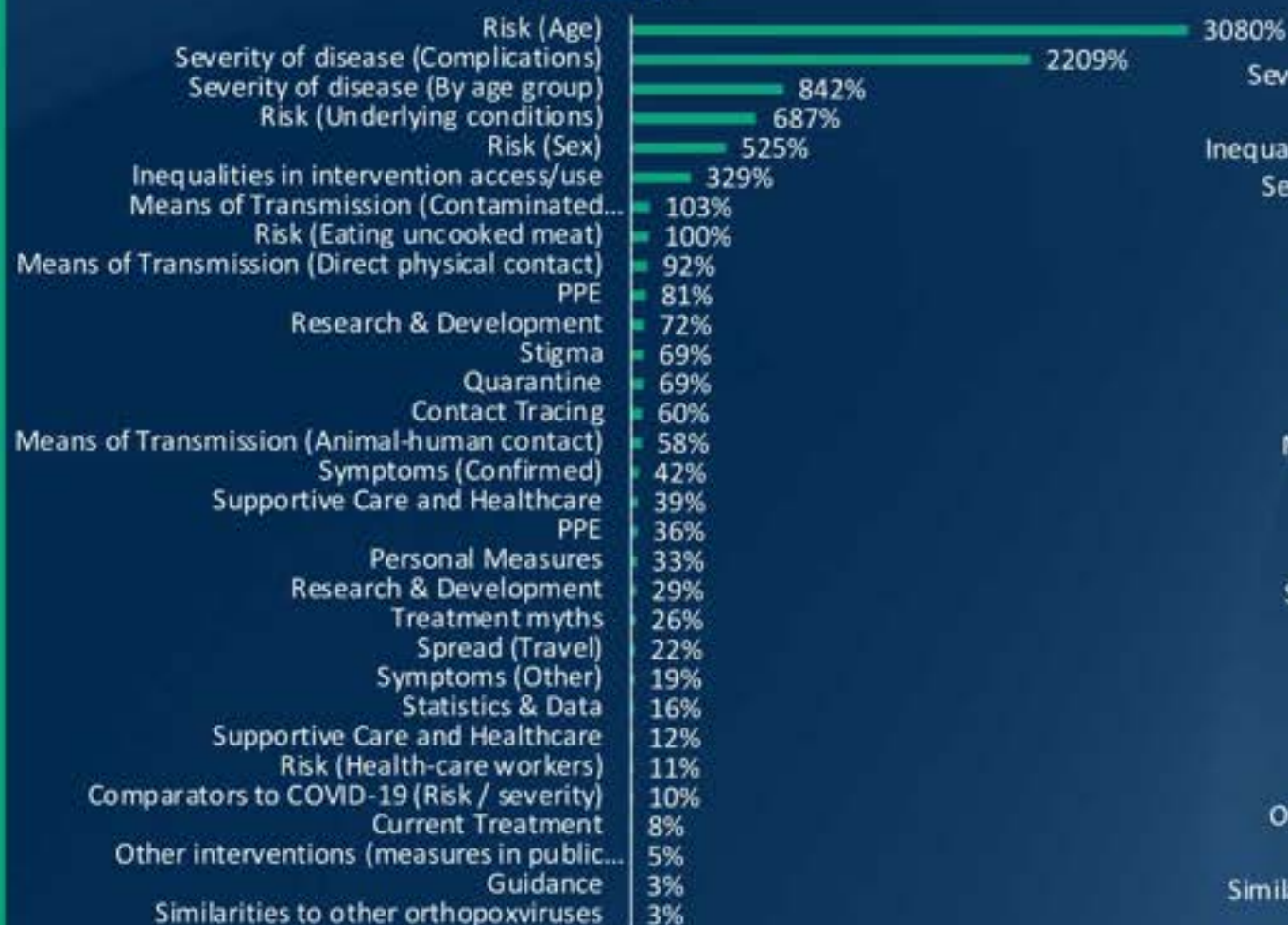




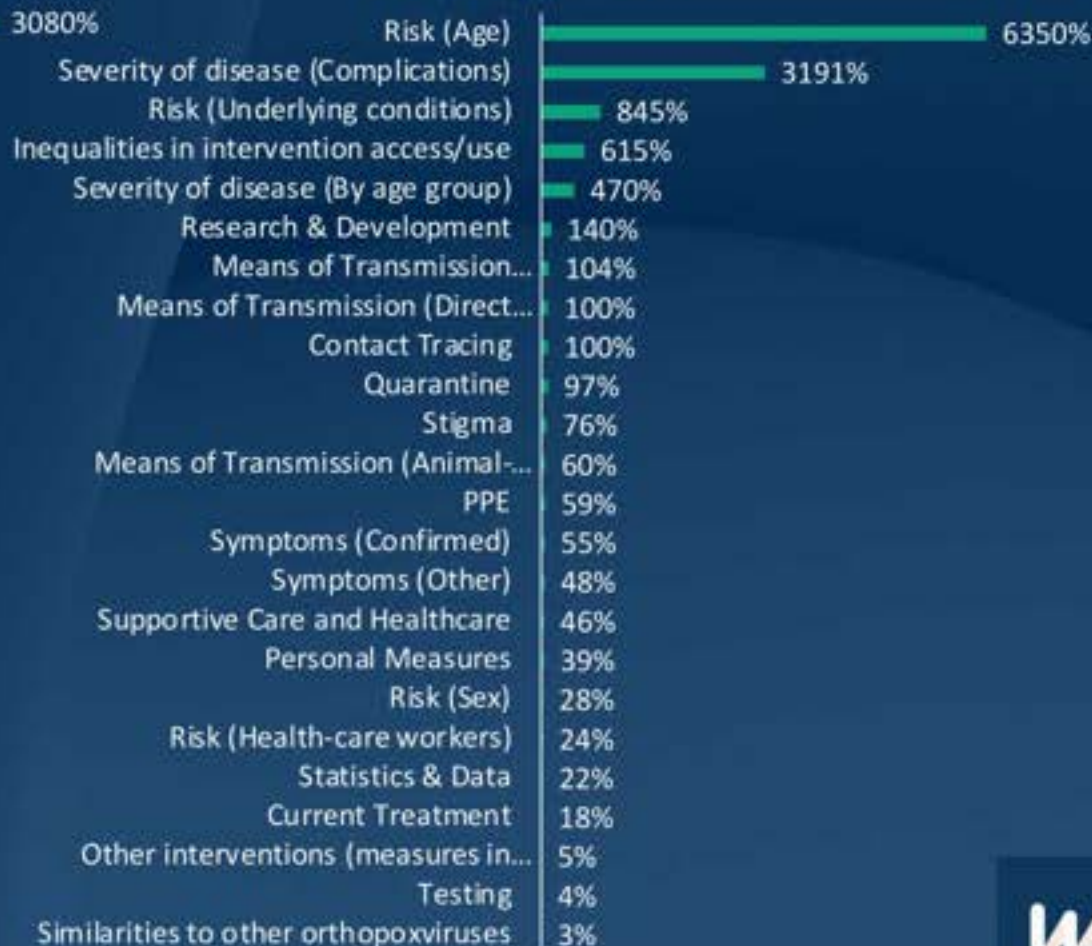
# Top rising topics (**velocity**)

## MPOX INFODEMIC INSIGHTS

### GLOBAL



### EXCL. UK/USA



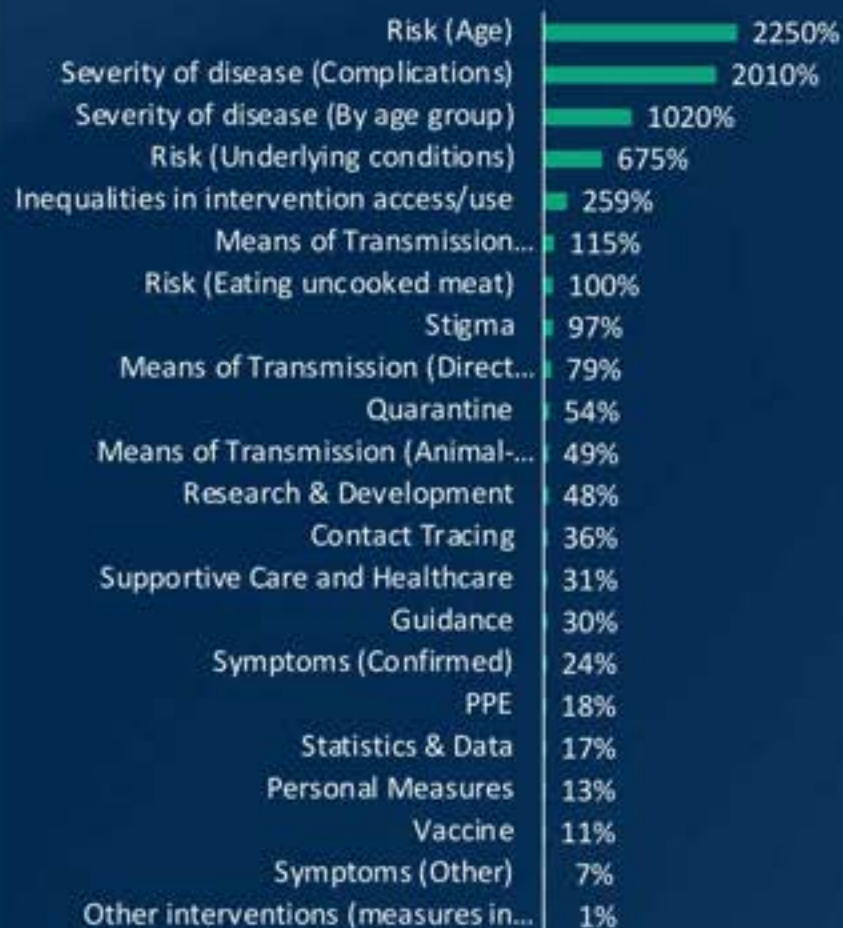
■ Topic increased in more than one data set ■ Unique pattern - topic rose in only one data set



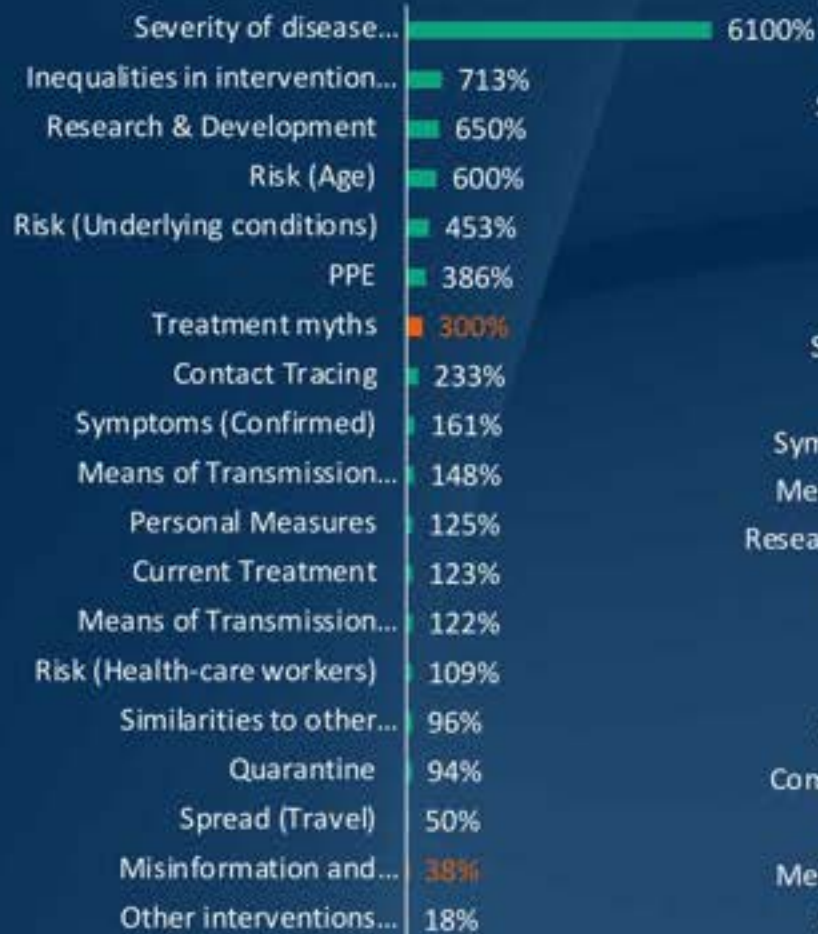
# Top rising topics (**velocity**)

## MPOX INFODEMIC INSIGHTS

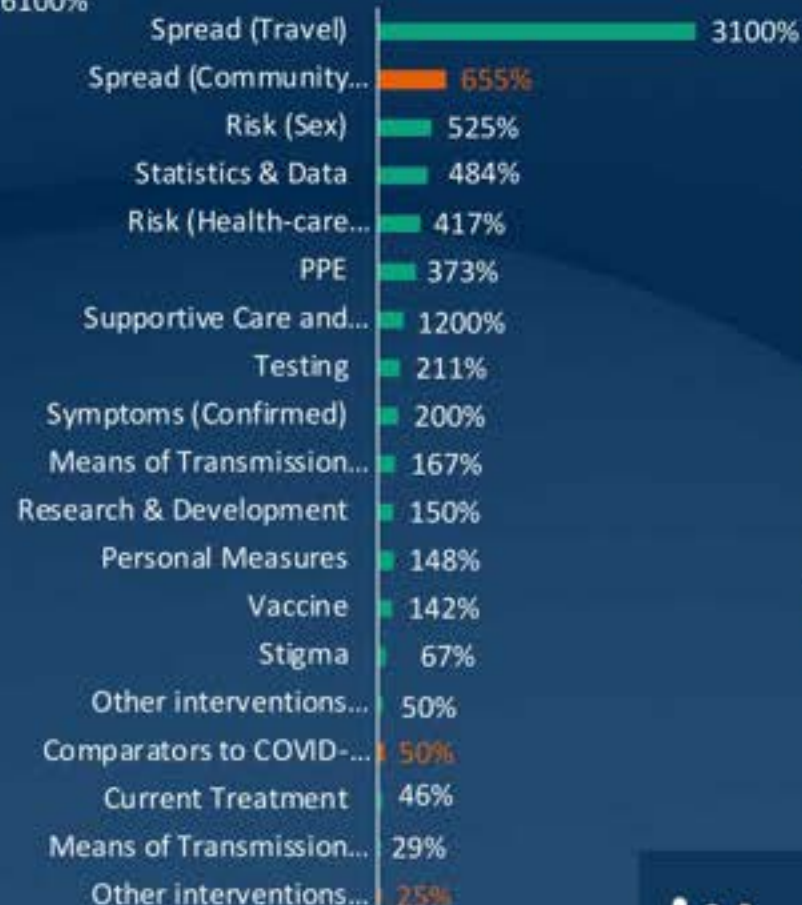
### EN ONLY



### ES ONLY



### FR ONLY



Report #009, 14 February - 27 February 2023

■ Topic increased in more than one data set ■ Unique pattern - topic rose in only one data set



# Global data excluding the UK and the USA

## MPOX INFODEMIC INSIGHTS

The global dataset excluding the UK and the USA featured 24 rising topics during this reporting period, whereas the global dataset featured 31. The non-UK/USA dataset featured no unique rising topics over the reporting period.

### Severity of Disease (Complications)

The topic of **Severity of Disease (Complications)** (+3190%) ranked second in the non-UK/USA dataset, with conversation being primarily driven by users based in Mexico (4%).

- A self-titled senior consultant of infectious diseases in Spain [shared an article](#) describing **1% of mpox infections resulting in ocular complications**, of which conjunctivitis was the most common (8 engagements).

### Inequalities in Intervention (Access/Use)

The topic of **Inequalities in Intervention (Access/Use)** (+615%) ranked fourth in the non-UK/USA dataset, with conversation being primarily driven by users also based in Mexico (6%).

- A self-described infectious diseases medical professional in Canada [posted to highlight a talk](#) at a conference on retroviruses, at which one of the panel speakers discussed the **importance of equitable access to vaccines in order to eliminate mpox**.



# Global data: English and French conversation

MPOX INFODEMIC INSIGHTS

The English-language dataset featured 22 rising topics during this reporting period with no unique topics. The French-language dataset contained 19 rising topics with three unique rising topics during this reporting period: **Spread (Community contexts)** (+655%), **Comparators to COVID-19 (Similarities)** (+50%), and **Other Interventions (travel measures)** (+25%).

## Means of transmission (Direct physical contact) (English-language)

**Means of transmission (Direct physical contact)** (+79%) ranked seventh in terms of topic velocity in the English-language dataset. Conversation was driven primarily by users in the USA (35%).

- Rates of mpox in some religious communities in the USA were discussed as a part of an on-going, wider-ranging discussion, in which one user asked another about mpox rates being unknown because of it being **spread in those communities through illicit sexual encounters** and covered up due to stigma (1 engagement).
- In a separate discussion, another user argued that mpox is not only spread through sex, but that **any kind of skin-to-skin contact can pass the virus on** – caveating that such cases are rare as the viral spread is inefficient (2 engagements).

# Global data: Spanish conversation

The Spanish-language data set featured 19 rising topics over the reporting period, of which there were two unique rising topics, namely: **Treatment Myths (+300%)**, **Risk (+600%)**.

## Risk (age)

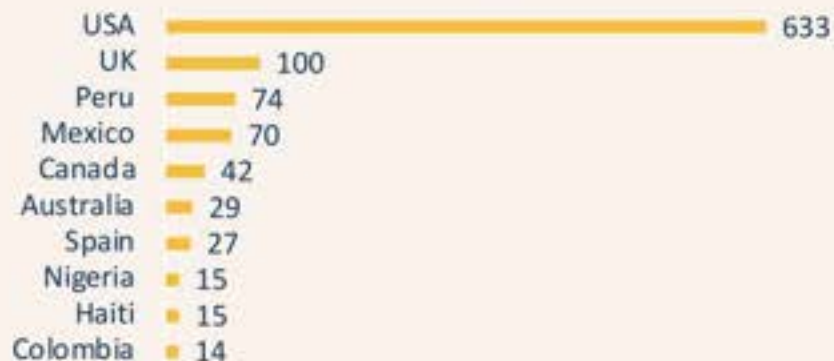
- **Risk (age)** (+600%) ranked 4<sup>th</sup> in the Spanish-language dataset, with content driven primarily from users geolocated in **Argentina** (29%) and **Spain** (29%).
- Users during this reporting period discussed the prevalence and severity of mpox amongst the younger generation. A user who described themselves as a doctor posted a tweet which stated the [risk of children and adolescents becoming infected with mpox is low](#) (5 engagements).
- **Misinformation and Disinformation**
- The topic of **Misinformation and Disinformation** (+38%) ranked 18<sup>th</sup> in the Spanish-language dataset, with content mainly driven by users geolocated in **Colombia** (10%), **Peru** (7%) and **Venezuela** (7%).
- A tweet sparked [engagement](#) on social media in the Spanish language conversation. [Several users retweeted](#) a post which urged users **not to trust the health reforms of the current Colombian government**, due to the lack of vaccine distribution for the mpox virus. The [tweet](#) stated “lets not be fooled... everything is a big lie” (64 engagements).
- Other conversation pertained to [conspiracies relating to the pharmaceutical industry](#). A user alleged that the patents placed on the vaccines are a “**true capitalist conspiracy**” (18 engagements). Similarly, another user suggested the reason behind the lack of vaccines for mpox was because it only affects a minority, and labelled it a “[plot by conservatives](#)” (17 engagements).

# RISING TOPICS

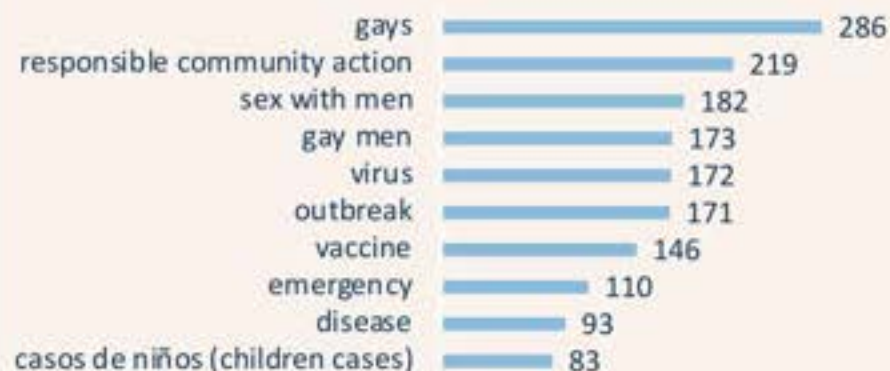


# Stigma +69%

Top locations for social media conversation on "Stigma":  
14 February – 27 February 2023



Top keywords & phrases in social media conversation on  
"Stigma":  
14 February – 27 February 2023



Discussion around **Stigma** generated **2.4K mentions** during this reporting period, increasing by 69% from the previous fortnight.

## USERS RESPOND TO SPECULATION THAT MPOX FADED FROM PUBLIC ATTENTION AS IT ONLY SPREAD THROUGH MSM SEX (ENGLISH-LANGUAGE)

- Speculative conversation came in reaction to a post on Twitter which questioned whether discussion about mpox disappeared due to the fact it **"only passed through gay sex"** (27K engagements). Replies often expressed homophobic sentiments, with users stating they stopped discussing mpox after **cases appeared in animals and children** (1.6K engagements). Some users also implied it was passed sexually and often used highly negative and **stigmatising language towards the MSM community** (36 engagements).
- A self-identified member of the **LGBTQI+ community** quoted the original post stating that **"straight progressive people" caused the narrative of stigmatisation surrounding mpox spread** after the focus shifted to men who have sex with men. They suggested that the gay community **"didn't object"** to this as they acknowledged the spread of mpox predominantly affected the MSM community (479 engagements).

## RESPONSES TO CLAIMS THAT IT IS "HOMOPHOBIC" TO CONSIDER THE LGBTQI+ COMMUNITY MORE AT-RISK OF CONTRACTING MPOX (UK, ENGLISH-LANGUAGE)

- Users often expressed the fact that mpox predominantly spread through LGBTQI+ communities as a fact, with posts also suggesting that **associating mpox as predominantly high-risk to the MSM community was homophobic** (421 engagements). Another user argued that messaging which emphasised mpox was not an STI served to **miseducate** people and endanger the health of at-risk communities (21 engagements).
- A user quoted the original post stating **"it was mainly straight people" who were claiming association mpox with the LGBTQI+ community was homophobic**, while "gay men got themselves vaccinated" (131 engagements).
- Another post criticised the original user, stating they are attempting to encourage others to forget their "shameful attack" on the LGB Alliance for reportedly spreading misinformation that mpox disproportionately affects "gay & bi men" (318 engagements).



# Risk (Underlying conditions) +687%

Top locations for social media conversation on  
"Risk (Underlying conditions)":

14 February – 27 February 2023



Top keywords & phrases in social media conversation on  
"Risk (Underlying conditions)":

14 – 27 February 2023



The conversation on Risk (Underlying conditions) generated 900 mentions, increasing by 687% from the previous fortnight.

DISCUSSION OF NEW RESEARCH ON HIV RESULTING IN A MORE SEVERE FORM OF MPOX (GERMANY, USA, UK)

- Several journalists on Twitter posted about [new research](#), which showed that **mpox poses a large risk** to those living with **uncontrolled HIV**. A [medical journalist](#) tweeted that the study presents "**disturbing data**" on **mpox among HIV+ people with low CD4 counts**, and that the study concludes that **mpox "is an opportunistic pathogen"** and that a "**severe necrotising form is an AIDS-defining condition**". The journalist recommended that public health authorities should "include" the study's findings.
- A [science journalist](#) noted that **out of 179 patients** with less than 200 CD4 cells per microliter, **27 died**. This journalist also included [a link](#) to an article about the research. Moreover, [another journalist](#) added that **mpox has a death rate of about 15%** for those with "**advanced HIV infection**". This tweet prompted some replies that [thanked the journalist](#) for covering the story, while one reply asked about the specifics of [how mpox was transmitted to a person with HIV](#). Conversely, an [education institution](#) tweeted that a new, severe form of **mpox has a death rate of "up to 30%"** in people living with **advanced HIV**; [a link to a commentary](#) on the study was included with this tweet.
- A [link](#) to an article about this story was also posted to the [NBC News Twitter page](#), where it prompted replies from those who [stigmatised gay men for spreading mpox](#). One of the replies suggested that "[monogamy solves all these problems](#)".

VACCINE PRIORITY FOR PEOPLE INFECTED WITH HIV AFTER NEW RESEARCH (PANAMA)

- A profile claiming to represent a company promoting "health outreach and scientific literacy" [suggested on Twitter](#) that following the release of the aforementioned [new research](#), "**all people at risk of mpox with HIV and a CD4 cell count of less than 200 cells per mm3 should be prioritised for preventive vaccination against mpox**".

CONCERN THAT PEOPLE NOT INFECTED WITH HIV WHO HAVE SUPPRESSED IMMUNE SYSTEMS COULD HAVE SEVERE MPOX CASES (UK)

- A user identifying themselves as an "HIV doc" [tweeted a question](#) that was asked of a Professor of HIV Medicine, which was: "Will people with **non-HIV-related immunosuppression also be at risk of severe #mpox outcomes?**" The professor said the answer was "**probably yes**", especially based on what we know about COVID-19.



# Guidance +3%

## Top locations for social media conversation on "Guidance": 14 February - 27 February 2023



## Top keywords & phrases\* in social media conversation on "Guidance": 14 February - 27 February 2023



\*excluding keywords such as "monkeypox", "mpox virus" and "mpox"

Conversation on **Guidance** generated **383 mentions** during this reporting period, increasing by 3% from the previous fortnight.

## DISCUSSION OF THE EXTENSION OF THE MPOX PUBLIC HEALTH EMERGENCY (ENGLISH-LANGUAGE)

- The director of a public health authority announced on Twitter the decision by an international health regulations committee to **continue classifying the outbreak of mpox as a "public health emergency of international concern"**. In the announcement, the committee explained that despite progress made in the global response to the multi-country outbreak of mpox, **several countries continue to see a sustained incidence of illness**, whilst it is also suspected that **underreporting of cases is also likely** in other regions.
- The organisation's decision to maintain surveillance, prevention, preparedness and response services against mpox was received with scepticism on Twitter, with **individuals branding it as an attempt to exert control over the population** by means of vaccines and the introduction of digital ID passports, whilst others questioned the credentials of the organisation's director. It is worth noting that many of the critical accounts replying to the original post had long Twitter handles filled with strings of random numbers and letters, which could suggest that many of them are bots instead of actual individuals.

## OFFICIAL RECOMMENDATIONS ON HOW TO ADDRESS MPOX LESIONS (MEXICO, EL SALVADOR)

- The public health authorities of Central American countries shared messages on Twitter to provide guidance on mpox. In Michoacán (Mexico), public health authorities shared a graphic with four recommendations for people infected with mpox, which included **not touching the lesions, handwashing for at least 20 seconds, avoiding physical contact and wearing face masks**. Similarly, the public health authorities of Salvador published two messages recommending that people infected with mpox and those self-quarantining should not scratch their lesions and make sure they wash their hands properly after cleaning the lesions.

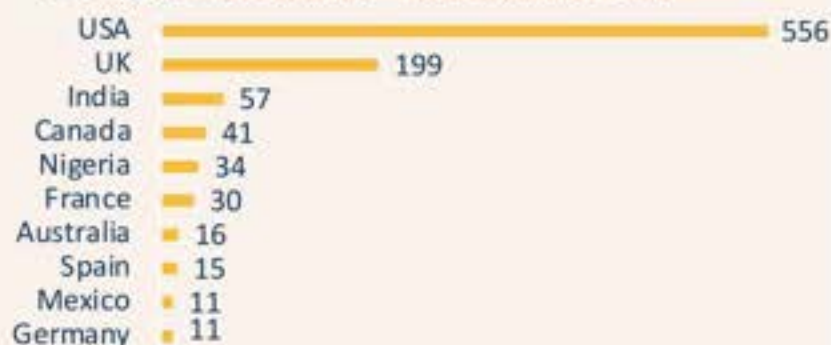
## GUIDANCE ON MPOX FOR PEOPLE LIVING WITH HIV (ENGLISH-LANGUAGE)

- An international health society shared the findings of a recent study that found that **"people living with HIV with a weakened immune system might experience worse mpox outcomes"**. According to data shared by the organisation, **"mpox has disproportionately affected people living with HIV, who account for 48% of diagnoses globally"**.

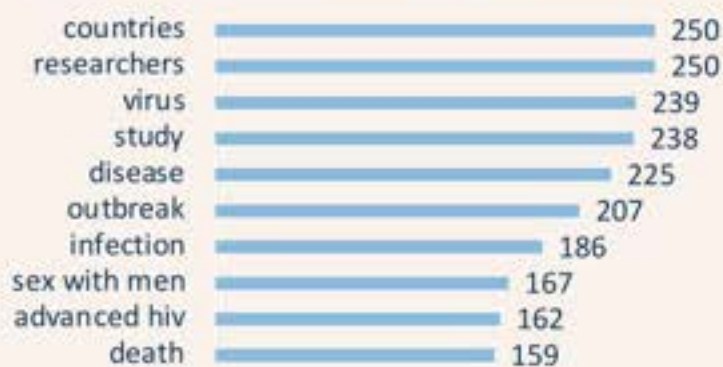


# Testing (French-language) +211%

Top locations for social media conversation on "Testing" : 14 February - 27 February 2023



Top keywords & phrases\* in social media conversation on "Testing": 14 February - 27 February 2023



\*excluding keywords such as "monkeypox", "mpox virus" and "mpox"

The topic of **Testing** generated **2.1K mentions**, with content in the French language increasing by **211%** from the previous fortnight.

## DISCUSSION OF NEW MPOX TESTING AND BARRIERS TO TESTING FROM A HEALTH CONFERENCE (USA)

- Medical professionals gathered at a health conference in the USA to discuss mpox testing, among other medical issues. An expert in infectious diseases presenting at the conference a new assay for the diagnosis of mpox, which was **claimed to provide 97.3% positive agreement and 100% negative agreement with reference testing**. The doctor also claimed that the test developed is a "user-friendly cartridge-based RT-PCR", which has **lots of potential uses in screening and surveillance of mpox infections**.
- Another scientist at the conference also shared on Twitter some takeaways from an mpox study carried out in August 2022, claiming that **the top barrier to testing was "not knowing where to test"**. The scientist also pointed out that their study saw the same disparities observed in other epidemics also persisted with mpox testing. They outlined that these **need to be addressed before the spring and summer months due to the expected uptick in cases**.

## ANNOUNCEMENT THAT THE FIRST POINT-OF-CARE TEST FOR MPOX WAS AUTHORISED IN THE USA (USA)

- A public health authority in the USA gave emergency use authorisation to the first point-of-care test for mpox, a decision that was seen by some individuals as a **result of the spread of infectious diseases**.
- The announcement, which was echoed by medical officers as well as public health organisations, was described as **a step forward to make sure that healthcare providers are ready for the potential re-emergence of mpox in the summer months**, following the sharp decrease since last summer.

## PERU ANNOUNCES DEVELOPMENT OF NEW TEST TO DETECT MPOX (PERU)

- In a continuing trend, a PCR test developed by the health authorities in Peru was described as having **100% effectiveness in the detection of the mpox virus**. The sanitary authorities stated that the scientists in charge of developing the new test followed the protocols of international health organisations for the molecular detection of the mpox virus.

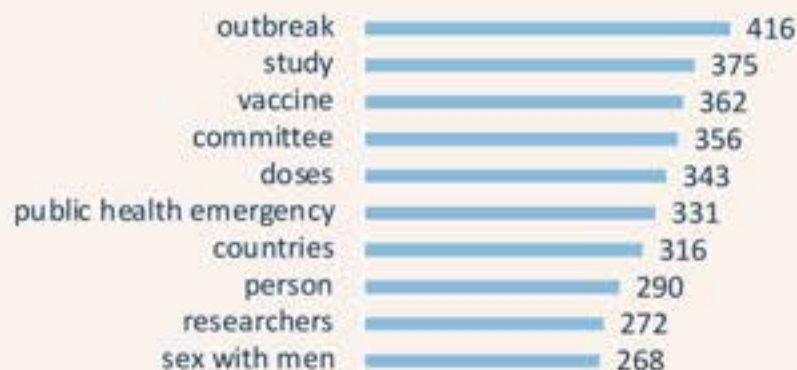


# Vaccines (French-language) +142%

Top locations for social media conversation on "Vaccines" : 14 February - 27 February 2023



Top keywords & phrases\* in social media conversation on "Vaccines": 14 February - 27 February 2023



\*excluding keywords such as "monkeypox", "mpox virus" and "mpox"

Discussion around **Vaccines** generated **8.2K mentions**, with content published in French showing a **142%** increase compared to the previous reporting period.

**UPDATED VACCINATION RECOMMENDATIONS ANNOUNCED BY A PUBLIC HEALTH AUTHORITY IN THE USA (USA)**

- Independent advisers of a public health authority in the USA voted unanimously to recommend the use of a two-dose mpox vaccine for adults deemed at risk of catching the disease during an outbreak. The announcement was covered by numerous news organisations, with self-titled independent media claiming that the definition of what constituted an outbreak of mpox could be as small as a single detected case. Vaccine questioning users criticised the decision, claiming that vaccination would lead to myocarditis and bloods clots, expressing their general distrust of public health authorities, and simply stating the old name given to the disease to express their opposition.

**CHILE ANNOUNCES THE EXPANSION OF PRIORITY GROUPS FOR VACCINATION (CHILE)**

- The public health authorities in Chile announced that the priority groups in the country's vaccination campaign against mpox would be expanded to include sex workers and people living with HIV, among others. A medical organisation in Chile shared an infographic detailing who is included in the expanded priority group, whilst vaccine-sceptics responded to the announcement claiming that the new vaccines are designed to cover up the effects of prior vaccines and questioning the lack of credibility of the public health authorities.

**GOVERNMENTS IN CENTRAL AMERICA CRITICISED FOR THE UNAVAILABILITY OF VACCINES (COLOMBIA, MEXICO)**

- The lack of national programmes in Mexico and Colombia to provide mpox vaccines was criticised by individuals targeting the authorities. In Colombia, a self-titled doctor in epidemiology lamented that **6 months after a minister announced the purchase of mpox vaccines, none had arrived in the country** (583 engagements). Similarly, the news that **Mexico was among the top 5 countries in the continent with the highest number of mpox cases** was used to criticise the government for not securing any vaccines.

# SPOTLIGHT FOCUS

Conversation from South America &  
Conversations from Africa





## Spotlight: Conversations from South America

Volume of social media conversation on mpox in South America : 27 November 2022 – 27 February 2023



Top locations for social media conversation on mpox in South America: 14 February - 27 February 2023



### CONCERNS OVER MPOX CASES IN SOUTH AMERICA (MEXICO, COLOMBIA, PERU, PANAMA)

- A theme within this reporting period centred around concerns over the alleged rise of mpox cases in Mexico, as it was purported that there were 3,877 confirmed cases in the country (824 engagements). One user expressed frustration with the lack of guidance released by health authorities, and wished information was spread earlier, before mpox cases rose significantly.
- Reportedly, Colombia was among the top five countries most affected by mpox. Consequently, a user questioned why the government has not yet provided mpox vaccines if there are over 4,000 infections (205 engagements). Similarly, Panama purportedly saw 21 new cases of mpox in the past fortnight, with cases totalling at 160.
- Peru, however, reportedly saw a decrease in the number of mpox cases, as a result of their vaccination programme and prioritisation to not compromise vulnerable populations.

### STIGMA ASSOCIATED WITH THE LGBTQI+ COMMUNITY AND MPOX (MEXICO, COLOMBIA)

- A top engaged-with post shared a video depicting a large gathering of men, with the caption "and they wonder why monkeypox spreads" (788 engagements), implying a link between the MSM community and the spread of mpox. Multiple users expressed further stigma towards those within the LGBTQI+ and MSM community, and linked the actions in the video to the spread of disease.
- Another user argued that there were high numbers of mpox cases within the MSM community in Colombia; however, due to stigma and "serophobia", they suggested there was reportedly little attention given to these cases.

### DISCUSSION OF HIV AND MPOX (MEXICO, CHILE)

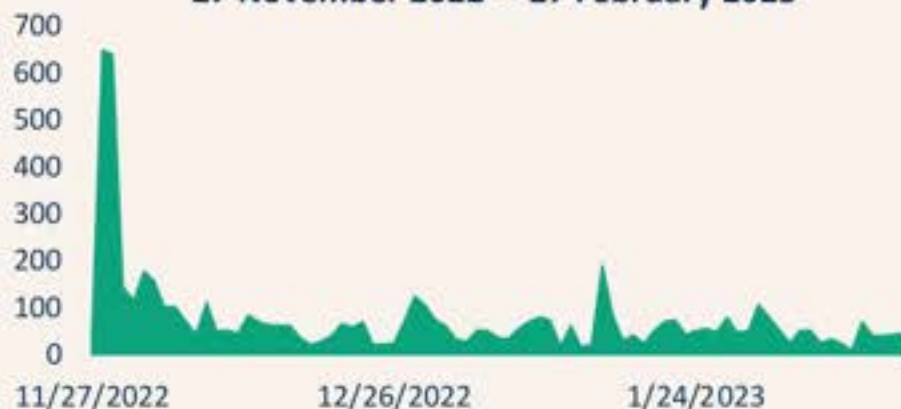
- There was prominent conversation surrounding the implications of mpox for those that have contracted HIV (107 engagements) following the release of a study carried out by an academic journal (129 engagements). The study claimed that mpox can be particularly dangerous, or even lethal, for those living with HIV (418 engagements). Further, the study purported that in severe cases of mpox, there is a 15% mortality rate for those with advanced HIV (120 engagements). Similarly, another user urged that the effects of mpox can be significantly more dangerous for those who have HIV (147 engagements). Consequently, mpox vaccination have been reportedly extended to those who live with HIV.



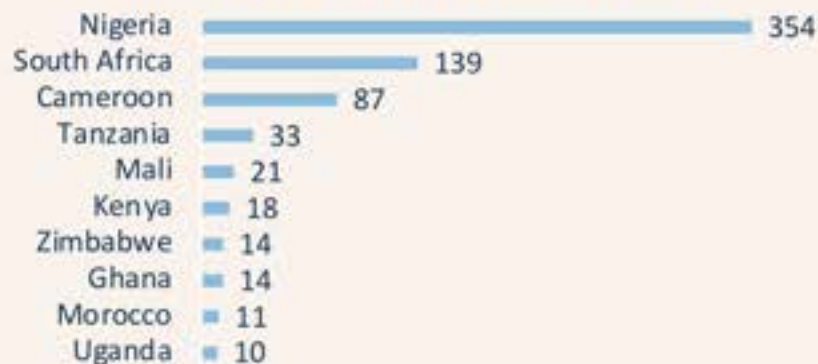
## Spotlight: Conversations from Africa

Volume of social media conversation on mpox from users geolocated in Africa:

27 November 2022 – 27 February 2023



Top locations of social media conversation on mpox in Africa: 14 February - 27 February 2023



### CONVERSATION OVER RISING CASES IN AFRICA (NIGERIA, CONGO)

- There was prominent conversation regarding the prevalence of mpox in Africa. A regional public health authority reported that there are currently active outbreaks of mpox in 13 countries in Africa (38 engagements).
- In particular, multiple news outlets reported that there have been **789 cases** of mpox in Nigeria, as well as **8 deaths** (39 engagements).

### DISCUSSION OF MPOX INTERVENTION STRATEGIES (NIGERIA, KENYA, ETHIOPIA)

- In light of rising mpox cases in Africa, a health authority in Nigeria urged that all **health workers must remain vigilant of mpox**, and ensure to **take necessary precautions** when handling suspected or confirmed cases of mpox (34 engagements). Similarly, a NGO based in Nigeria posted video of mpox symptoms to look out for, as well as **guidance to help prevent the spread** of the disease.
- Moreover, discussion over the vaccine roll out in Africa was also prominent. A user geolocated in Ethiopia claimed in a tweet that there are no mpox vaccines in the continent, but that they may begin to arrive and be distributed in **the next two weeks**. This was amplified by a user geolocated in Kenya.

### QUESTIONS OVER THE EXISTENCE OF MPOX (ETHIOPIA, SOUTH AFRICA, CÔTE D'IVOIRE, LIBERIA, KENYA)

- There was a prominent theme regarding the existence of mpox in Africa, as multiple users questioned **'what happened to mpox?'** or **'is monkeypox still a thing?'**, and suggested (279 engagements) that it came and went very quickly, and that not many people discuss it anymore. Another user claimed that the **"monkey pox agenda" had failed**.
- Further, a user geolocated in Kenya retweeted a post that questioned whether mpox went away or **did people stop talking about it due to the perception that mpox is transmitted through sexual activity**, particularly within the MSM community.

# METHODOLOGY



# PROJECT BACKGROUND

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Marble Global was commissioned to analyse and quantify the information – right and wrong – in digital media discussing mpox. The project consists of two workstreams:

1. These fortnightly summary reports to track and quantify fortnightly conversation trends and emerging citizen questions
2. Interactive Tableau dashboard to provide regular updates on the analysis models created

To create these reports, Marble has used a wide range of its enterprise social listening, media monitoring, online search, AI and data enrichment tools & expertise to provide an analysis of digital information discussed and reported on by citizens referencing the mpox pandemic.

The data collected for this study includes content publicly available on social media platforms (Twitter, Facebook, Instagram, YouTube, Blogs & forums) as well as online news content (including broadcast) that has resonated in the aforementioned social media platforms. Question and sentiment language is sourced from the aforementioned social media platforms (excluding blogs) to ensure consistent proximity between the searched entities and the linguistic cues used to detect sentiment and question language.

Data analysed will be collected in English-language, French-Language and Spanish-language.

# METHODOLOGY

| 5 CATEGORIES<br>See methods <a href="#">journal article</a> | 22 SUB-CATEGORIES                 | 40 TOPICS | LANGUAGES |
|-------------------------------------------------------------|-----------------------------------|-----------|-----------|
| Category A                                                  | Category A area<br>Sub-category 1 | Topic A1a | EN ES FR  |
|                                                             |                                   | Topic A1b | EN ES FR  |
|                                                             | Category A<br>Sub-category 2      | Topic A2a | EN ES FR  |
|                                                             |                                   | Topic A2b | EN ES FR  |
| Category B                                                  | Category B<br>Sub-category 1      | Topic B1a | EN ES FR  |
|                                                             |                                   | Topic B1b | EN ES FR  |

+ Questions data > 40 strings **AND** question words / phrases / syntax.

# 80

individual search strings





CONTENT SEARCHES



AUTOMATED DATA  
PROCESSING



INSIGHTS



+WEB SEARCH DATA

W.



# METHODOLOGY

## Fortnight-on-fortnight change

| Taxonomy             | Category                             | Week of Data | Count  | Previous weeks count | WoW %   |
|----------------------|--------------------------------------|--------------|--------|----------------------|---------|
| The Illness          | B2a Means of Transmission            | Week 18      | 28     | 187                  | -87.60% |
| The Cause            | A2a Further spread: Immunity         | Week 18      | 721    | 3,958                | -81.70% |
| The Interventions    | D4 Technology                        | Week 18      | 385    | 815                  | -52.60% |
| The Treatment        | C1c Research & Development           | Week 18      | 890    | 2,838                | -68.70% |
| The Cause            | A2a Further spread: Stigma           | Week 18      | 1,307  | 4,428                | -70.90% |
| The Interventions    | D5e Inequalities                     | Week 18      | 58     | 152                  | -61.30% |
| The Interventions    | O2a Supportive Care (Equipment)      | Week 18      | 3,108  | 8,754                | -64.60% |
| The Illness          | B1c Asymptomatic                     | Week 18      | 377    | 904                  | -57.80% |
| The Illness          | B2b Protection from Transmission     | Week 18      | 3,705  | 11,454               | -67.50% |
| The Illness          | B3c Risk - Demographics (Age)        | Week 18      | 653    | 1,628                | -59.50% |
| The Interventions    | D3a Personal Measures                | Week 18      | 2,194  | 7,029                | -68.30% |
| Types of Information | E1 Statistics & Data                 | Week 18      | 1,757  | 5,657                | -69.10% |
| The Interventions    | D5b Faith                            | Week 18      | 997    | 2,527                | -60.50% |
| The Interventions    | D1 Testing                           | Week 18      | 4,578  | 12,500               | -63.30% |
| The Interventions    | D5d The Environment                  | Week 18      | 1,477  | 3,209                | -53.90% |
| The Interventions    | D3b Measures in Public Settings      | Week 18      | 10,970 | 25,873               | -57.60% |
| The Illness          | B3d Vulnerable People                | Week 18      | 1,744  | 5,529                | -68.60% |
| The Treatment        | C1a Current Treatment                | Week 18      | 4,175  | 9,004                | -53.70% |
| The Interventions    | D3d Protection                       | Week 18      | 2,763  | 6,500                | -57.10% |
| The Illness          | B3b Risk - Demographics (Sex)        | Week 18      | 180    | 322                  | -44.10% |
| The Illness          | B1a Confirmed Symptoms               | Week 18      | 7,184  | 18,178               | -60.50% |
| The Interventions    | D3c Reduction of Movement            | Week 18      | 1,296  | 2,777                | -53.30% |
| The Interventions    | D5a Travel                           | Week 18      | 3,795  | 9,209                | -58.90% |
| The Illness          | B1d Pre-Symptomatic                  | Week 18      | 5      | 29                   | -82.80% |
| The Interventions    | D5c Unions and Industry              | Week 18      | 9,585  | 18,666               | -48.60% |
| The Treatment        | C2b Myths                            | Week 18      | 308    | 861                  | -64.30% |
| The Illness          | B3a Risk - Underlying Conditions     | Week 18      | 202    | 439                  | -54.20% |
| The Illness          | B3e Vulnerable Communities           | Week 18      | 1,541  | 2,279                | -32.80% |
| The Treatment        | C2a Non-proven treatment (Nutrition) | Week 18      | 205    | 461                  | -56.20% |
| The Treatment        | C1b Vaccines                         | Week 18      | 2,130  | 4,060                | -47.50% |
| Types of Information | E2 Misinformation                    | Week 18      | 196    | 386                  | -49.20% |
| The Interventions    | O2b Supportive Care (Healthcare)     | Week 18      | 7,390  | 12,662               | -41.90% |
| The Illness          | B1b Other discussed symptoms         | Week 18      | 345    | 430                  | -19.50% |
| The Cause            | A1 The Cause                         | Week 18      | 812    | 657                  | 23.60%  |
| The Interventions    | D5f Civil Unrest                     | Week 18      | 733    | 398                  | 83.90%  |

Identify rising topics



Contextualise the rise

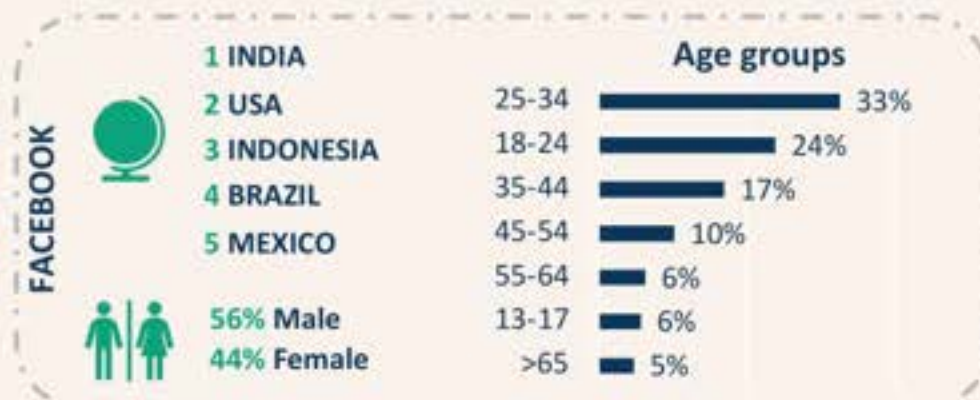
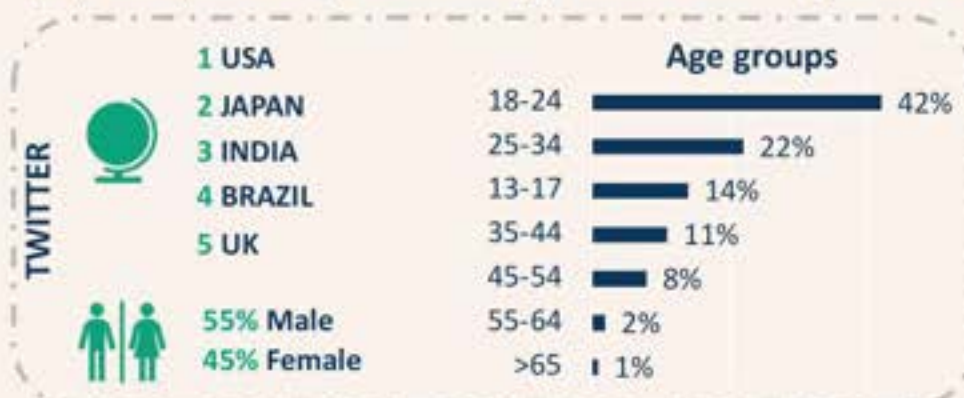


Narratives  
Engaging content  
Networks  
Emerging trends  
Patterns

# METHODOLOGY

## Top questions & platform demographics

Top questions are researched and identified through data feeds based on mpox key words (including misspellings) and grammatical features and/or markers that are used in English, French, and Spanish to build questions. Due to the nature of the platforms, data is most likely to originate from Twitter and forums (especially Reddit\*). Occasionally, Facebook also represents a source of viral questions on mpox.



\*According to the *GlobalWebIndex*, 19.9% of all internet users that access the web to seek for health-related information use Reddit.



# Note on representativity

The data is based on the publication of posts from populations that are digitally active and that are likely to use social media to discuss or share opinions about mpox and the mpox pandemic.

Note that demographics vary significantly from country to country and the availability of public social media data differs from platform to platform. Additionally, note an overrepresentation of English, French and Spanish speakers from all over the world due to scope limitations.

Twitter data is overrepresented in the data analysed in this report due to differing data sharing policies in place between individual social media platforms and social media data aggregators. Whilst the data aggregator used for this report offers firehose access to Twitter data, Facebook data is limited to a posts published by selected public pages and comments posted in these pages. The tracked sample of top global and local Facebook pages was selected based on recent engagement data retrieved from searches utilising the mpox public health social listening methodology. News pages have been prioritised, since these are particularly likely to attract public debates in comment threads.

The approach to writing insight and commentary consists of sorting content by engagement. Therefore, content which has been most shared is most likely to be referenced. Compared with following a methodology of sorting by highest reach, the methodology of sorting by highest engagement gives greater visibility to content from individual users.



# Appendix on WHO infodemic recommendations generation: Methodology for generation of insights and recommendation for infodemic management in three steps

This report is an intermediary analytical product that feeds into WHO's biweekly infodemic insights and recommendations generation related to the mpox outbreak.

The following slides describe the steps taken to arrive to the infodemic management recommendations, and where in the process this report fits in.

# Steps to generate biweekly infodemic recommendations on mpox

## STEP 1: Quantitative identification of potential topics of concern, questions, and information voids

### Tools /methods:

- Implemented and validated WHO mpox social listening taxonomy (see slide 37-40)
- NLP and AI for identification, aggregation of online content and categorization into 35 sub-topics using the

**Roles:** MG set up and validates the analytical pipeline and tools as per WHO-defined process and standards

**Output:** Summary dataset with annotations

## STEP 2: Weekly comparison, qualitative analysis and production of digital infodemic intelligence

### Tools /methods:

- Qualitative analysis by human analyst of weekly comparisons and changes
- Summary identification of velocity/virality of narrative themes and summary of questions

**Roles:** MG prepares report; WHO reviews for public health relevance and evidence

**Output:** **this report**, plus a whatsapp message summarizing the findings

## STEP 3: Integrated analysis and generation of recommendations to manage the infodemic

- Review of the MG report and identified themes
- Triangulation and comparison with other data sources freely available
- Assessment of themes by risk to public health based on risk matrix (see slides 35-36)
- **Roles:** WHO infodemic management team with external reviewers from WHO global IM community
- **Output:** top three themes of highest risk and accompanying recommendations for action



# Applied in step 1: Public health taxonomy for social listening on mpox conversations (updated on 23 August 2022)

**Objective :** Objective of the [taxonomy](#) is to monitor millions of conversations related to mpox on within thematic categories relevant to public health response. The subtopics are to capture breadth of conversations and help identify structure and changes in narratives. The taxonomy can be applied to online social media listening, as well as for offline social listening and can facilitate structured integrated analysis of the data to produce infodemic insights and recommendations.

**Background:** *What is the difference between social listening for marketing efforts and infodemic monitoring and intelligence gathering?* Social listening is often understood as an approach for monitoring online conversations on specific brands and topics, often used by marketing companies. Social listening is a limited label to use in infodemic management, since integrated analysis is best done with a diverse set of data sources across social, program, behavioral, media, and epidemiological domains. Infodemic monitoring and intelligence gathering consider as many relevant data sources as possible, recognizing they all individually have limitations and biases, but when analyzed in an integrated manner, can yield insights that data sources analyzed in isolation would not provide. Infodemic monitoring and insights generation encompasses systematic **analysis of different data sources**, generation of **intelligence**, turning the intelligence into infodemic **insights** and applying structured judgment and risk matrix approach to generate **recommendations** for action.

## Note to analyst:

- Compare the volume and themes of conversations and dynamics to overall net conversations vs COVID-19 conversations vs mpox-specific
- Compare velocity of conversations within mpox conversations over time
- Identify mpox specific themes of **questions, worries, concerns, information voids, circulating narrative and misinformation**, and crossover with COVID-19
- Focus not only on the content of conversations but also understanding people's reactions, confusion, questions, and conversations about issued health guidance.
- Pay attention to vulnerable populations and stigma, both on MSM, sex workers, inequities, as well as visual analysis of memes and images used associated with mpox in the media and social media.
- Refer to WHO-authored papers<sup>1,2</sup> for how to apply and validate its use.

Purnat TD, Vacca P, Czerniak C, Ball S, Burzo S, Zecchin T, Wright A, Bezbaruah S, Tanggol F, Dubé É, Labbé F. Infodemic signal detection during the COVID-19 pandemic: development of a methodology for identifying potential information voids in online conversations. JMIR infodemiology. 2021 Jul 28;1(1):e30971. <https://infodemiology.jmir.org/2021/1/e30971>

Purnat TD, Nguyen T, Ishizumi A, Yau B, White B, Cecchini S, Samuel R, Hess S, Bezbaruah S, Briand S. 2022. Delivering actionable infodemic insights and recommendations for the COVID-19 pandemic response. Weekly Epidemiological Record. 2022 Jul 8; 97 (27), 313 - 324. <https://apps.who.int/iris/handle/10665/359144>



# Applied in step 3: Risk Matrix for infodemic harm in relation to mpox outbreak- summary

The risk matrix is an important tool that helps infodemic analysts systematically translate infodemic insights into actionable recommendations.<sup>1</sup> As shown on the following slide, the overall structure of the risk matrix used in the mpox infodemic insights reporting is based on the risk matrix that was applied previously to COVID-19. However, the matrix reflects the following disease-specific considerations:

1. **Stigma** – one important feature of mpox is the potential for stigmatizing language and imagery about vulnerable population groups. Social listening may pick up more conversations *about* them, rather than *by* them.
2. **Stratifying voices and audiences** – what are conversations being had *by* vulnerable groups? And how might those conversations be dominated in the analytical datasets by other louder groups?
3. **At-risk population, population of focus** – the degree of harm to public health would be guided by the vulnerability of the population of focus, even if this population is a small one and therefore the volume of conversation is relatively small to the whole dataset.
4. **Context/region** – analytical approach and risk of harm of a narrative must take into account context and spread of narratives across geographies that may socially or legally address and treat LGBTQI+ and MSM populations differently.
5. **Evolving science** – there is evolving science about mpox and how it presents itself in new populations. For example, vulnerable populations other than MSM, have been identified as being underdiagnosed, which may lead to disproportioned harm of narratives (e.g. women and non-binary people).

**The risk matrix will be updated as the epidemiological and scientific situation around mpox evolves.**

1. Purnat TD, Nguyen T, Ishizumi A, Yau B, White B, Cecchini S, Samuel R, Hess S, Bezbaruaha S, Briand S. [Delivering actionable infodemic insights and recommendations for the COVID-19 pandemic response](#). Geneva: WHO 2022.



# RISK MATRIX TO DERIVE INFODEMIC-RELATED RECOMMENDATIONS FOR MPOX

Each key finding is classified by level of risk to public health. A risk matrix assesses potential for impact on seeking and uptake of PHSM, vaccines treatments and diagnostics, underrepresentation of vulnerable groups in data, stigmatisation\* of, and the experience of stigma in vulnerable populations, as well as narrative reach and dissemination. The risk level is indicated by colour.

- **High risk narrative** may lead to increased stigmatisation of vulnerable groups, reduced preventative behaviors and healthcare-seeking of recommended treatments and diagnostics. The narrative either has wide reach and is jumping geographies or platforms, or is pervasive particularly among at-risk and vulnerable populations (red colour).
- **Moderate risk narrative** may lead to stigmatisation of vulnerable groups, reduced preventative behaviors and healthcare-seeking of recommended treatments and diagnostics. It has moderate reach, may be crossing communities, platforms and formats, and has therefore has moderate dissemination (orange colour).
- **Low risk** narrative themes are a concern but pose a low risk to reinforcing stigmatisation, uptake of recommended health behaviour and guidance. They have limited reach and dissemination, only circulating in small groups and communities, and on one platform (yellow colour).
- **Positive sentiment** reflects thematic narratives that could decrease stigmatisation, increase uptake of health guidance and healthy behaviour. It may have variable reach and dissemination (green colour).

|                                                                |                                                                                                                                                                                                      | Reach, dissemination, at-risk population, population of focus                                                               |                                                                                         |                                      |
|----------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------|--------------------------------------|
|                                                                |                                                                                                                                                                                                      | Wide reach, high dissemination, particularly among at-risk and vulnerable populations (e.g., MSM, women, non-binary people) | Moderate reach and dissemination, may be skipping communities, platforms or geographies | Limited reach, limited dissemination |
| Impact on uptake of PHSM, vaccines, treatments and diagnostics | May lead to increased stigmatisation and silencing of vulnerable groups, refusal of recommended treatments and diagnostics, reduced healthcare-seeking, or lower adherence to recommended behaviours | High risk                                                                                                                   | High risk                                                                               | Moderate risk                        |
|                                                                | Potential to trigger stigmatisation, reduced healthcare-seeking, hesitancy to public health and social measures, vaccination, or pharmaceutical interventions                                        | Moderate risk                                                                                                               | Moderate risk                                                                           | Low risk                             |
|                                                                | Concerning, but low risk to uptake of recommended health behaviours and health guidance                                                                                                              | Low risk                                                                                                                    | Low risk                                                                                | Low risk                             |
|                                                                | Could increase uptake of health guidance, intent, and enactment of health behaviours.                                                                                                                | Positives sentiment                                                                                                         | Positive sentiment                                                                      | Positive sentiment                   |

\*Cultural contexts and legal barriers in some countries may contribute to reduced healthcare-seeking behaviour, and even the experience of stigmatisation in health service access and delivery.



# CONTACT

Marble Global

[who@marbleglobal.com](mailto:who@marbleglobal.com)





**From:** PEREIRA IBRAHIM, Alhassan  
**Sent:** Mon, 20 Mar 2023 09:10:18 +0000  
**To:** infodemicmanagement  
**Subject:** Mpox Infodemic Insights Report (28 February- 13 March 2023)  
**Attachments:** MG\_Mpox\_Infodemic\_Digital\_Insights\_Report\_10\_shared.pdf

Dear all,

We're glad to share with you the latest infodemic insights report on mpox, covering the period of 14 - 27 February 2023.

This biweekly reporting was stood up to support the Health Ops pillar of the WHO HQ Mpox IMST. This report is an intermediate analytical product feeding into generation of infodemic recommendations that will be shared with the OPS pillar separately. The methods used to generate this report, as well as the follow up risk assessment and infodemic insights recommendations generation are summarized at the end of this report, including references to the WHO public health social listening taxonomy for mpox and the risk matrix used to derive recommendations (as detailed in slides 33-37).

#### 🔍 KEY FINDINGS FOR THE PAST TWO WEEKS

##### 📌 THE TREATMENT – EMERGING RESEARCH AND INVESTIGATIONS OF TREATMENTS FOR MPOX SYMPTOMS

Social media users discussed reported new research on treatments for mpox. Media outlets reported that a hospital in Spain developed a topical treatment for skin lesions and mucous membrane disorders for people with mild mpox symptoms. In another conversation, a clinical trial was announced that aims to evaluate the effectiveness of tecovirimat as an antiviral treatment for human mpox infection. Furthering conversation on tecovirimat, a cohort of users shared a report that allegedly investigated a death from mpox, with some users attributing the death to resistance to the antiviral tecovirimat (Narratives observed in Spain, USA, Mexico and Colombia).

##### 📌 THE INFORMATION - MISTRUST OF THE GOVERNMENTS IN MEXICO AND COLOMBIA

A prominent conversation highlighted perceived mistrust of the governments of Mexico and Colombia due to their responses to mpox, emphasising the high number of cases of mpox in the countries. Several users criticised politicians, health ministries and the governments of Mexico and Colombia for neglecting to secure mpox vaccines. In Mexico, some users attributed the lack of vaccines to homophobia and claimed people in Mexico also do not have access to antiviral mpox treatments. In Colombia, some users alleged that the government failed to fulfil a promise to deliver vaccines by February 2023 and employed the failure to secure mpox vaccines as evidence of proposed health reforms being inadequate in Colombia (Narratives observed in Mexico, Colombia and Spanish-language).

##### 📌 THE TREATMENT – POLARISED DISCUSSIONS OF MPOX VACCINES

Discussion of mpox vaccines was polarised, with some users emphasising the need to get vaccinated against mpox and others expressing anti-vaccination sentiment. Medical professionals and public health authorities encouraged people to receive mpox vaccines to enhance protection and reduce the number of mpox cases. Some users requested information and guidance on receiving mpox vaccines after recovering from mpox infection. On the other hand, several users claimed that a global health authority reported that people who received mpox vaccines are part of

a clinical trial, causing users to also claim that both COVID-19 and mpox vaccines were experimental (Narratives observed in USA, France, Colombia and French-language).

Full report is attached and can be shared with partners. You will find an archive of reports: [here](#)

Wishing you all a great week.

Kind regards,

**Alhassan Ibrahim**

Consultant | Infodemic Management Team

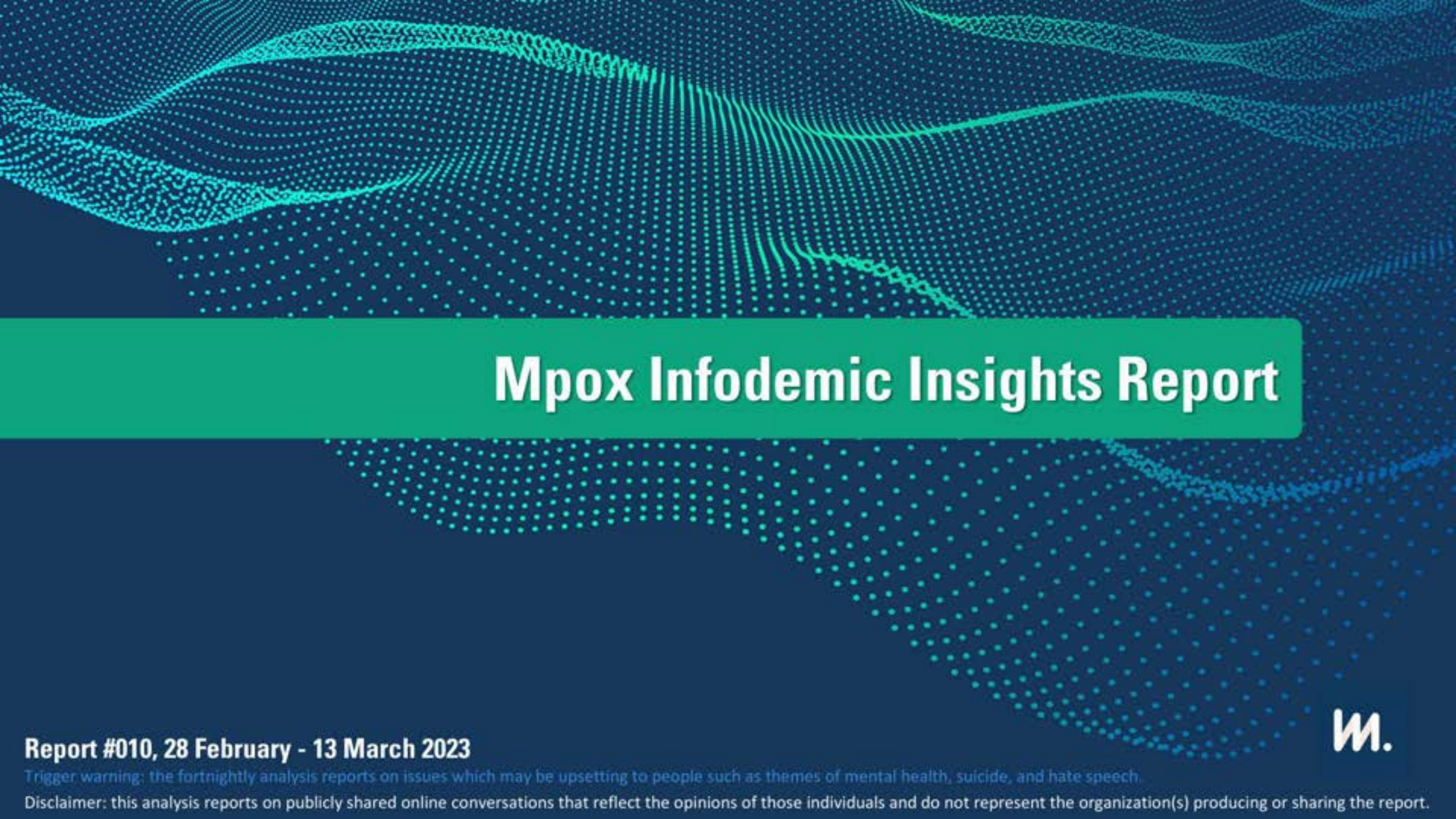
High Impact Events Preparedness

Epidemic and Pandemic Preparedness and Prevention (EPP)

Preparedness Division, WHO Emergency Programme (WPE/WHE)

World Health Organization





# Mpox Infodemic Insights Report

**Report #010, 28 February - 13 March 2023**

Trigger warning: the fortnightly analysis reports on issues which may be upsetting to people such as themes of mental health, suicide, and hate speech.

Disclaimer: this analysis reports on publicly shared online conversations that reflect the opinions of those individuals and do not represent the organization(s) producing or sharing the report.





# KEY FINDINGS

**This report is an analytical product produced in step 2 out of 3 in production of WHO recommendations to manage the infodemic related to mpox outbreak. See appendix for details.**

# MPOX INFODEMIC INSIGHTS: Key findings

28 February - 13 March 2023

## THE TREATMENT – EMERGING RESEARCH AND INVESTIGATIONS OF TREATMENTS FOR MPOX SYMPTOMS

Social media users discussed reported new research on treatments for mpox. Media outlets reported that a hospital in Spain developed a topical treatment for skin lesions and mucous membrane disorders for people with mild mpox symptoms. In another conversation, a clinical trial was announced that aims to evaluate the effectiveness of tecovirimat as an antiviral treatment for human mpox infection. Furthering conversation on tecovirimat, a cohort of users shared a report that allegedly investigated a death from mpox, with some users attributing the death to resistance to the antiviral tecovirimat (Narratives observed in Spain, USA, Mexico and Colombia).

## THE INFORMATION - MISTRUST OF THE GOVERNMENTS IN MEXICO AND COLOMBIA

A prominent conversation highlighted perceived mistrust of the governments of Mexico and Colombia due to their responses to mpox, emphasising the high number of cases of mpox in the countries. Several users criticised politicians, health ministries and the governments of Mexico and Colombia for neglecting to secure mpox vaccines. In Mexico, some users attributed the lack of vaccines to homophobia and claimed people in Mexico also do not have access to antiviral mpox treatments. In Colombia, some users alleged that the government failed to fulfil a promise to deliver vaccines by February 2023 and employed the failure to secure mpox vaccines as evidence of proposed health reforms being inadequate in Colombia (Narratives observed in Mexico, Colombia and Spanish-language).

## THE TREATMENT – POLARISED DISCUSSIONS OF MPOX VACCINES

Discussion of mpox vaccines was polarised, with some users emphasising the need to get vaccinated against mpox and others expressing anti-vaccination sentiment. Medical professionals and public health authorities encouraged people to receive mpox vaccines to enhance protection and reduce the number of mpox cases. Some users requested information and guidance on receiving mpox vaccines after recovering from mpox infection. On the other hand, several users claimed that a global health authority reported that people who received mpox vaccines are part of a clinical trial, causing users to also claim that both COVID-19 and mpox vaccines were experimental (Narratives observed in USA, France, Colombia and French-language).

### KEY FINDING CLASSIFICATION

Key findings are assigned a rating based on the potential risk to public health and the likelihood of impacting beliefs and attitudes via a reach/dissemination/at-risk population/population of focus matrix. Risk levels are depicted by colour:

- **Red** – high risk
- **Orange** - moderate risk
- **Yellow** - low risk
- **Green** – positive sentiment

Narratives are also classified as:  
**Emerging:** A new narrative not previously identified, may require further analysis or development of new information materials.

**Persistent:** A narrative that continuously drives online conversations without any significant changes in volume or velocity.

**Re-emerging:** A previously identified narrative that resurfaces after being absent (or low in volume) for multiple weeks.



# OPPORTUNITIES FOR ACTION: FILLING INFORMATION VOIDS

## EMERGING ISSUES

1. **THE ILLNESS** - Be aware of allegations that mpox was a lie spread by the president of the USA.
2. **THE ILLNESS** - Note claims that mpox deaths resulted from “poor HIV suppression”.
3. **THE INFORMATION** - Some users claimed that targeting information about and responses to mpox to the MSM community is a form of protection rather than discrimination.
4. **THE INFORMATION** - Be aware of some users sharing a new report reportedly indicating there has been a case of mpox reinfection and claiming there is a lack of guidance on mpox vaccines after infection.
5. **THE INFORMATION** - Note allegations that western media has promoted racism by allegedly primarily employing images of people from Africa in connection to mpox outbreaks.
6. **THE TREATMENT** - Be aware of a reported new medication discovered at a hospital in Spain to address skin lesions for people with mild mpox symptoms.
7. **THE TREATMENT** - Note reports of a new clinical trial purportedly to evaluate the effectiveness of tecovirimat as an mpox treatment for humans.
8. **THE TREATMENT** - Be aware of allegations that a death linked to mpox was the result of “resistance to tecovirimat”.
9. **THE TREATMENT** - Be aware of claims that people who have been infected with mpox and treated with tecovirimat should get vaccinated after recovery.
10. **THE TREATMENT** - Note allegations of a lack of antivirals in Mexico.



# OPPORTUNITIES FOR ACTION: FILLING INFORMATION VOIDS

## PERSISTENT ISSUES

1. **THE ILLNESS** - Note that users continued to question why there is less discussion of mpox.
2. **THE ILLNESS** - Note claims that discussion of mpox decreased because of the perception that it is primarily spread by sex between MSM.
3. **THE TREATMENT** - Be aware of a cohort of users continuing to question why the government of Mexico has not secured mpox vaccines and asking where mpox vaccines are in Colombia.
4. **THE TREATMENT** - Note continued frustration expressed towards the governments of Mexico and Colombia for not making mpox vaccines available.
5. **THE TREATMENT** - Some users continued to claim that the lack of vaccines in Mexico is a result of homophobia.
6. **THE TREATMENT** - Be aware of claims that the government of Colombia failed to fulfil its alleged promise of delivering mpox vaccines.

# OPPORTUNITIES FOR ACTION: FILLING INFORMATION VOIDS

## RE-EMERGING ISSUES

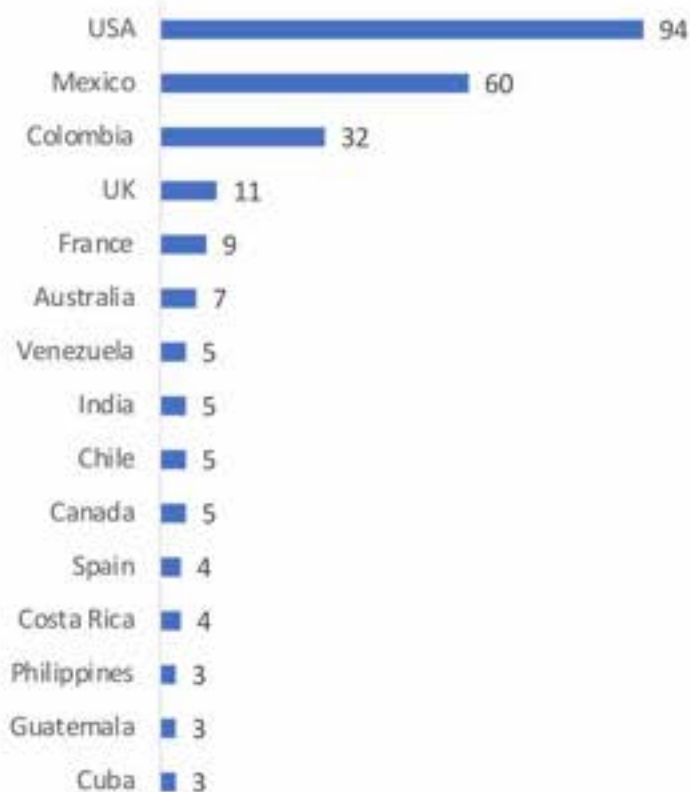
1. **THE ILLNESS** - Note criticism of the decision by a global public health authority to declare mpox an international health emergency.
2. **THE ILLNESS** - Be aware of claims that a global public health authority lied about mpox and questioned why people would accept its guidance.
3. **THE ILLNESS** - Note some users questioned why the virus was renamed mpox.
4. **THE INTERVENTIONS** - Note allegations that the response to mpox in Latin America was delayed because of fear of stigmatisation.
5. **THE TREATMENT** - Some users asked if it is advisable to receive the mpox vaccine on the same day as receiving a flu shot.
6. **THE TREATMENT** - Note that some users questioned why the government of Colombia would need to provide mpox vaccines when mpox allegedly has a low mortality rate.
7. **THE TREATMENT** - Note claims that stigma prevents people from seeking treatment for mpox.
8. **THE TREATMENT** - Be aware of claims that a global public health authority indicated that the people who received mpox vaccines are part of a “clinical trial”.



# Top Questions

28 February - 13 March 2023

## Volume of questions on mpox by country



## MPOX LATEST INFORMATION

[A public health authority] has declared a global emergency for mpox. What happened to that? ([Twitter](#), French-language) – 97 engagements

Why does it seem like no one is talking about mpox anymore? ([Twitter](#), USA) – 28 engagements

## VACCINES

Why has the Mexican government not bought vaccines for mpox? ([Twitter](#), Mexico) – 188 engagements

Where are the vaccines in Mexico? ([Twitter](#), Mexico) – 83 engagements

Where are the mpox vaccines in Colombia? ([Twitter](#), Spanish-language) – 33 engagements

Have the mpox vaccines arrived to Colombia yet? ([Twitter](#), Colombia) – 5 engagements

Can I take the flu shot on the same day as I take my mpox shot or should I keep a few days gap? ([Twitter](#), English-language) – 3 engagements



# FORTNIGHTLY OVERVIEW

## MOST POPULAR TOPICS (BY VOLUME)

- **#1 VACCINE** (GLOBAL, EXCL. UK/USA, ES, FR), **SPREAD (COMMUNITY CONTEXTS)** (EN)
- **#2 SPREAD (COMMUNITY CONTEXTS)** (GLOBAL, EXCL. UK/USA, ES), **VACCINE** (EN), **STATISTICS & DATA** (FR)

## RISING TOPICS (BY VELOCITY)

- **#1 MEANS OF TRANSMISSION (CONTAMINATED MATERIALS)** (GLOBAL, EXCL. UK/USA), **RISK (HEALTH-CARE WORKERS)** (EN), **SUPPORTIVE CARE AND HEALTHCARE** (ES), **RESEARCH & DEVELOPMENT** (FR)
- **#2 RESEARCH & DEVELOPMENT** (GLOBAL, EXCL. UK/USA), **SYMPTOMS (OTHER)** (EN), **MEANS OF TRANSMISSION (CONTAMINATED MATERIALS)** (ES), **TRUST IN AUTHORITY** (FR)

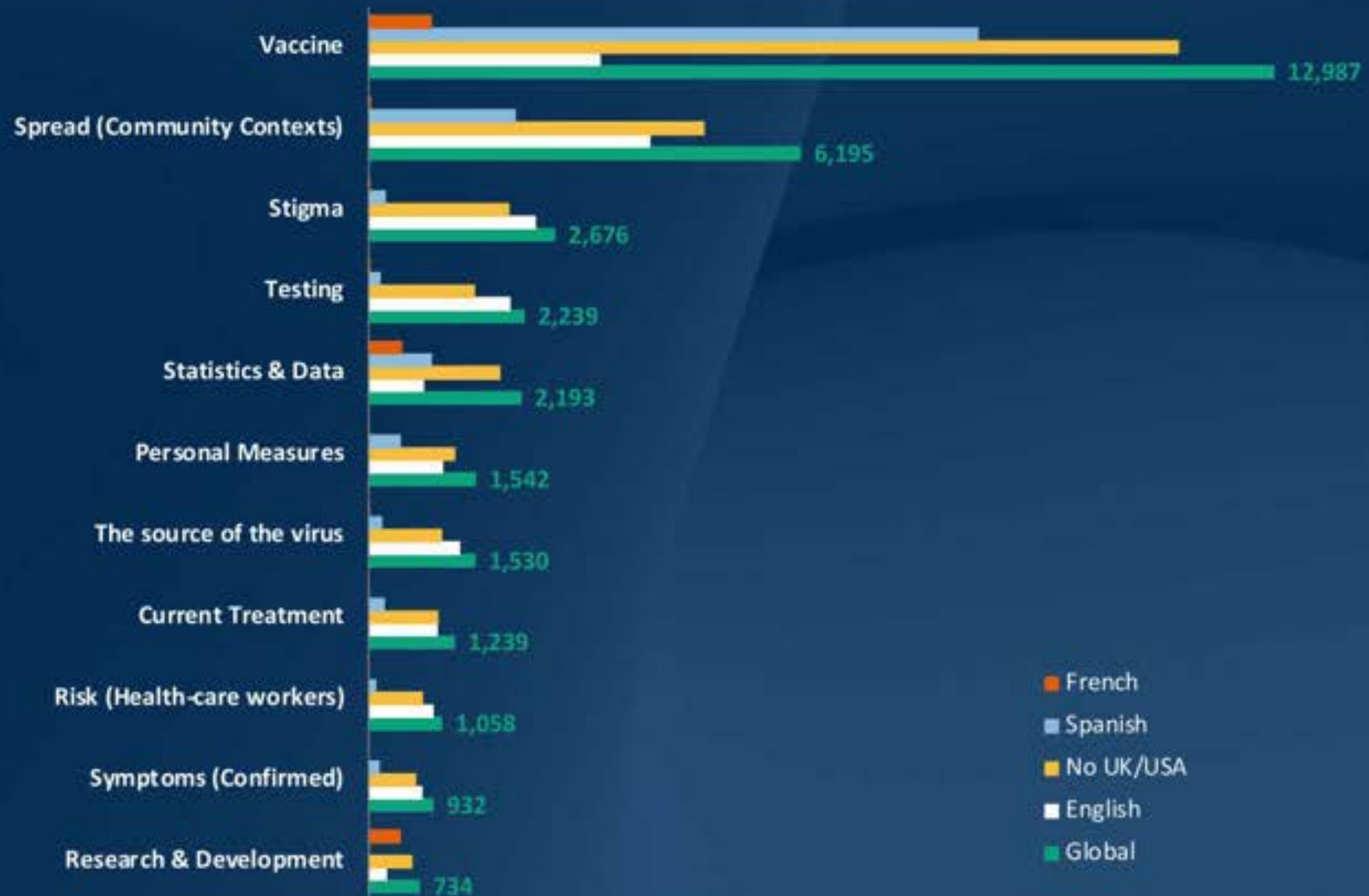
## SPOTLIGHT ON: CONVERSATIONS FROM SOUTH AMERICA & AFRICA

- Both Africa and South America saw prejudicial behaviour towards the LGBTQI+ community regarding mpox, although these trends took different forms. South American anti-LGBTQI+ prejudice revolved around the lack of vaccine provision, with users suggesting that this vaccine deficiency was as a result of homophobia. African anti-LGBTQI+ prejudice surrounded narratives rather than policy, with discussion around mpox narratives being homophobic and perpetuating stigma against the LGBTQI+ community.
- South American conversations covered concerns over handling mpox outbreaks in Colombia, the prevalence of mpox in Mexico, the LGBTQI+ community and mpox in Mexico, and HIV & mpox in Mexico. Across these different subjects and countries, a repeating theme was each country's ongoing lack of mpox vaccines.
- Countries in Africa are tackling mpox as part of a broader strategy to mitigate or treat outbreaks of multiple preventable diseases, of which mpox is one, rather than having mpox as a single public health focal point.

# SOCIAL LISTENING DATA



# Top topics by volume

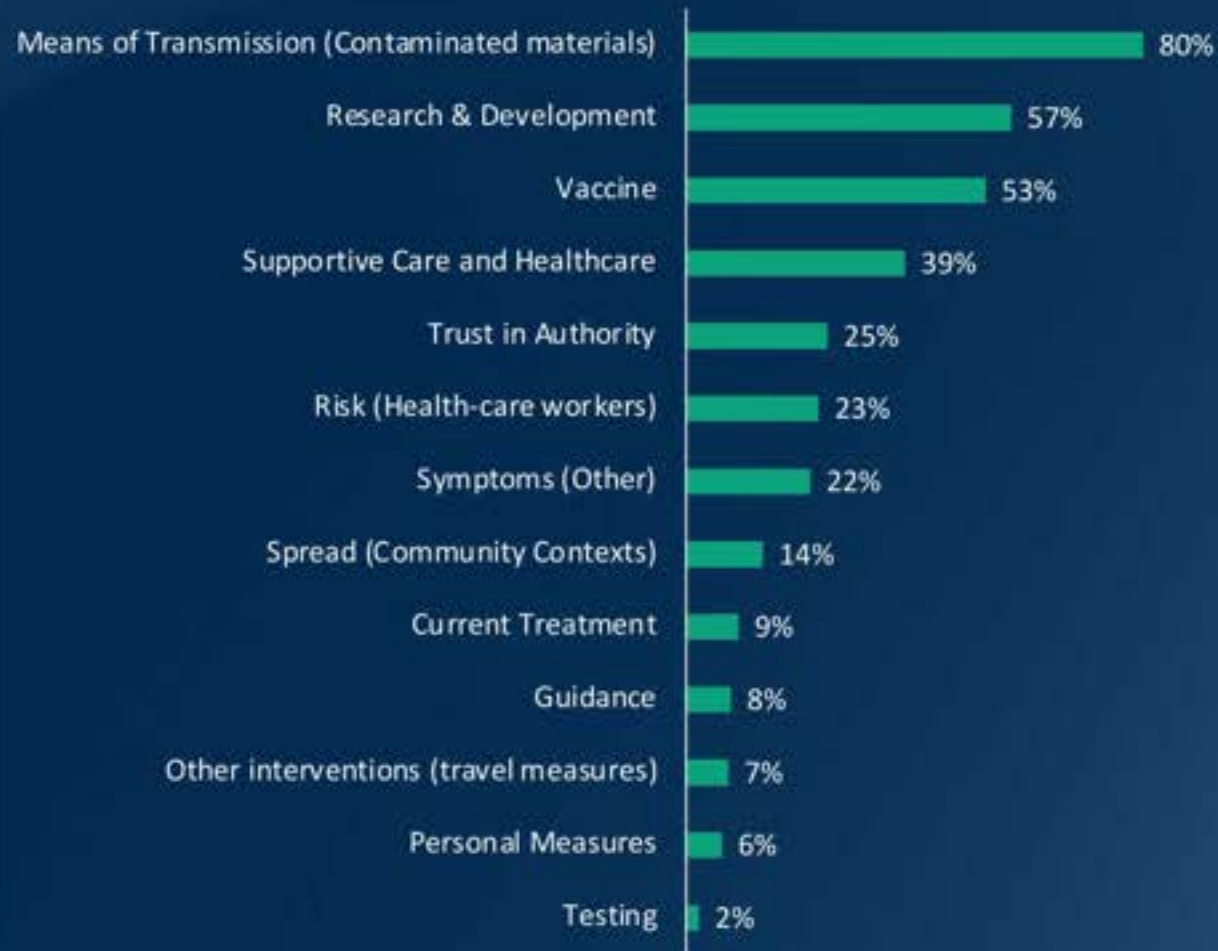




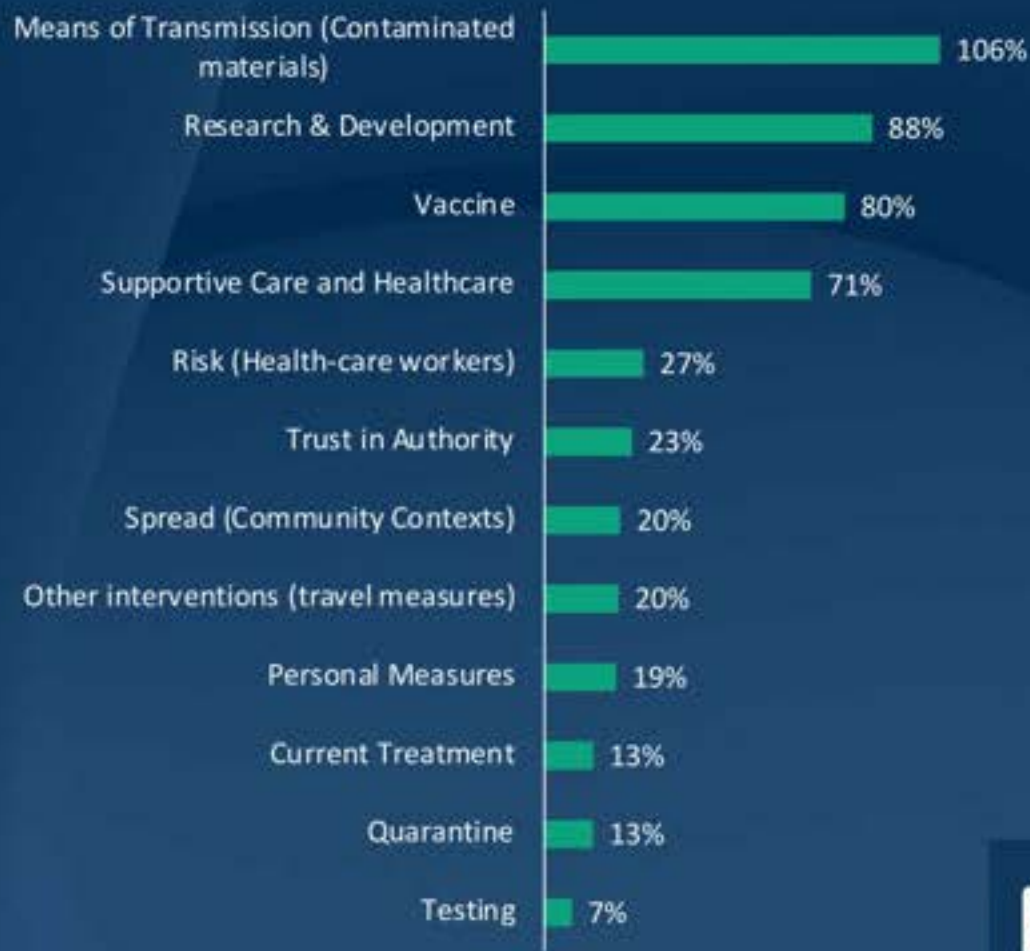
# Top rising topics (**velocity**)

## MPOX INFODEMIC INSIGHTS

### GLOBAL



### EXCL. UK/USA

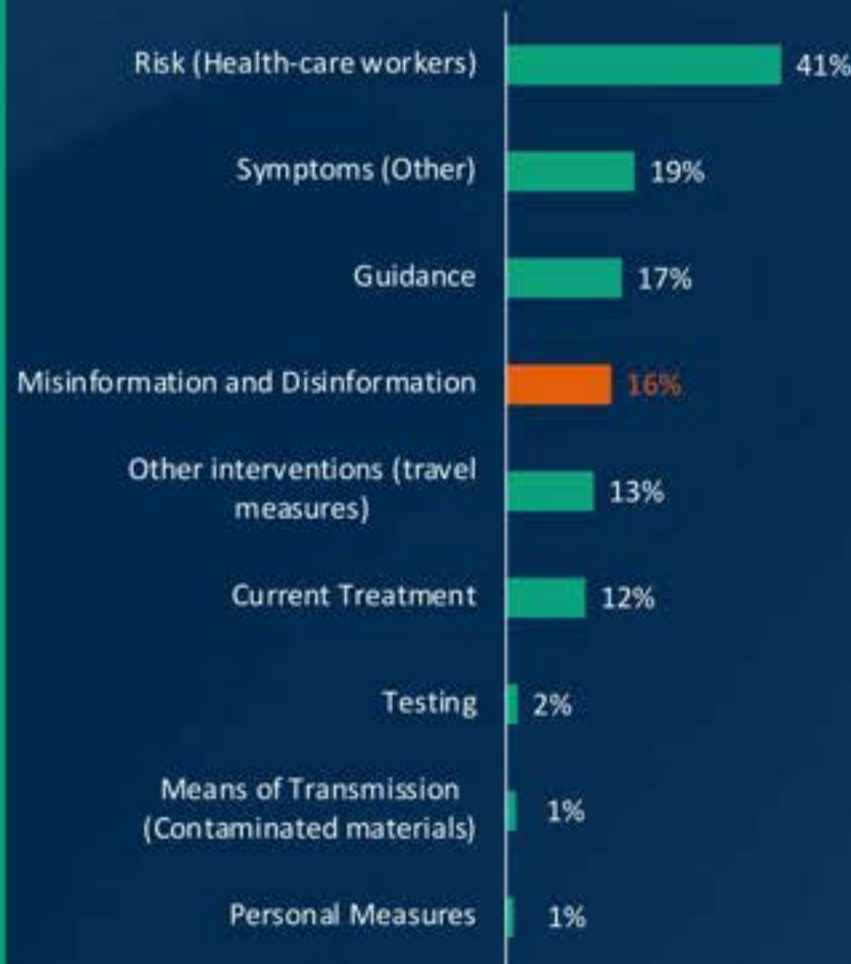


■ Topic increased in more than one data set ■ Unique pattern - topic rose in only one data set

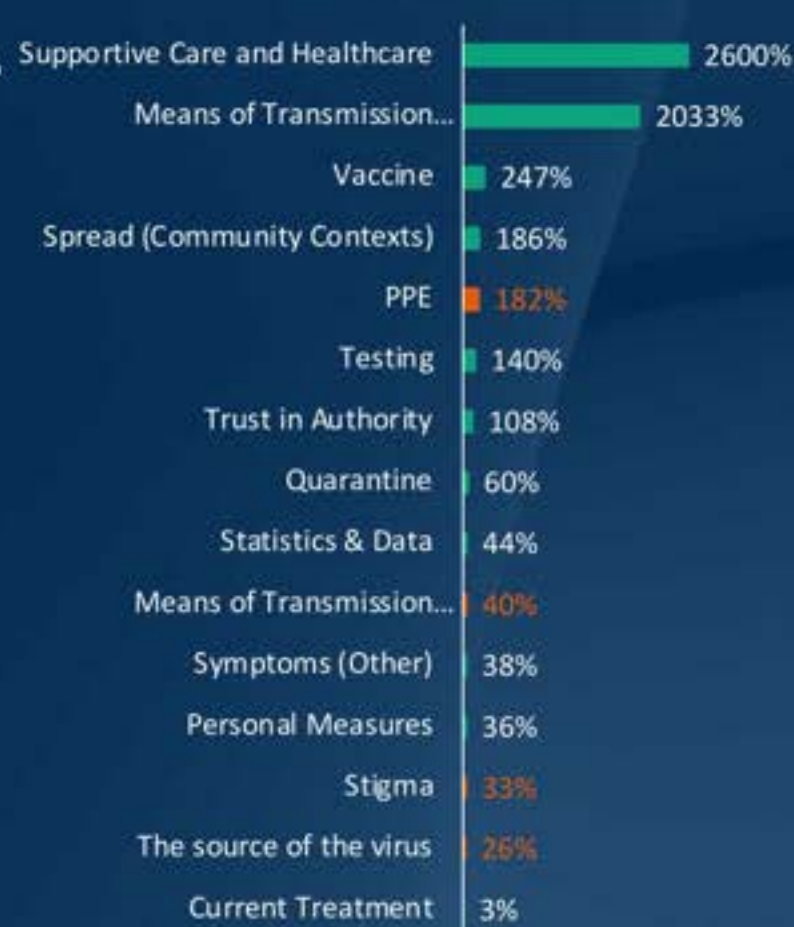
# Top rising topics (**velocity**)

## MPOX INFODEMIC INSIGHTS

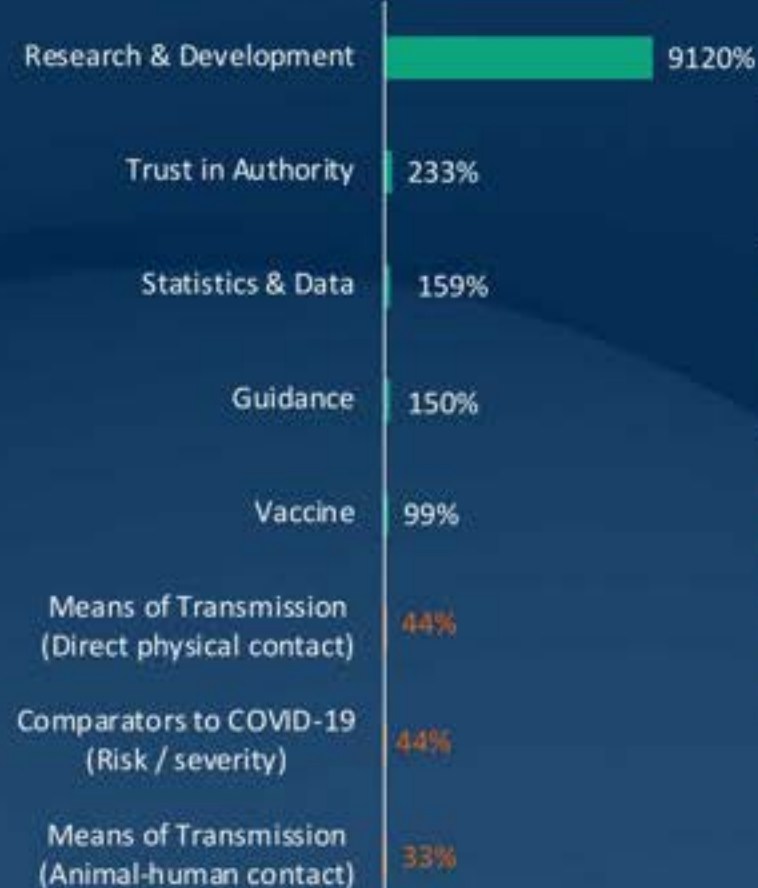
### EN ONLY



### ES ONLY



### FR ONLY



Report #010, 28 February - 13 March 2023

■ Topic increased in more than one data set ■ Unique pattern - topic rose in only one data set





# Mpox mentions overtime

## MPOX INFODEMIC INSIGHTS

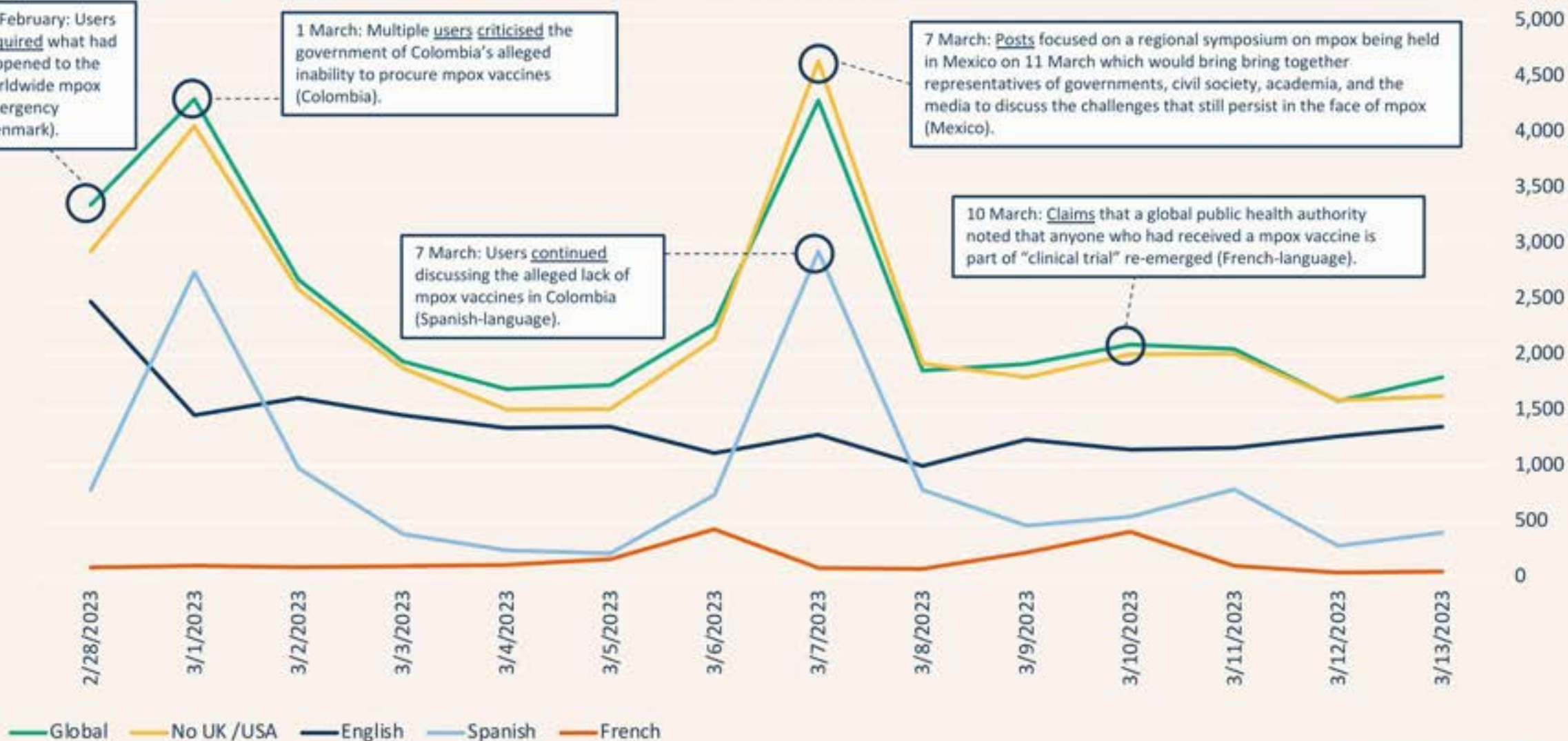
28 February: Users enquired what had happened to the worldwide mpox emergency (Denmark).

1 March: Multiple users criticised the government of Colombia's alleged inability to procure mpox vaccines (Colombia).

7 March: Users continued discussing the alleged lack of mpox vaccines in Colombia (Spanish-language).

7 March: Posts focused on a regional symposium on mpox being held in Mexico on 11 March which would bring together representatives of governments, civil society, academia, and the media to discuss the challenges that still persist in the face of mpox (Mexico).

10 March: Claims that a global public health authority noted that anyone who had received a mpox vaccine is part of "clinical trial" re-emerged (French-language).



Marble.



# Global data excluding the UK and the USA

## MPOX INFODEMIC INSIGHTS

The global dataset excluding the UK and the USA featured 12 rising topics during this reporting period, whereas the global dataset featured 13. The non-UK/USA dataset featured no unique rising topics over the reporting period.

### Personal Measures

The topic of **Personal Measures** (+19%) ranked ninth in the non-UK/USA dataset, with conversation being primarily driven by users based in El Salvador (6%).

- A user based in Spain strongly voiced that they would **not be following personal measures against COVID-19, flu, or mpox advocated by their government** due to mistrust in the public authority (695 engagements).
- In a separate conversation, a news organisation based in El Salvador shared that the country's health ministry has asked people to **wear masks when in close proximity to people who are sick with mpox** to prevent contagion (26 engagements).
- Meanwhile, a user geolocated in Costa Rica replied to a post about the country's alleged first mpox death to argue that **people should take prophylactic measures and "take care" in their sexual relations** (16 engagements).

### Quarantine

The topic of **Quarantine** (+13%) ranked 11<sup>th</sup> in the non-UK/USA dataset, with conversation being primarily driven by users based in El Salvador (20%).

- El Salvador's health ministry shared a post asking people **isolating for mpox to ensure they are in a well ventilated space** (163 engagements).



# Global data: English and French conversation

MPOX INFODEMIC INSIGHTS

The English-language dataset featured 9 rising topics during this reporting period with one unique topics: **Misinformation and Disinformation (+16%)**. The French-language dataset contained 8 rising topics with three unique rising topics during this reporting period: **Means of transmission (direct physical contact) (+44%)**, **Comparators to COVID-19 (+44%)**, **Means of transmission (animal-human contact) (+33%)**.

## Misinformation and Disinformation (English-language)

The topic of **Misinformation and Disinformation (+16%)** was a unique topic in the English dataset, ranking fourth with conversation being primarily driven by users also based in the USA (26%).

- A user based in the USA asked “what happened to mpox?”, labelling it a lie and accusing the president of the USA of being unable to “keep up with all the crimes and lies anymore” (99 engagements). Another post containing homophobic sentiment suggested that mpox became less of a focal point for the media because it was found to largely be spread by sex between men (14 engagements).
- A journalist based in the UK complained about people who had built online followings based on sharing misinformation about COVID-19 now spreading “nonsense claims” about mpox (58 engagements).

## Research & Development (French-language)

The topic of **Research & Development (+9120%)** ranked second in the French dataset, with conversation being primarily driven by users also based in France (17%).

- Multiple tweets were posted alleging that a global public health authority has revealed that all **recipients of the mpox vaccine are part of a clinical trial** (558 engagements). Many of these implied this may also be the case for COVID-19 vaccines.





# Global data: Spanish conversation

The Spanish-language data set featured 15 rising topics over the reporting period, of which there were four unique rising topics, namely: **PPE (+182%)**, **Means of Transmission (Mother-fetus) (40%)**, **Stigma (+33%)**, and **The Source of the Virus (+26%)**.

## Stigma

- **Stigma (+33%)** ranked 13<sup>th</sup> in the Spanish-language dataset, with content driven primarily from users geolocated in Mexico (35%), **Chile (16%)**, **Argentina (29%)** and **Spain (4%)**.
- An epidemiologist noted that in Latin America the response to mpox has reportedly been slow and late, partially **due to fear of stigmatisation**. The author of the post also stated that carrying out focused actions and information to the MSM community, who have purportedly been most affected by mpox, is a form of protection, and not discrimination.

## Testing

- The topic of **Testing (+140%)** ranked sixth in the Spanish-language dataset, with content mainly driven by users geolocated in **Mexico (18%)**, **Spain (9%)** and **Colombia (3%)**.
- In light of an increasing evidence of a link between untreated HIV/AIDS and severe mpox symptoms, users amplified a post from a global public health authority which noted **the importance of ensuring testing**, prevention, and treatment reaches those who have HIV/AIDS and mpox (282 engagements).



# RISING TOPICS

# Statistics & Data (French-language) +159%

Top locations for social media conversation on "Statistics & Data": 28 February – 13 March 2023



Top keywords & phrases in social media conversation on "Statistics & Data": 28 February – 13 March 2023



\*excluding keywords such as "monkeypox", "mpox virus" and "mpox"

The topic of **Statistics & Data** generated **2.25K mentions**, with content in the French language increasing by **159%** from the previous fortnight.

**STATISTICS COMPARING MPOX DEATHS AND STARVATION DEATHS USED TO CRITICISE GLOBAL PUBLIC HEALTH AUTHORITY (SPAIN)**

- The vast difference between the deaths caused by mpox and those caused by starvation worldwide was highlighted by an individual criticising the decision of a global public health authority to declare mpox an international health emergency (1.5K engagements). The majority of replies derived from users who oppose the international organisation and the sanitary measures. They alleged that the organisation's decisions were an authoritarian attempt to control the population, advertised commercial ploys to sell vaccines, and had plans to start a new global pandemic.

**CLAIMS THAT 100 PEOPLE HAVE DIED OF MPOX AROUND THE WORLD SINCE THE START OF THE INTERNATIONAL HEALTH EMERGENCY (USA)**

- A journalist compiled data purportedly from a global public health authority to tally up in a chart the number of deaths attributed to mpox by country, totaling 100 mpox deaths and with the USA recording 34 mpox deaths since the start of the health emergency. Another journalist commented on the figures to highlight that **the deaths were allegedly caused by "poor HIV suppression"**.

**VACCINATION ENCOURAGED AS MPOX CASES CONTINUE FALLING IN ORDER TO PREVENT FUTURE OUTBREAKS (USA)**

- A medical professional in the USA quoted the latest figures published by the national public health authorities to show **there is currently a single average case of mpox detected per day**. The self-titled doctor shared the 7-day daily average of mpox infections to **promote the adoption of vaccination in order to prevent the potential of future outbreaks and clusters**.

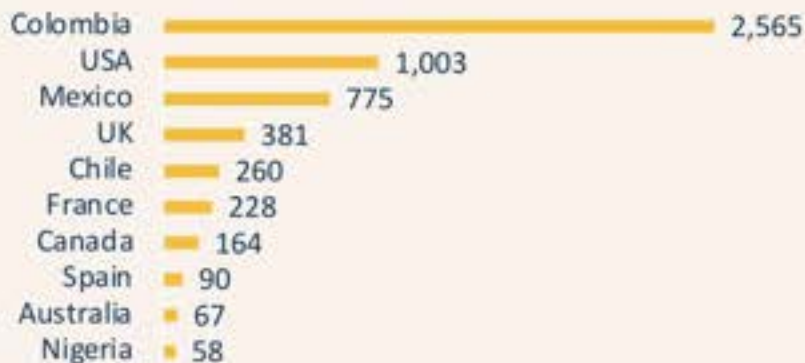
**NEW CASES OF MPOX CASES ANNOUNCED WORLDWIDE (MEXICO, PANAMA, TAIWAN (SAR CHINA))**

- Several news organisations and journalists around the world shared the latest figures on mpox, with the 50 cases detected in Mexico over the past two weeks bringing the **country's tally to 3,928 confirmed cases**. In Taiwan (SAR China), a journalist cited the 2 new cases detected to **theories about a potential large-scale outbreak**, while the 7 new cases confirmed in Panama brought that country's total to 167 confirmed cases.



# Vaccines +53%

## Top locations for social media conversation on "Vaccines": 28 February – 13 March 2023



## Top keywords & phrases in social media conversation on "Vaccines": 28 February – 13 March 2023



Discussion around **Vaccines** generated **12.9K mentions** during this reporting period, increasing by 53% from the previous fortnight.

### DISCUSSION OF GOVERNMENT FAILURE TO SECURE MPOX VACCINES IN COLOMBIA (USA, COLOMBIA, SPANISH-LANGUAGE)

- A strong sentiment of anger towards the government (304 engagements) of Colombia was detected during this reporting period, due to the lack of mpox vaccines in the country (659 engagements). Several users expressed frustration with the "[government's] inability to respond to an emergency" and criticised the government's alleged failure to procure vaccines on time (183 engagements). Similarly, another user argued that the government had broken their commitment to deliver mpox vaccines by February 2023, and further criticised government ministers (2.1K engagements). In response, some users expressed a lack of faith in the government procuring mpox vaccines, however, some appeared to show anti-vaccine sentiment, with two users labelling vaccines as "poison".

### CONVERSATION ON RESEARCH ABOUT THE NEED FOR MPOX VACCINES IN MEXICO (MEXICO, SPANISH-LANGUAGE)

- Conversation on social media was sparked after a medical journal published an article concerning the need for mpox vaccines in Mexico. A user, who was purportedly one of the authors, shared the article on social media (429 engagements) and received much support in response. Further, another user, who was also suggested to be one of the authors, shared the article and urged that the country is without vaccines, antivirals and options (165 engagements).

### ANTI-MPOX VACCINE SENTIMENT (USA, CANADA, ENGLISH-LANGUAGE, SPANISH-LANGUAGE, FRENCH-LANGUAGE)

- A user expressed anti-vaccine rhetoric (195 engagements) in response to a global public health authority promoting users to get vaccinated against mpox, or to get tested if they have symptoms of mpox. In the comments, several others also rejected the advice to get tested and vaccinated.
- Moreover, another user warned people who have taken the mpox vaccine and claimed that a global public health authority allegedly admitted that the mpox vaccines were part of a clinical trial (558 engagements).

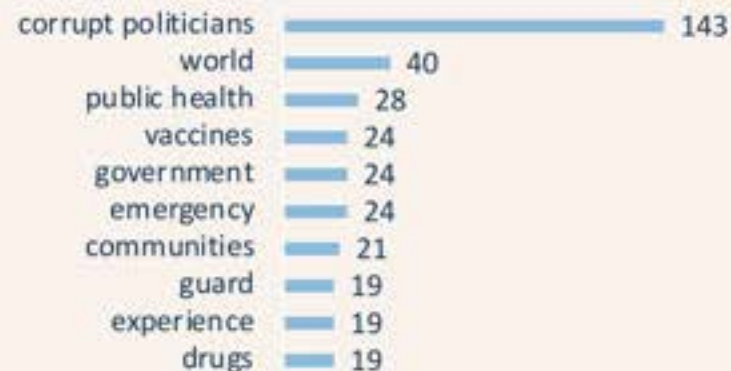


# Trust in Authority +25%

Top locations for social media conversation on "Trust in Authority": 28 February – 13 March 2023



Top keywords & phrases in social media conversation on "Trust in Authority": 28 February – 13 March 2023



The discussion around **Trust in Authority** generated 396 mentions, increasing by 25% from the previous reporting period.

## LACK OF MPOX VACCINES IN COLOMBIA HIGHLIGHTED TO UNDERMINE THE CREDIBILITY OF THE GOVERNMENT'S HEALTH REFORMS (COLOMBIA)

- The announcement of new plans to reform the public health service in Colombia drew criticism by individuals that pointed at the government's allegedly poor record on procuring mpox vaccines. A journalist sought to set aside criticism of the health reforms themselves but **questioned the absence of mpox vaccines** and further COVID-19 vaccines as a way to criticise the initiative. The opposition party took a more critical position of the health ministry, **questioning** the quality of the potential reforms due to an alleged **inability of the government to secure any mpox vaccines**. A user held similar beliefs and **cited** the absence of mpox vaccines as a reason to deem the reforms as unacceptable.

## HEALTH AUTHORITIES IN MEXICO CRITICISED FOR RECOMMENDING THE USE OF MPOX VACCINES BUT FAILING TO SECURE THEM (MEXICO)

- The health authorities of Mexico found themselves **in an allegedly contradictory position**, as one of its high-ranking members was the signatory of an international research paper that recommended the **use of mpox vaccines targeting groups at higher risk of infection, whilst failing to obtain any mpox vaccines for Mexico**. An organisation focused on AIDS in Central America echoed this criticism and **shared** a letter from activists about the **need to authorise the use of mpox vaccines in Mexico** to help save lives.
- The director of an organisation that aids HIV positive people highlighted the alleged institutional harassment suffered by individuals at the hands of government and other individuals affiliated to it, **claiming** that **politicians should stop undermining their efforts to help HIV positive people and focus on securing mpox vaccines**.

## GLOBAL PUBLIC HEALTH AUTHORITY CRITICISED FOR CLASSIFYING MPOX AN INTERNATIONAL EMERGENCY (ENGLISH-LANGUAGE)

- The mechanism to decide whether mpox was declared a virus of international concern came under criticism as individuals **questioned** why the 9-6 vote was **allegedly overruled**. **The perception that the leaders of the global public health authority allegedly lied was highlighted by some individuals** to undermine trust in their guidance in matters of public health.



# Current Treatment +9%

Top locations for social media conversation on "Current Treatment": 28 February – 13 March 2023



Top keywords & phrases in social media conversation on "Current Treatment": 28 February – 13 March 2023



Discussion around **Current Treatment** generated **1.51K mentions** during this reporting period, increasing by 9% from the previous fortnight.

## CONSIDERATIONS FOR TREATMENT OF SEVERE MPOX INFECTIONS (USA)

- On [Facebook](#), a public health authority posted a [link to a report](#) looking at "interim clinical treatment considerations for severe manifestations of mpox". The post added that severe mpox infections "continue to be reported, especially among people with weakened immune systems". However, **comments** on this post **did not appear to take the topic of treatment seriously**; users instead [questioned the new name](#) of "mpox" and expressed [homophobic](#) sentiment (369 engagements).

## CLAIM THAT A HEALTH SERVICE DOES NOT HAVE ACCESS TO MPOX TREATMENT (MEXICO)

- A [tweet](#) claimed that most people affected by mpox "are not going for tests" because a **public health service in Mexico "does not offer treatment"** (92 engagements).

## NEW RESEARCH AND CLINICAL TRIALS (SPAIN, USA)

- [News](#) was posted on Twitter about how specialists from a hospital in Spain discovered an **effective medication against skin lesions** in mpox patients with mild symptoms, which also allows for shortening the isolation of patients (52 engagements). The same news was tweeted by a [health authority](#), which also included a link to an [article](#) about the study. The article clarified that the **treatment** studied is "for **topical use to treat skin and mucous membrane disorders** caused by **mpox** infection" (51 engagements).
- A self-titled medical professional [tweeted](#) a [link to information](#) about a clinical trial to evaluate the effectiveness of the antiviral **tecovirimat** for the **treatment of human mpox infection**.

## CASE REPORT OF AN MPOX DEATH FOLLOWING TECOVIRIMAT TREATMENT (MEXICO, COLOMBIA)

- A [tweet](#) from a user claiming to be a surgeon cited a medical journal, claiming that a 33-year-old man **died from mpox after receiving "2 cycles of #tecovirimat oral"**. The tweet included photographs of an infected hand and oesophagus (61 engagements).
- [Another tweet](#) cited a case report from the same medical journal, but this time stated that the **death** was due to "**resistance to tecovirimat**". A screenshot of the case report was also included with the tweet (35 engagements).

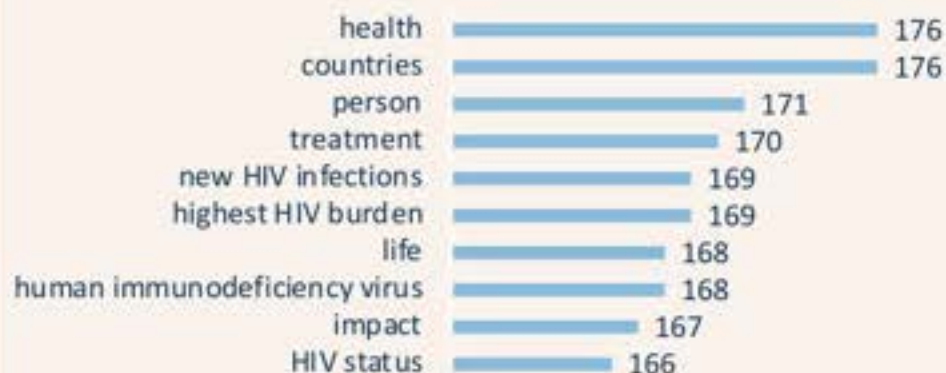


# Guidance +8%

## Top locations for social media conversation on "Guidance": 28 February – 13 March 2023



## Top keywords & phrases in social media conversation on "Guidance": 28 February – 13 March 2023



\*excluding keywords such as "monkeypox", "mpox virus" and "mpox"

The topic of **Guidance** generated **432 mentions** during this reporting period, increasing by 8% from the previous fortnight.

### GUIDANCE ON HOW TO TREAT MPOX PATIENTS (USA, NIGERIA)

- Various forms of guidance for healthcare workers and clinicians was shared online on how to treat, care for, and vaccinate mpox patients. A public health authority from Nigeria highlighted the importance of following standard practice precautions as well as isolating any suspected mpox case so adequate diagnosis and treatment can be provided.
- In the USA, the upcoming Pride celebrations prompted the health service of one of the country's states to share new guidance for clinicians on mpox vaccines, whilst at the national level, interim guidance on clinical management of mpox was provided in a public health update.

### RARE CASE OF MPOX REINFECTION PROMPTS THE NEED FOR FURTHER GUIDANCE FOR VACCINATION POST INFECTION (USA)

- A recent study about a case of mpox reinfection prompted an online discussion on the need to have clinical guidelines for vaccination after reinfection with mpox. The study reportedly detailed a case of a non-immunosuppressed MSM who had completely recovered from a primary mpox infection 4 months previously and had received a complete two-dose course of smallpox vaccination between the two presentations.
- Some individuals interpreted the results as a call to recommend a second mpox vaccination in order to keep immunity boosted, while others quoted a different study to suggest that anyone who gets infected with mpox and receives TPOXX as a treatment should get vaccinated after recovery.

### RECOMMENDATIONS ON QUARANTINING AND HOW TO CARE AFTER LESIONS (EL SALVADOR, MEXICO)

- The public health ministry of El Salvador highlighted the importance of **washing one's clothes separately for any patients currently quarantining for mpox** in order to avoid new contagions.
- Elsewhere, authorities in Mexico focused on the importance of **keeping mpox lesions from becoming infected by stressing the need to keep them clean and dry**, preventing oneself from scratching the lesions and handwashing before and after touching them.



# SPOTLIGHT FOCUS

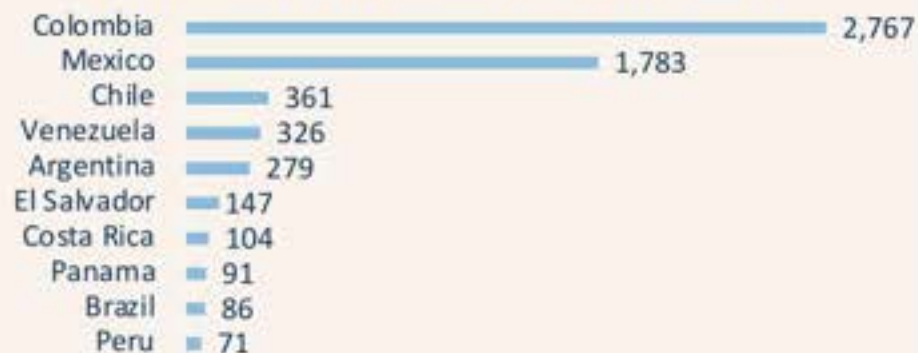
Conversation from South America &  
Conversations from Africa

## Spotlight: Conversations from South America

Volume of social media conversation on mpox in South America : 13 December 2022 – 13 March 2023



Top locations for social media conversation on mpox in South America: 28 February - 13 March 2023



### CONCERNS OVER THE HANDLING OF THE MPOX OUTBREAK IN COLOMBIA (COLOMBIA)

- A prominent narrative emerging from users geolocated in Colombia were criticisms over the government's approach to managing mpox and the lack of an effective vaccine programme (243 engagements). A top engaged-with post claimed the Minister of Health in Colombia was ineffective in being able to bring any mpox vaccines to the country (8.9K engagements).
- Similarly, another user claimed the current administration's lack of progress in providing mpox vaccines has been "disastrous" (862 engagements). In response, however, some users were in **defence of the government**, and questioned why the government should offer vaccines for a virus which allegedly has a low mortality rate.

### CONVERSATION ON THE PREVALENCE OF MPOX IN MEXICO (MEXICO)

- The number of mpox cases and lack of vaccines in Mexico was discussed by social media users during this reporting period. A user claimed that in the past two weeks, there had been 51 new cases of mpox in the country, making Mexico the country with the most new cases globally, given that other countries allegedly experiencing a decline in mpox cases (198 engagements). Another user expressed frustration with the lack of action taken to mitigate against the mpox outbreak in Mexico, despite the country supposedly seeing a second wave of the virus (190 engagements). Similarly, a user noted that Mexico was reportedly the 6<sup>th</sup> country most affected by mpox, and yet the country has neither vaccines nor antivirals (106 engagements).

### THE LGBTQI+ COMMUNITY AND MPOX (MEXICO)

- Claims of prejudice towards the LGBTQI+ community within the context of mpox persisted. A user argued that homophobia is the only explanation for the lack of mpox vaccines in Mexico (73 engagements), whilst another user perceived that it was rooted in institutional homophobia (93 engagements). A user also urged that as part of the MSM community, one has to **fight for their human right to access the mpox vaccine** (291 engagements).

### HIV AND MPOX (MEXICO)

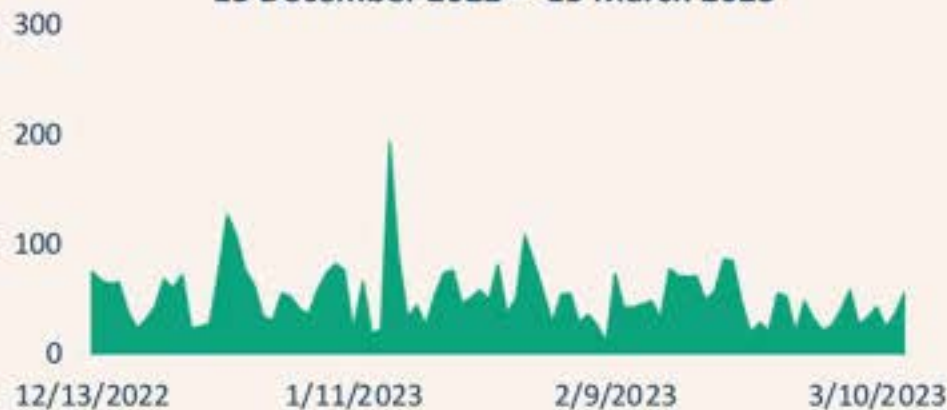
- The link between HIV and mpox reappeared in conversation. One post claimed that states in Mexico with the most cases of HIV also had the most cases of mpox, suggesting a need for strengthened healthcare for both diseases in those regions (146 engagements). Further, another user stated that people in Mexico need access to a vaccine, after it was reported that the mortality rate for mpox can be up to 15% for those with advanced HIV (96 engagements).



## Spotlight: Conversations from Africa

Volume of social media conversation on mpox from users geolocated in Africa:

13 December 2022 – 13 March 2023



Top locations of social media conversation on mpox in Africa: 28 February - 13 March 2023



### PREVENTION AND MITIGATION STRATEGIES FOR MPOX (DEMOCRATIC REPUBLIC OF CONGO, NIGERIA)

- A global public health authority posted a tweet stating they are working to mitigate outbreaks of major preventable diseases, including mpox (86 engagements). In response, one user supported this, however another urged the organisation to “stop meddling”.
- Further, a health clinic based in Nigeria urged users to get tested for mpox, and listed the early symptoms and signs of mpox, including fever, chills, headache and muscle ache.

### NUMBER OF MPOX CASES ACROSS AFRICA (NIGERIA, CAMEROON)

- A user geolocated in Nigeria retweeted a post which claimed that the country is experiencing several disease outbreaks, including mpox (49 engagements). Furthermore, another user geolocated in Nigeria stated “monkeypox is real and deadly” and urged users to stay safe.
- Additionally, a news outlet reported that from 2022, purportedly there have been 106 suspected cases of mpox and three deaths in Cameroon.

### STIGMA ASSOCIATED WITH MPOX (UGANDA, SOUTH AFRICA)

- Several users geolocated across the African continent retweeted posts regarding the stigma associated with the LGBTQI+ community and mpox. One user retweeted a post from a global public health authority which stated “mpox can affect anyone. Stigma and discrimination related to any disease are never acceptable”, and shared the hashtag #solidaritynotstigma.
- In a parallel conversation, another user retweeted a post which argued that narratives about mpox can be homophobic, which can deter heterosexual men who have contracted the virus to go get treatment out of fear of being labelled as homosexual.
- Additionally, another user retweeted a post which suggested that Western media portrays outbreaks of mpox almost exclusively with imagery with people from Africa, and claimed there is an “endemic nature of systemic racial stereotyping”.



# METHODOLOGY

# PROJECT BACKGROUND

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Marble Global was commissioned to analyse and quantify the information – right and wrong – in digital media discussing mpox. The project consists of two workstreams:

1. These fortnightly summary reports to track and quantify fortnightly conversation trends and emerging citizen questions
2. Interactive Tableau dashboard to provide regular updates on the analysis models created

To create these reports, Marble has used a wide range of its enterprise social listening, media monitoring, online search, AI and data enrichment tools & expertise to provide an analysis of digital information discussed and reported on by citizens referencing the mpox pandemic.

The data collected for this study includes content publicly available on social media platforms (Twitter, Facebook, Instagram, YouTube, Blogs & forums) as well as online news content (including broadcast) that has resonated in the aforementioned social media platforms. Question and sentiment language is sourced from the aforementioned social media platforms (excluding blogs) to ensure consistent proximity between the searched entities and the linguistic cues used to detect sentiment and question language.

Data analysed will be collected in English-language, French-Language and Spanish-language.

# METHODOLOGY

| 5 CATEGORIES<br>See methods <a href="#">journal article</a> | 22 SUB-CATEGORIES                 | 40 TOPICS | LANGUAGES |
|-------------------------------------------------------------|-----------------------------------|-----------|-----------|
| Category A                                                  | Category A area<br>Sub-category 1 | Topic A1a | EN ES FR  |
|                                                             |                                   | Topic A1b | EN ES FR  |
|                                                             | Category A<br>Sub-category 2      | Topic A2a | EN ES FR  |
|                                                             |                                   | Topic A2b | EN ES FR  |
| Category B                                                  | Category B<br>Sub-category 1      | Topic B1a | EN ES FR  |
|                                                             |                                   | Topic B1b | EN ES FR  |

+ Questions data > 40 strings **AND** question words / phrases / syntax.

# 80

individual search strings





CONTENT SEARCHES



AUTOMATED DATA  
PROCESSING



INSIGHTS



+WEB SEARCH DATA

W.

# METHODOLOGY

## Fortnight-on-fortnight change

| Taxonomy             | Category                             | Week of Data | Count  | Previous weeks count | WoW %   |
|----------------------|--------------------------------------|--------------|--------|----------------------|---------|
| The Illness          | B2a Means of Transmission            | Week 18      | 28     | 187                  | -87.60% |
| The Cause            | A2a Further spread: Immunity         | Week 18      | 721    | 3,958                | -84.70% |
| The Interventions    | D4 Technology                        | Week 18      | 385    | 815                  | -58.60% |
| The Treatment        | C1c Research & Development           | Week 18      | 890    | 2,838                | -61.70% |
| The Cause            | A2a Further spread: Stigma           | Week 18      | 1,307  | 4,428                | -70.80% |
| The Interventions    | D5e Inequalities                     | Week 18      | 58     | 152                  | -61.30% |
| The Interventions    | O2a Supportive Care (Equipment)      | Week 18      | 3,108  | 8,754                | -64.60% |
| The Illness          | B1c Asymptomatic                     | Week 18      | 377    | 904                  | -57.80% |
| The Illness          | B2b Protection from Transmission     | Week 18      | 3,705  | 11,454               | -67.50% |
| The Illness          | B3c Risk - Demographics (Age)        | Week 18      | 653    | 1,628                | -59.50% |
| The Interventions    | D3a Personal Measures                | Week 18      | 2,194  | 7,029                | -68.30% |
| Types of Information | E1 Statistics & Data                 | Week 18      | 1,757  | 5,657                | -69.10% |
| The Interventions    | D5b Faith                            | Week 18      | 997    | 2,527                | -60.50% |
| The Interventions    | D1 Testing                           | Week 18      | 4,578  | 12,500               | -63.30% |
| The Interventions    | D5d The Environment                  | Week 18      | 1,477  | 3,209                | -53.70% |
| The Interventions    | D3b Measures in Public Settings      | Week 18      | 10,970 | 25,873               | -57.60% |
| The Illness          | B3d Vulnerable People                | Week 18      | 1,744  | 5,529                | -68.80% |
| The Treatment        | C1a Current Treatment                | Week 18      | 4,175  | 9,004                | -53.70% |
| The Interventions    | D3d Protection                       | Week 18      | 2,763  | 6,500                | -57.10% |
| The Illness          | B3b Risk - Demographics (Sex)        | Week 18      | 180    | 322                  | -43.80% |
| The Illness          | B1a Confirmed Symptoms               | Week 18      | 7,184  | 18,178               | -60.50% |
| The Interventions    | D3c Reduction of Movement            | Week 18      | 1,296  | 2,777                | -53.30% |
| The Interventions    | D5a Travel                           | Week 18      | 3,795  | 9,209                | -58.90% |
| The Illness          | B1d Pre-Symptomatic                  | Week 18      | 5      | 29                   | -82.40% |
| The Interventions    | D5c Unions and Industry              | Week 18      | 9,585  | 18,686               | -48.70% |
| The Treatment        | C2b Myths                            | Week 18      | 308    | 861                  | -64.30% |
| The Illness          | B3a Risk - Underlying Conditions     | Week 18      | 202    | 439                  | -53.80% |
| The Illness          | B3e Vulnerable Communities           | Week 18      | 1,541  | 2,279                | -32.80% |
| The Treatment        | C2a Non-proven treatment (Nutrition) | Week 18      | 205    | 461                  | -56.20% |
| The Treatment        | C1b Vaccines                         | Week 18      | 2,130  | 4,060                | -47.50% |
| Types of Information | E2 Misinformation                    | Week 18      | 196    | 386                  | -49.20% |
| The Interventions    | O2b Supportive Care (Healthcare)     | Week 18      | 7,290  | 12,662               | -42.40% |
| The Illness          | B1b Other discussed symptoms         | Week 18      | 345    | 430                  | -19.50% |
| The Cause            | A1 The Cause                         | Week 18      | 812    | 657                  | 23.60%  |
| The Interventions    | D5f Civil Unrest                     | Week 18      | 733    | 398                  | 83.40%  |

Identify rising topics



Contextualise the rise



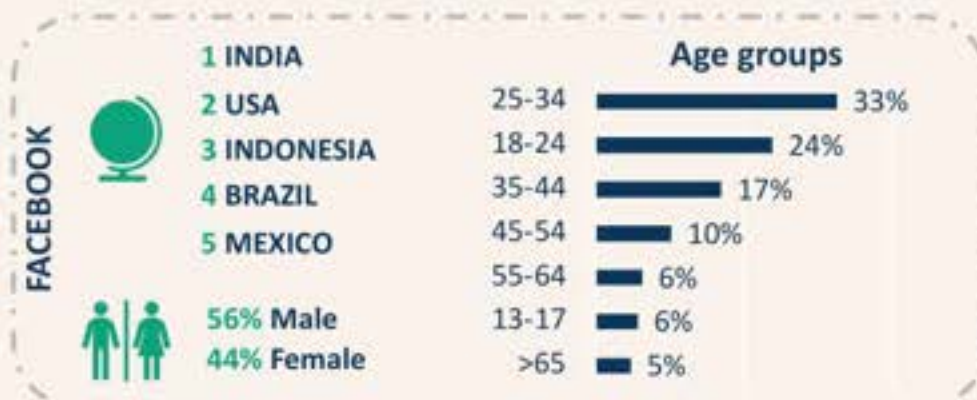
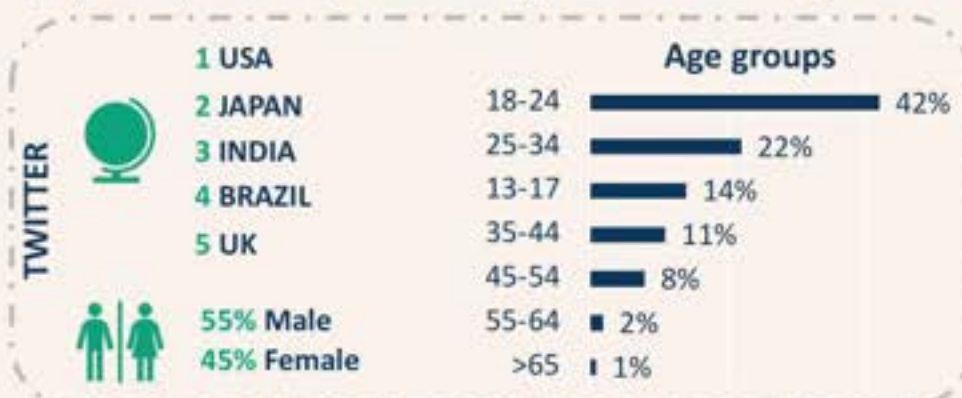
Narratives  
Engaging content  
Networks  
Emerging trends  
Patterns



# METHODOLOGY

## Top questions & platform demographics

Top questions are researched and identified through data feeds based on mpox key words (including misspellings) and grammatical features and/or markers that are used in English, French, and Spanish to build questions. Due to the nature of the platforms, data is most likely to originate from Twitter and forums (especially Reddit\*). Occasionally, Facebook also represents a source of viral questions on mpox.



\*According to the *GlobalWebIndex*, 19.9% of all internet users that access the web to seek for health-related information use Reddit.



# Note on representativity

## MPOX INFODEMIC INSIGHTS

The data is based on the publication of posts from populations that are digitally active and that are likely to use social media to discuss or share opinions about mpox and the mpox pandemic.

Note that demographics vary significantly from country to country and the availability of public social media data differs from platform to platform. Additionally, note an overrepresentation of English, French and Spanish speakers from all over the world due to scope limitations.

Twitter data is overrepresented in the data analysed in this report due to differing data sharing policies in place between individual social media platforms and social media data aggregators. Whilst the data aggregator used for this report offers firehose access to Twitter data, Facebook data is limited to a posts published by selected public pages and comments posted in these pages. The tracked sample of top global and local Facebook pages was selected based on recent engagement data retrieved from searches utilising the mpox public health social listening methodology. News pages have been prioritised, since these are particularly likely to attract public debates in comment threads.

The approach to writing insight and commentary consists of sorting content by engagement. Therefore, content which has been most shared is most likely to be referenced. Compared with following a methodology of sorting by highest reach, the methodology of sorting by highest engagement gives greater visibility to content from individual users.



# Appendix on WHO infodemic recommendations generation: Methodology for generation of insights and recommendation for infodemic management in three steps

This report is an intermediary analytical product that feeds into WHO's biweekly infodemic insights and recommendations generation related to the mpox outbreak.

The following slides describe the steps taken to arrive to the infodemic management recommendations, and where in the process this report fits in.



# Steps to generate biweekly infodemic recommendations on mpox

## STEP 1: Quantitative identification of potential topics of concern, questions, and information voids

### Tools /methods:

- Implemented and validated WHO mpox social listening taxonomy (see slide 37-40)
- NLP and AI for identification, aggregation of online content and categorization into 35 sub-topics using the

**Roles:** MG set up and validates the analytical pipeline and tools as per WHO-defined process and standards

**Output:** Summary dataset with annotations

## STEP 2: Weekly comparison, qualitative analysis and production of digital infodemic intelligence

### Tools /methods:

- Qualitative analysis by human analyst of weekly comparisons and changes
- Summary identification of velocity/virality of narrative themes and summary of questions

**Roles:** MG prepares report; WHO reviews for public health relevance and evidence

**Output:** **this report**, plus a whatsapp message summarizing the findings

## STEP 3: Integrated analysis and generation of recommendations to manage the infodemic

- Review of the MG report and identified themes
- Triangulation and comparison with other data sources freely available
- Assessment of themes by risk to public health based on risk matrix (see slides 35-36)
- **Roles:** WHO infodemic management team with external reviewers from WHO global IM community
- **Output:** top three themes of highest risk and accompanying recommendations for action



# Applied in step 1: Public health taxonomy for social listening on mpox conversations (updated on 23 August 2022)

**Objective :** Objective of the [taxonomy](#) is to monitor millions of conversations related to mpox on within thematic categories relevant to public health response. The subtopics are to capture breadth of conversations and help identify structure and changes in narratives. The taxonomy can be applied to online social media listening, as well as for offline social listening and can facilitate structured integrated analysis of the data to produce infodemic insights and recommendations.

**Background:** *What is the difference between social listening for marketing efforts and infodemic monitoring and intelligence gathering?* Social listening is often understood as an approach for monitoring online conversations on specific brands and topics, often used by marketing companies. Social listening is a limited label to use in infodemic management, since integrated analysis is best done with a diverse set of data sources across social, program, behavioral, media, and epidemiological domains. Infodemic monitoring and intelligence gathering consider as many relevant data sources as possible, recognizing they all individually have limitations and biases, but when analyzed in an integrated manner, can yield insights that data sources analyzed in isolation would not provide. Infodemic monitoring and insights generation encompasses systematic **analysis of different data sources**, generation of **intelligence**, turning the intelligence into infodemic **insights** and applying structured judgment and risk matrix approach to generate **recommendations** for action.

## Note to analyst:

- Compare the volume and themes of conversations and dynamics to overall net conversations vs COVID-19 conversations vs mpox-specific
- Compare velocity of conversations within mpox conversations over time
- Identify mpox specific themes of **questions, worries, concerns, information voids, circulating narrative and misinformation**, and crossover with COVID-19
- Focus not only on the content of conversations but also understanding people's reactions, confusion, questions, and conversations about issued health guidance.
- Pay attention to vulnerable populations and stigma, both on MSM, sex workers, inequities, as well as visual analysis of memes and images used associated with mpox in the media and social media.
- Refer to WHO-authored papers<sup>1,2</sup> for how to apply and validate its use.

Purnat TD, Vacca P, Czerniak C, Ball S, Burzo S, Zecchin T, Wright A, Bezbaruah S, Tanggol F, Dubé É, Labbé F. Infodemic signal detection during the COVID-19 pandemic: development of a methodology for identifying potential information voids in online conversations. JMIR infodemiology. 2021 Jul 28;1(1):e30971. <https://infodemiology.jmir.org/2021/1/e30971>

Purnat TD, Nguyen T, Ishizumi A, Yau B, White B, Cecchini S, Samuel R, Hess S, Bezbaruah S, Briand S. 2022. Delivering actionable infodemic insights and recommendations for the COVID-19 pandemic response. Weekly Epidemiological Record. 2022 Jul 8; 97 (27), 313 - 324. <https://apps.who.int/iris/handle/10665/359144>

# Applied in step 3: Risk Matrix for infodemic harm in relation to mpox outbreak- summary

The risk matrix is an important tool that helps infodemic analysts systematically translate infodemic insights into actionable recommendations.<sup>1</sup> As shown on the following slide, the overall structure of the risk matrix used in the mpox infodemic insights reporting is based on the risk matrix that was applied previously to COVID-19. However, the matrix reflects the following disease-specific considerations:

1. **Stigma** – one important feature of mpox is the potential for stigmatizing language and imagery about vulnerable population groups. Social listening may pick up more conversations *about* them, rather than *by* them.
2. **Stratifying voices and audiences** – what are conversations being had *by* vulnerable groups? And how might those conversations be dominated in the analytical datasets by other louder groups?
3. **At-risk population, population of focus** – the degree of harm to public health would be guided by the vulnerability of the population of focus, even if this population is a small one and therefore the volume of conversation is relatively small to the whole dataset.
4. **Context/region** – analytical approach and risk of harm of a narrative must take into account context and spread of narratives across geographies that may socially or legally address and treat LGBTQI+ and MSM populations differently.
5. **Evolving science** – there is evolving science about mpox and how it presents itself in new populations. For example, vulnerable populations other than MSM, have been identified as being underdiagnosed, which may lead to disproportioned harm of narratives (e.g. women and non-binary people).

**The risk matrix will be updated as the epidemiological and scientific situation around mpox evolves.**

1. Purnat TD, Nguyen T, Ishizumi A, Yau B, White B, Cecchini S, Samuel R, Hess S, Bezbaruaha S, Briand S. [Delivering actionable infodemic insights and recommendations for the COVID-19 pandemic response](#). Geneva: WHO 2022.



# RISK MATRIX TO DERIVE INFODEMIC-RELATED RECOMMENDATIONS FOR MPOX

Each key finding is classified by level of risk to public health. A risk matrix assesses potential for impact on seeking and uptake of PHSM, vaccines treatments and diagnostics, underrepresentation of vulnerable groups in data, stigmatisation\* of, and the experience of stigma in vulnerable populations, as well as narrative reach and dissemination. The risk level is indicated by colour.

- **High risk narrative** may lead to increased stigmatisation of vulnerable groups, reduced preventative behaviors and healthcare-seeking of recommended treatments and diagnostics. The narrative either has wide reach and is jumping geographies or platforms, or is pervasive particularly among at-risk and vulnerable populations (red colour).
- **Moderate risk narrative** may lead to stigmatisation of vulnerable groups, reduced preventative behaviors and healthcare-seeking of recommended treatments and diagnostics. It has moderate reach, may be crossing communities, platforms and formats, and has therefore has moderate dissemination (orange colour).
- **Low risk** narrative themes are a concern but pose a low risk to reinforcing stigmatisation, uptake of recommended health behaviour and guidance. They have limited reach and dissemination, only circulating in small groups and communities, and on one platform (yellow colour).
- **Positive sentiment** reflects thematic narratives that could decrease stigmatisation, increase uptake of health guidance and healthy behaviour. It may have variable reach and dissemination (green colour).

|                                                                |                                                                                                                                                                                                      | Reach, dissemination, at-risk population, population of focus                                                               |                                                                                         |                                      |
|----------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------|--------------------------------------|
|                                                                |                                                                                                                                                                                                      | Wide reach, high dissemination, particularly among at-risk and vulnerable populations (e.g., MSM, women, non-binary people) | Moderate reach and dissemination, may be skipping communities, platforms or geographies | Limited reach, limited dissemination |
| Impact on uptake of PHSM, vaccines, treatments and diagnostics | May lead to increased stigmatisation and silencing of vulnerable groups, refusal of recommended treatments and diagnostics, reduced healthcare-seeking, or lower adherence to recommended behaviours | High risk                                                                                                                   | High risk                                                                               | Moderate risk                        |
|                                                                | Potential to trigger stigmatisation, reduced healthcare-seeking, hesitancy to public health and social measures, vaccination, or pharmaceutical interventions                                        | Moderate risk                                                                                                               | Moderate risk                                                                           | Low risk                             |
|                                                                | Concerning, but low risk to uptake of recommended health behaviours and health guidance                                                                                                              | Low risk                                                                                                                    | Low risk                                                                                | Low risk                             |
|                                                                | Could increase uptake of health guidance, intent, and enactment of health behaviours.                                                                                                                | Positives sentiment                                                                                                         | Positive sentiment                                                                      | Positive sentiment                   |

\*Cultural contexts and legal barriers in some countries may contribute to reduced healthcare-seeking behaviour, and even the experience of stigmatisation in health service access and delivery.



# CONTACT

Marble Global

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**From:** PEREIRA IBRAHIM, Alhassan  
**Sent:** Mon, 20 Feb 2023 08:51:05 +0000  
**To:** infodemicmanagement  
**Subject:** Mpox Infodemic Insights Report (31 January – 13 February 2023)  
**Attachments:** MG\_Mpox\_Infodemic\_Digital\_Insights\_Report\_8\_shared.pdf

Dear all,

We're glad to share with you the latest infodemic insights report on mpox, covering the period of 31 January - 13 February 2023.

This biweekly reporting was stood up to support the Health Ops pillar of the WHO HQ Mpox IMST. This report is an intermediate analytical product feeding into generation of infodemic recommendations that will be shared with the OPS pillar separately. The methods used to generate this report, as well as the follow up risk assessment and infodemic insights recommendations generation are summarized at the end of this report, including references to the WHO public health social listening taxonomy for mpox and the risk matrix used to derive recommendations (as detailed in slides 32-36).

## 🔍 KEY FINDINGS FOR THE PAST TWO WEEKS

### 📧 THE ILLNESS – UPDATED MESSAGING SURROUNDING ASYMPTOMATIC MPOX TRANSMISSION PROMPTS CONFUSION

A prominent source of conversation emerged in response to updated messaging from a USA public health authority suggesting that mpox can be transmitted between one to four days prior to symptom-onset. This triggered discussion around the potential for asymptomatic mpox transmission. On the one hand, a cohort of users stated they were unsurprised by the update and cited similar changes to guidance with regards to SARS-CoV-2 transmission during the COVID-19 pandemic. Others interpreted the updated messaging as an indication that mpox is airborne, resulting in concerns over its increased transmissibility. In parallel conversations, users implied that changes in messaging by public health authorities results in waning trust in official guidance. (Narratives observed in USA, Mexico and English-language)

### 🏥 THE INTERVENTIONS – CONCERNS SURROUNDING UNEQUAL ACCESS TO MPOX TESTING

A prominent narrative over the reporting period concerned unequal access to mpox testing both at a global and national level. Conversation regarding unequal global access was fuelled by findings by a consortium of health experts that high prices and burdensome intellectual property rules on test components have significantly inhibited resource constrained countries from accessing mpox tests. In response to claims that – due to laboratory facilities being concentrated in urban areas – the rollout of mpox tests would always be more centralised in nature, users expressed concern that testing is out of reach for individuals living in rural areas. (Narratives observed in English-language).

### 📰 THE INFORMATION – ALLEGATIONS THAT THE THREAT FROM MPOX HAS BEEN EXAGGERATED AND REPRESENTS A FORM OF AUTHORITARIAN CONTROL

In a recurring trend, social media users continued to allege that the threat from mpox has been exaggerated by the media and the authorities, with a number of users branding the virus a “scam”. A



number of conversation drivers fed into this narrative, including that the alleged lower than predicted fatality rate from mpox is a testament to the virus' lesser severity, as well as allegations that mpox represents a means by authorities to control the masses. (Narratives observed in French-language and English-language).

Full report is attached and can be shared with partners. You will find an archive of reports: [here](#)

Wishing you all a great week.

Kind regards,

**Alhassan Ibrahim**

Consultant | Infodemic Management Team

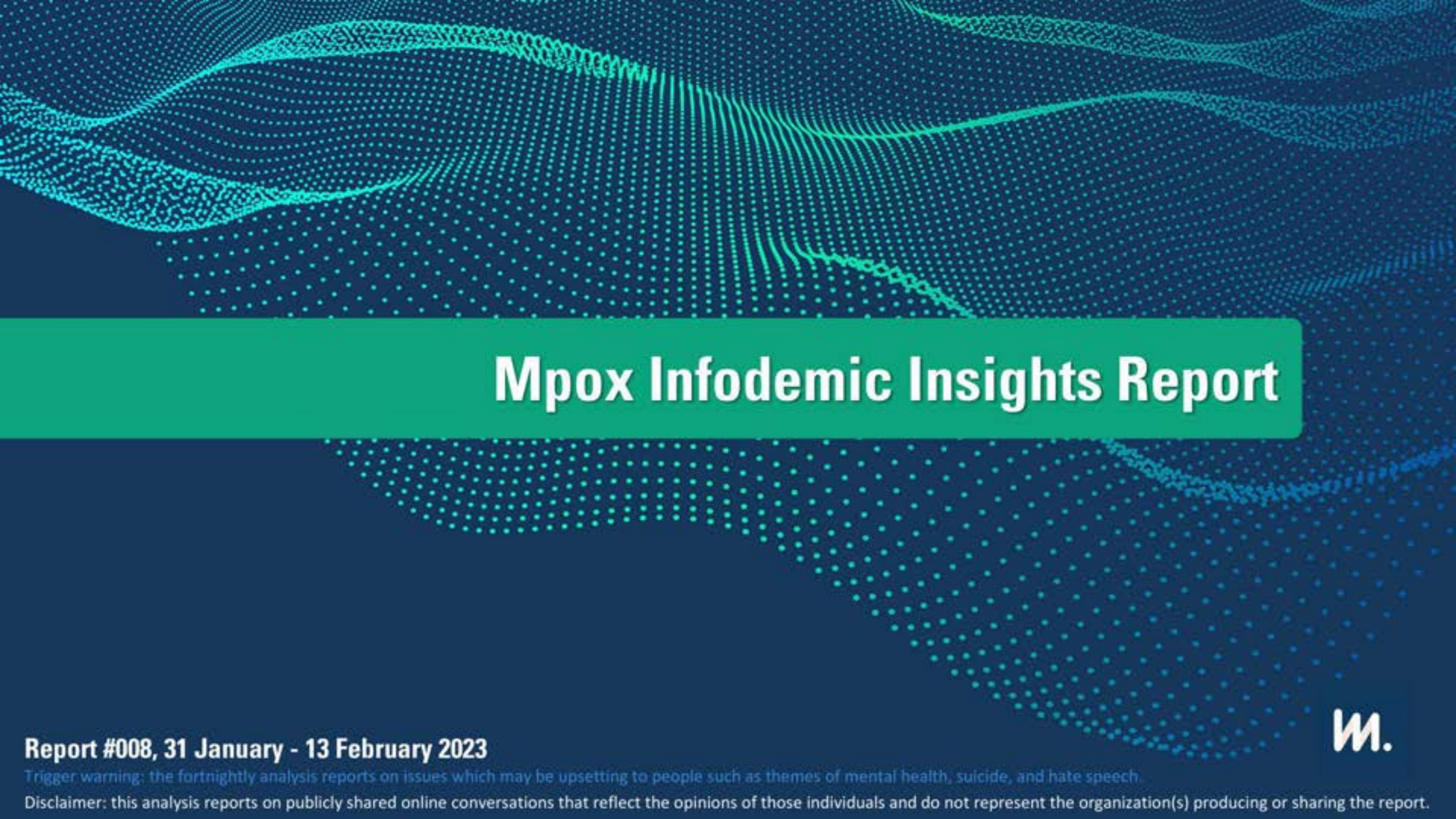
High Impact Events Preparedness

Epidemic and Pandemic Preparedness and Prevention (EPP)

Preparedness Division, WHO Emergency Programme (WPE/WHE)

World Health Organization





# Mpox Infodemic Insights Report

**Report #008, 31 January - 13 February 2023**

Trigger warning: the fortnightly analysis reports on issues which may be upsetting to people such as themes of mental health, suicide, and hate speech.

Disclaimer: this analysis reports on publicly shared online conversations that reflect the opinions of those individuals and do not represent the organization(s) producing or sharing the report.





# KEY FINDINGS

**This report is an analytical product produced in step 2 out of 3 in production of WHO recommendations to manage the infodemic related to mpox outbreak. See appendix for details.**

# MPOX INFODEMIC INSIGHTS: Key findings

31 January - 13 February 2023

## THE ILLNESS – UPDATED MESSAGING SURROUNDING ASYMPTOMATIC MPOX TRANSMISSION PROMPTS CONFUSION

A prominent source of conversation emerged in response to updated messaging from a USA public health authority suggesting that mpox can be transmitted between one to four days prior to symptom-onset. This triggered discussion around the potential for asymptomatic mpox transmission. On the one hand, a cohort of users stated they were unsurprised by the update and cited similar changes to guidance with regards to SARS-CoV-2 transmission during the COVID-19 pandemic. Others interpreted the updated messaging as an indication that mpox is airborne, resulting in concerns over its increased transmissibility. In parallel conversations, users implied that changes in messaging by public health authorities results in waning trust in official guidance. (Narratives observed in USA, Mexico and English-language)

## THE INTERVENTIONS – CONCERNS SURROUNDING UNEQUAL ACCESS TO MPOX TESTING

A prominent narrative over the reporting period concerned unequal access to mpox testing both at a global and national level. Conversation regarding unequal global access was fuelled by findings by a consortium of health experts that high prices and burdensome intellectual property rules on test components have significantly inhibited resource constrained countries from accessing mpox tests. In response to claims that – due to laboratory facilities being concentrated in urban areas – the rollout of mpox tests would always be more centralised in nature, users expressed concern that testing is out of reach for individuals living in rural areas. (Narratives observed in English-language).

## THE INFORMATION – ALLEGATIONS THAT THE THREAT FROM MPOX HAS BEEN EXAGGERATED AND REPRESENTS A FORM OF AUTHORITARIAN CONTROL

In a recurring trend, social media users continued to allege that the threat from mpox has been exaggerated by the media and the authorities, with a number of users branding the virus a “scam”. A number of conversation drivers fed into this narrative, including that the alleged lower than predicted fatality rate from mpox is a testament to the virus’ lesser severity, as well as allegations that mpox represents a means by authorities to control the masses. (Narratives observed in French-language and English-language).

### KEY FINDING CLASSIFICATION

Key findings are assigned a rating based on the potential risk to public health and the likelihood of impacting beliefs and attitudes via a reach/dissemination/at-risk population/population of focus matrix. Risk levels are depicted by colour:

- **Red** – high risk
- **Orange** - moderate risk
- **Yellow** - low risk
- **Green** – positive sentiment

Narratives are also classified as:  
**Emerging:** A new narrative not previously identified, may require further analysis or development of new information materials.

**Persistent:** A narrative that continuously drives online conversations without any significant changes in volume or velocity.

**Re-emerging:** A previously identified narrative that resurfaces after being absent (or low in volume) for multiple weeks.



Emerging



Emerging



Persistent



# OPPORTUNITIES FOR ACTION: FILLING INFORMATION VOIDS

## EMERGING ISSUES

1. **THE CAUSE** - Note allegations by a user in the USA that mpox can be caused by Ivermectin usage.
2. **THE ILLNESS** - Note reporting about an uptick in mpox cases in Nigeria and Ghana.
3. **THE ILLNESS** - Note that a USA health authorities' suggestion that mpox can be transmitted between one to four days prior to symptom onset has prompted concern that mpox is transmitted via aerosols.
4. **THE ILLNESS** - Be aware that guidance by a USA health authority that mpox can be transmitted between one to four days prior to symptom onset has been interpreted by social media users as a change in public messaging, prompting confusion surrounding mpox transmission.
5. **THE TREATMENT** - Be aware of the promotion of plant based homeopathic remedies as an aid to reduce reliance on antibiotics for various types of illnesses, including mpox.
6. **THE INTERVENTIONS** - Be aware of warnings from health experts that the hoarding of mpox and COVID-19 tests by resource abundant nations has amounted to a significant diagnostics inequality.
7. **THE INTERVENTIONS** - Note that high prices and burdensome intellectual property rules on test components were cited by a group of health experts as a key factor impeding resource constrained nations from accessing mpox and COVID-19 tests.
8. **THE INTERVENTIONS** - Be aware of concerns that mpox testing is purportedly centralised and that subsequently, individuals living outside of urban centres have limited access.
9. **THE INFORMATION** - Note that the alleged limited impact of mpox in France during the summer of 2022 was cited by social media users as proof that health authorities and mainstream media exaggerated the threat from the virus.

# OPPORTUNITIES FOR ACTION: FILLING INFORMATION VOIDS

## PERSISTENT ISSUES

1. **THE ILLNESS** - Note that social media users continue to question “what happened to mpox?”.
2. **THE TREATMENT** - Note continued expressions of frustration over the perceived lack of mpox vaccine access in Mexico.
3. **THE TREATMENT** - Be aware of allegations that the lack of investment into the mpox vaccine in Mexico is rooted in institutional homophobia.
4. **THE INFORMATION** - Note continued allegations that the threat from mpox was exaggerated and is evidence of a “media scam.”
5. **THE INFORMATION** - Note that social media users promoted the idea that mpox allegedly does not exist.
6. **THE INFORMATION** - Note continued expressions of mistrust and feelings of neglect as a result of authorities’ management of the mpox outbreak in Mexico and Colombia.
7. **THE INFORMATION** - Be aware of allegations in Colombia that the authorities are failing to disclose the number of mpox caused fatalities.



# OPPORTUNITIES FOR ACTION: FILLING INFORMATION VOIDS

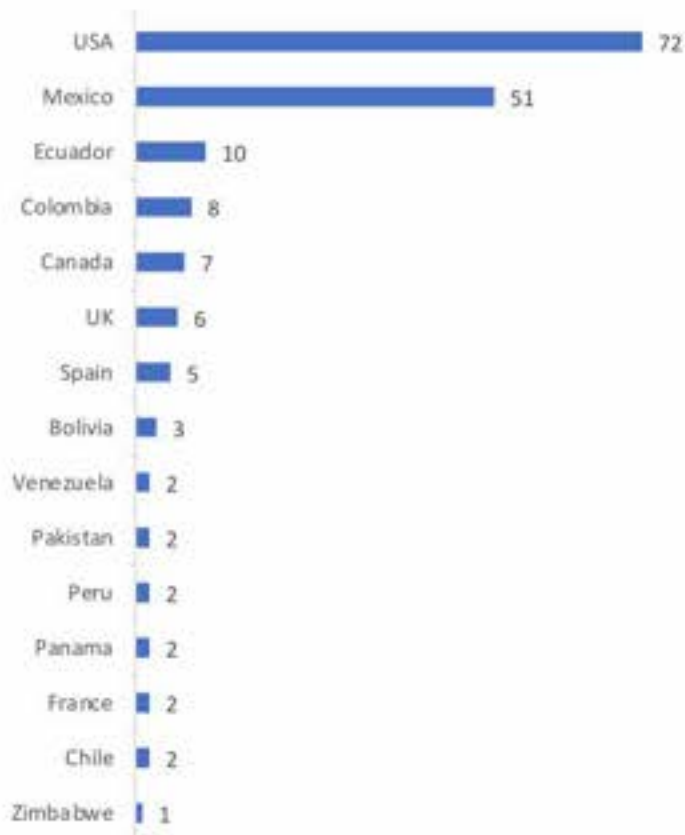
## RE-EMERGING ISSUES

1. **THE ILLNESS** - Note claims that heterosexual individuals think they are immune to mpox.
2. **THE CAUSE** - Note that recent research on the epidemiological characteristics of mpox prompted responses alleging that mpox is a “skin disease” attributed to COVID-19 vaccination.
3. **THE CAUSE** - Be aware of stigmatising narratives in the Spanish-language dataset, notably allegations that increased mpox cases can be attributed to the promiscuity of the LGBTQI+ community.
4. **THE ILLNESS** - Note that researchers in the medical field are still questioning mpox transmission and prevention.
5. **THE ILLNESS** - Note the presence of questioning regarding whether mpox reinfection is possible.
6. **THE ILLNESS** - Note confusion regarding how mpox can be transmitted and whether it happens via sexual activity only.
7. **THE TREATMENT** - Note the promotion of herbal treatments, including the use of chaparral as a cure for viruses including mpox.
8. **THE INTERVENTIONS** - Note that in the context of preparations for a carnival in Colombia, public health authorities encouraged members of the public to use condoms if engaging in sexual practices in order to prevent mpox transmission.

# Top Questions

31 January - 13 February 2023

## Volume of questions on mpox by country



## CURRENT STATUS OF THE MPOX OUTBREAK

Hey, what happened to the monkeypox ? It suddenly disappeared. ([Twitter](#), Spain) - 221 engagements

What happened to the Monkey Pox-is it in for a name change?- when can we expect it back again? ([Twitter](#), English-language) - 69 engagements

Since [a public health authority] declared a global emergency for monkeypox, we haven't heard from it. What happened to the ER? ([Twitter](#), France) - 63 Engagements

## PUBLIC FRUSTRATION TOWARDS GOVERNMENTS

Did I really just read a government ad with influencers saying that the measures against Simica smallpox is to use a face mask and clean surfaces in your house ? IS THIS A JOKE? What a frustration ([Twitter](#), Mexico) - 61 engagements

## TRANSMISSION OF MPOX

Do you know how #mpox , formerly called #Simic Smallpox, is transmitted ? ([Twitter](#), Mexico) - 34 Engagements

## MPOX VACCINES

How is it that Mexico does not want to buy vaccines for monkeypox ? ([Twitter](#), Mexico) - 20 Engagements

In recent months there have been announcements about efforts to bring monkeypox vaccines into the country, but when will they arrive? Time passes and nothing. ([Twitter](#), Mexico)- 59 Engagements



# FORTNIGHTLY OVERVIEW

## MOST POPULAR TOPICS (BY VOLUME)

- #1 VACCINE (GLOBAL, EXCL. UK/USA, ES, EN, FR)
- #2 SPREAD (COMMUNITY CONTEXTS) (GLOBAL, EXCL. UK/USA, EN)

## RIISING TOPICS (BY VELOCITY)

- #1 MEANS OF TRANSMISSION (MOTHER-FETUS) (GLOBAL, EXCL. UK/USA, EN), COMPARATORS TO COVID-19 (ES), MISINFORMATION AND DISINFORMATION (FR)
- #2 RISK (SEX WORKERS) (GLOBAL, EN) , PPE (Excl UK/USA), SPREAD (TRAVEL) (ES) OTHER INTERVENTIONS (MEASURES IN PUBLIC SETTINGS) (FR)

## SPOTLIGHT ON: CONVERSATIONS FROM SOUTH AMERICA & CONVERSATIONS FROM AFRICA

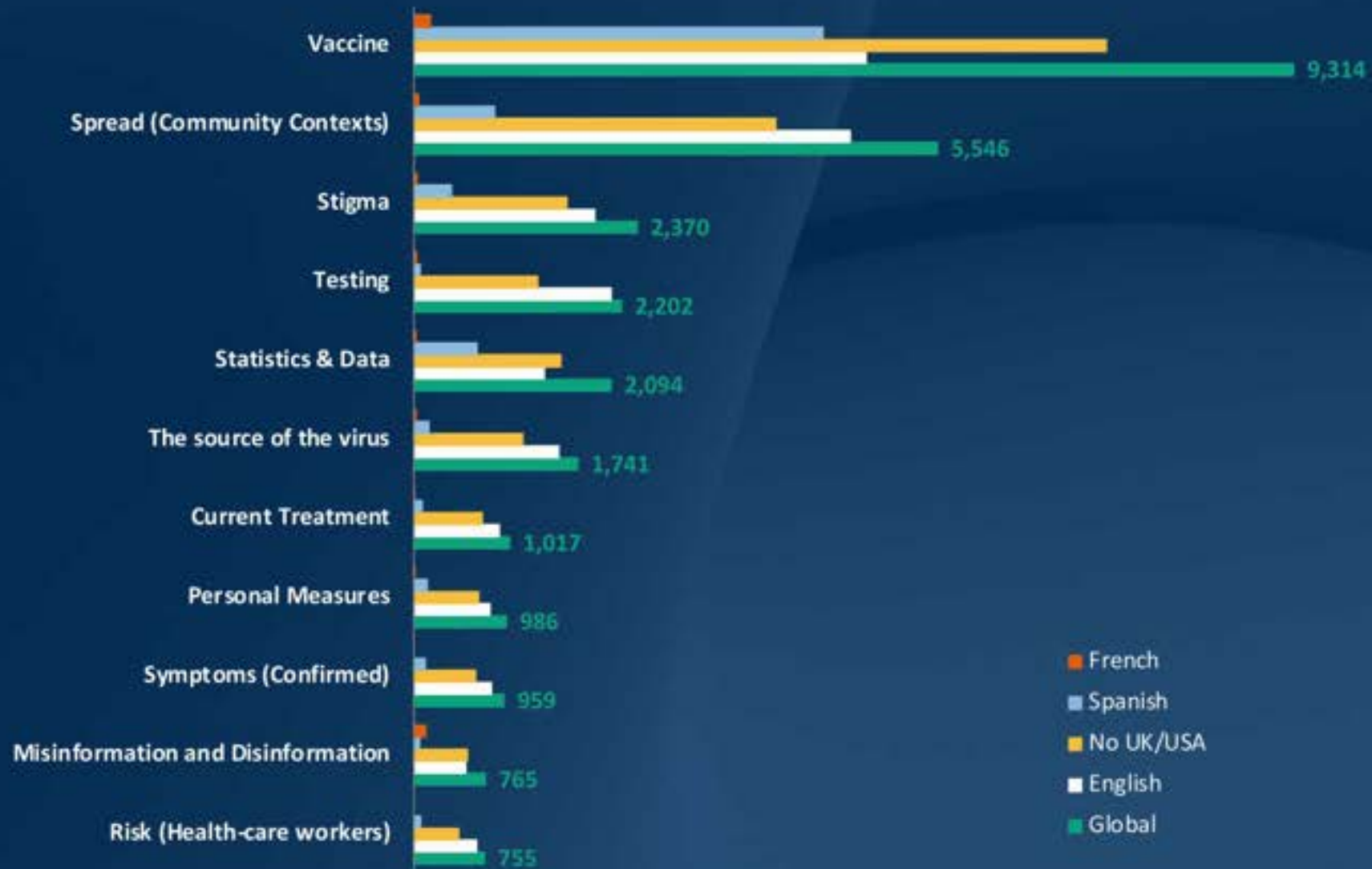
- Conversations about the alleged lack of mpox cases, the lack of vaccines, and the management of the outbreak emerged during the reporting period.
- Conversations in Africa were comparatively small and centred on government and medical interventions to combat the outbreak through various initiatives. For example, conversations from the Democratic Republic of the Congo touched on the need for a more effective strategic framework to combat the virus. Elsewhere, an alleged increase in mpox cases in Ghana was reported.
- In South America, on the other hand, users focused on a lack of trust in the authorities and perceptions that the authorities have neglected the management of the mpox outbreak. Users in Mexico also shared concerns about vaccine distribution and highlighted an urgent need for more vaccines.

# SOCIAL LISTENING DATA





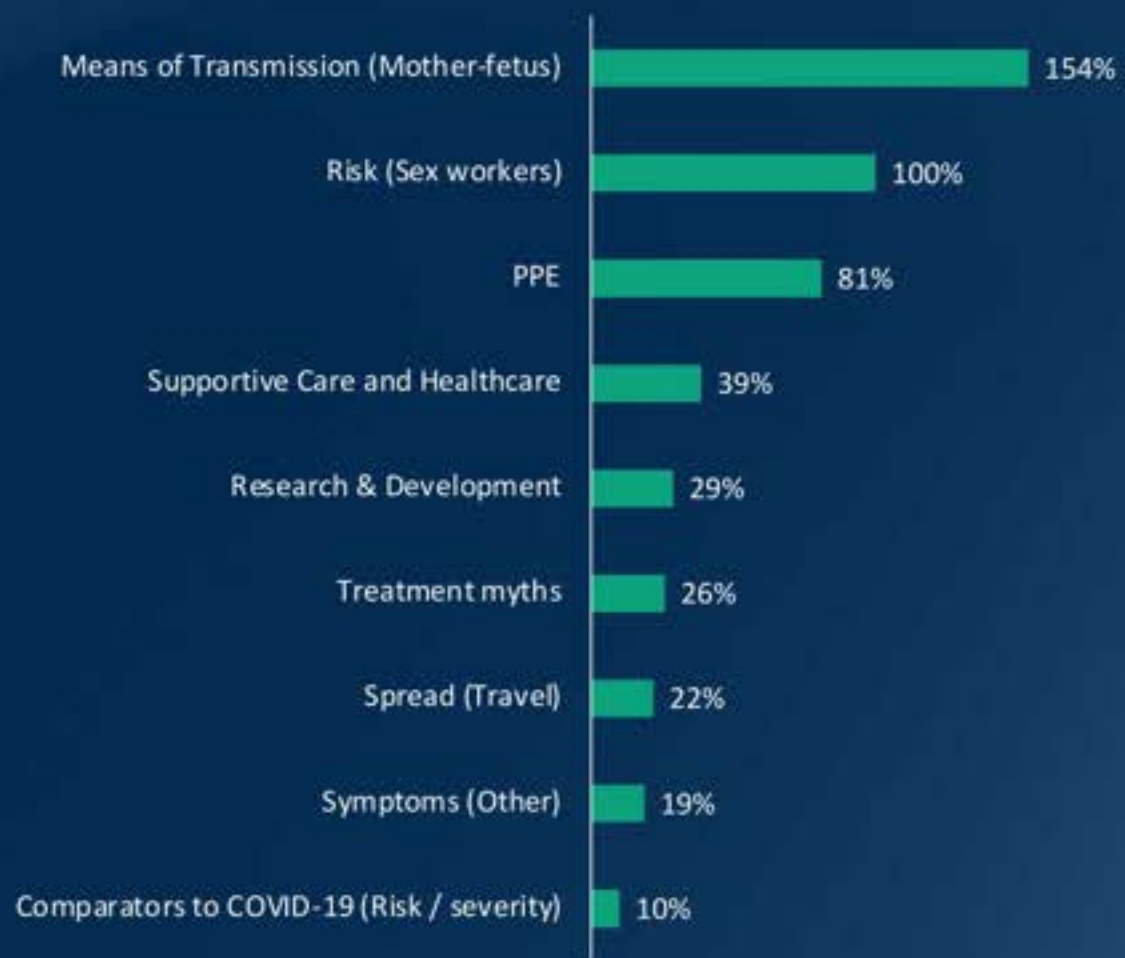
# Top topics by volume



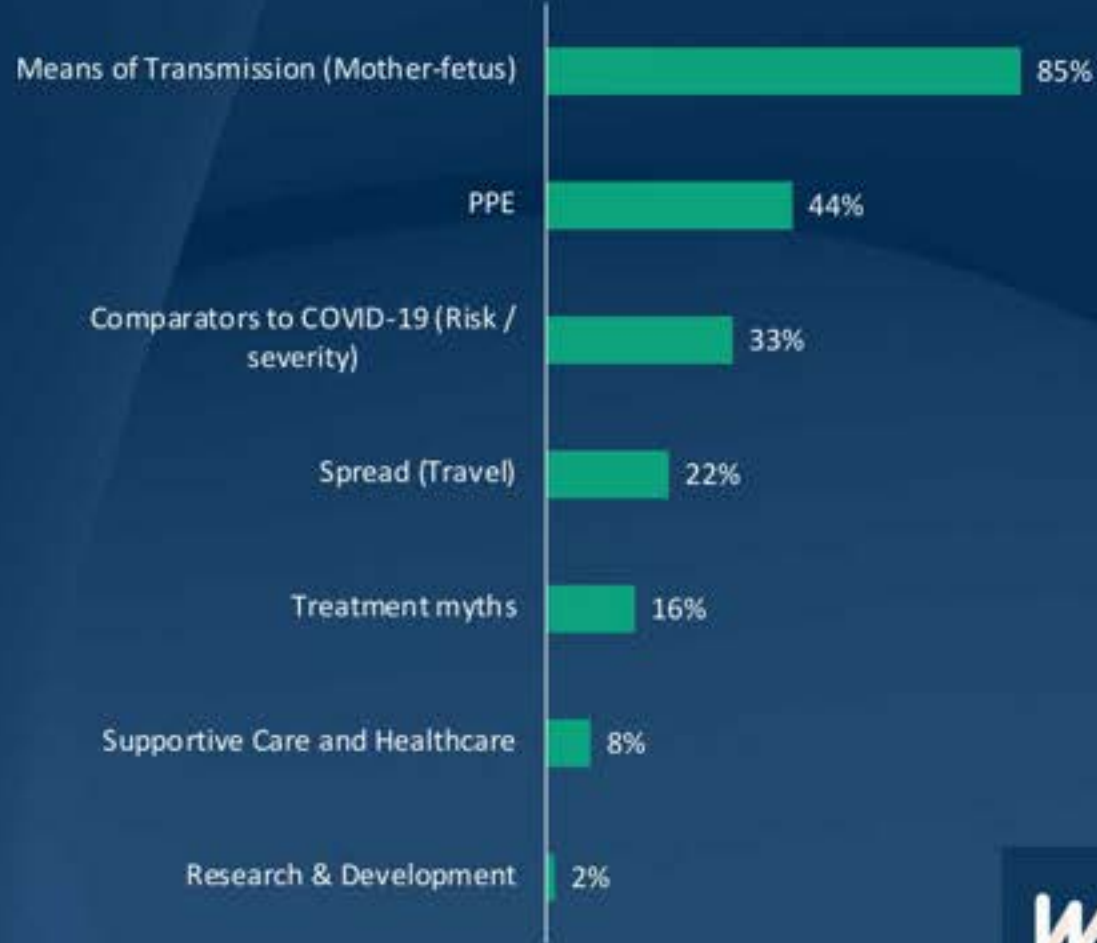
# Top rising topics (**velocity**)

## MPOX INFODEMIC INSIGHTS

### GLOBAL



### EXCL. UK/USA



■ Topic increased in more than one data set

■ Unique pattern - topic rose in only one data set



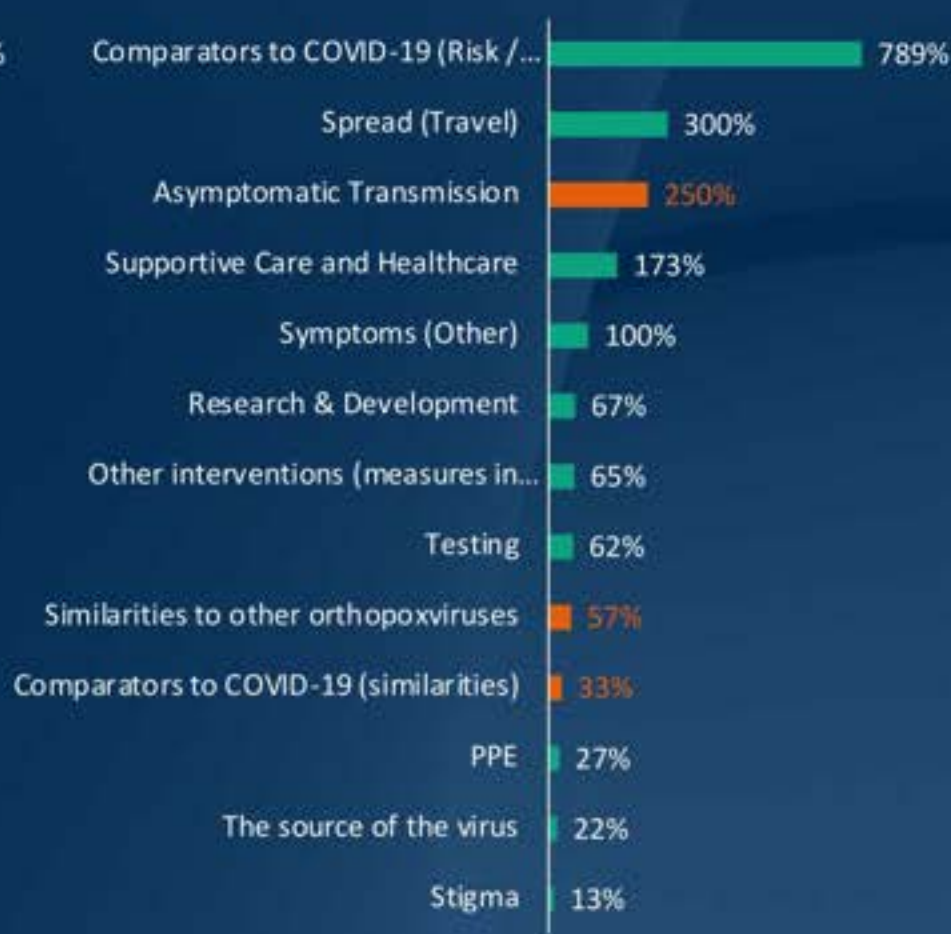
# Top rising topics (**velocity**)

## MPOX INFODEMIC INSIGHTS

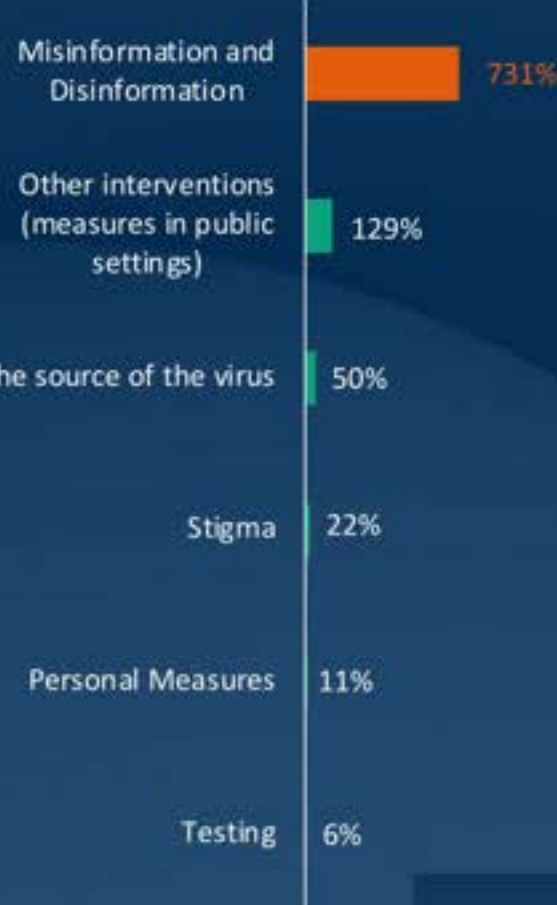
### EN ONLY



### ES ONLY



### FR ONLY



Report #008, 31 January - 13 February 2023

■ Topic increased in more than one data set ■ Unique pattern - topic rose in only one data set



# Global data excluding the UK and the USA

## MPOX INFODEMIC INSIGHTS

The global dataset excluding the UK and the USA featured seven rising topics, whereas the global dataset featured nine rising topics. The non-UK/USA dataset featured no unique rising topics over the reporting period.

### PPE

The topic of **PPE** (+46%) ranked second in the non-UK/USA dataset, with the conversation being primarily driven by users geolocated in India (9%).

- Posts often focused on the efficacy of specific mask types in the context of mpox transmission. Some users promoted wearing a **KN95, N95 OR KF94** mask to protect against airborne diseases such as mpox. Others said they were glad they had decided to purchase respirators due to mpox, speculating that a pandemic of multiple overlapping illnesses would emerge. Another user publicising a “Safety Drive” in the USA asked those dropping off supplies to **wear masks in order to not spread mpox or COVID-19 through the donated items.**
- On the other hand, a tweet by a health government department in Ecuador argued that the mpox outbreak “has nothing to do” with masks.

### Treatment Myths

The topic of **Treatment Myths** (+16%) ranked fifth in the non-UK/USA dataset, with conversation being primarily driven by users based in India (12%).

- **Promotion of herbal treatments** through posts on Instagram was present within conversations. For example, a user touted the use of chaparral and claimed it is **effective for reversing a range of diseases including mpox** (70 engagements). Another post endorsed **plant based homeopathic remedies** as an aid to reduce reliance on antibiotics for various types of illnesses including mpox





# Global data: English and French conversation

MPOX INFODEMIC INSIGHTS

The English-language dataset featured 11 rising topics during this reporting period with two unique rising topics: **Quarantine (+43%)** and **Means of Transmission (Direct physical contact) (+21%)**. The French-language dataset contained six rising topics with one unique rising topics during this reporting period: **Misinformation & Disinformation (+731%)**.

## Supportive Care and Healthcare (English-language)

- **Supportive Care and Healthcare (+26%)** ranked sixth in terms of topic velocity in the English-language dataset. Conversation was driven primarily by users in USA (60%), Nigeria (10%) and India (4%).
- A user alleged that one state in the USA has declared an end to the mpox outbreak, but reminded readers that the municipal health system will continue to provide mpox vaccination, testing and treatment at all 11 hospitals and five health centres that cater for the health needs of the LGBTQI+ community.
- In a separate conversation, a journal article was shared which outlined practical guidance for managing mpox infections for hospitals, such as treatment, complications, hospital precautions and differential diagnoses.

# Global data: Spanish conversation

The Spanish-language data set featured 13 rising topics over the reporting period, of which there were three unique rising topics, namely: **Asymptomatic Transmission (250%)**, **Similarities to other orthopoxviruses (+57%)**, and **Comparators to COVID-19 (Similarities) (+33%)**.

## Stigma

- The topic of Stigma (+13%) saw an increase in velocity in the Spanish-language dataset relative to the previous fortnight, with content mainly driven by users geolocated in **Peru (17%)**, **Mexico (14%)** and **Spain (6%)**.
- A top engaged-with post stigmatised the LGBTQI+ community by inferring that the community engages in “promiscuous” sexual activity which has allegedly led to higher mpox cases (448 engagements). In response, a user suggested that mpox cases increased when “it became popular to take children to drag queen shows” (1 engagement).
- The narrative that mpox is more prevalent among LGBTQI+ & MSM communities was further amplified on social media following the circulation of leaflet advising members of the MSM community not to engage in sexual activity in order to prevent the spread of mpox. A user described the leaflet as discriminatory and questioned whether the same advice would be given for a disease which primarily affected heterosexual (27 engagements).



# RISING TOPICS

# Research & Development

## +29%

Top locations for social media conversation on  
"Research & Development":  
31 January – 13 February 2023



Top keywords & phrases in social media conversation on  
"Research & Development":  
31 January – 13 February 2023



Discussion around **Research & Development** generated **268** mentions during this reporting period, increasing by 29% from the previous fortnight.

**AMPLIFICATION OF NEW RESEARCH AND JOURNAL ARTICLES ABOUT MPOX (PERU, SWITZERLAND)**

- Users engaged with a [tweet](#) from a doctor which featured a link to [a study](#) looking at the **epidemiological characteristics and clinical features of patients in a hospital in Peru with mpox virus infection**. The tweet prompted a [reply](#) alleging that mpox is a "skin disease" brought on by the **COVID-19 vaccine**, which was labelled a "biological weapon".
- There were several instances of tweets from **microbiology journals** which hyperlinked **research papers looking at mpox**. These tweets did not prompt any replies, however. [One such tweet](#) linked to a [review article](#) that reviewed the **diagnosis, treatments and prevention of mpox**. Another such [tweet](#) linked to a [review article](#) looking at the **mechanisms of immune evasion of the mpox virus**. Moreover, a [third such tweet](#) linked to a [review article](#) that provided an overview on the mpox virus, exploring **pathogenesis, transmission, host infection and therapeutics**.

**DISCUSSION ABOUT MPOX RESEARCH PRIORITIES (SWITZERLAND, USA)**

- A [paper](#) about at "**defining the research agenda**" for mpox was posted by several social media accounts. The link to the paper was tweeted by the open-access [medical journal](#) that published the paper, as well as by an [unverified account](#) claiming to be an education institution in Switzerland. Moreover, a [social media user](#) who claimed to be one of the authors of the paper quote-tweeted the aforementioned post by the medical journal and added that the mpox 2022-23 outbreak is still ongoing and is "generating **research questions about transmission through sexual contact and prevention and societal impact**." The user also said that "**elimination is the goal**" of the research agenda.

**ANNOUNCEMENT OF GRANT AWARDED TO SCIENTIST FOR MPOX RESEARCH (MALAYSIA)**

- In Malaysia, an [unverified account](#) claiming to be representing a university tweeted a link to an [online news article](#) reporting that a **RM30,000 grant was awarded to a scientist for mpox research**. The tweet prompted only [one reply](#), which congratulated the scientist.

**MPOX RESEARCH ROUNDTABLE (USA)**

- A Twitter user claiming to have attended an **mpox research roundtable event** [tweeted](#) about how "thrilled" they were to hear from the event's speakers.



## Misinformation & Disinformation (French-language) +731%

Top locations for social media conversation on  
"Misinformation & Disinformation":

31 January – 13 February 2023



Top keywords\* & phrases in social media conversation on  
"Misinformation & Disinformation":

31 January – 13 February 2023



\*excluding keywords such as "monkeypox", "mpox virus" and "mpox"

Discussion around Misinformation & Disinformation generated 789 mentions, with content in French increasing by 731% from the previous fortnight.

**CLAIMS THAT THE FRENCH MEDIA EXAGGERATED THE THREAT OF MPOX (FRENCH-LANGUAGE, ENGLISH-LANGUAGE)**

- The alleged limited impact of mpox in France during the summer of 2022 was interpreted by some individuals as proof that the **health authorities and mainstream media exaggerated the threat of the virus**. A journalist shared an article which contrasted data about **4,982 mpox cases and 0 deaths being recorded in France** with media headlines from 2022 suggesting **mpox is a threat**. The journalist alleged that the messaging around mpox amounted to a "media scam". Similar posts were made by other users who shared similar media content and echoed the allegation of a "media scam".
- In response, some users accused the media of being the main amplifier of misinformation, while others described "**health terrorism**" as a "**means of controlling the masses**". Some users described mpox as a hoax or a lie. For instance, one claimed that mpox is "a good example" of a lie being pushed by so-called "globalists" that was failing to gain traction among citizens. In addition, a user claimed that mpox does not exist and created a poll to see if followers agreed or disagreed with this statement.

**QUESTIONING OF BIRD FLU DRAWS COMPARISONS TO MPOX (USA)**

- The spread of the N5H1 bird flu was alleged by some to be another media scare similar to mpox. A sociologist and journalist appealed to vaccine and pandemic questioning online users, urging them to not view the bird flu situation as an "extension of COVID fights" and arguing that **unlike mpox, which they alleged generated a lot of "nonsense" commentary, N5H1 has the potential of becoming a pandemic**.

**CLAIMS THAT FACIAL SYMPTOMS AND LESIONS ATTRIBUTED TO MPOX WERE CAUSED BY IVERMECTIN (USA)**

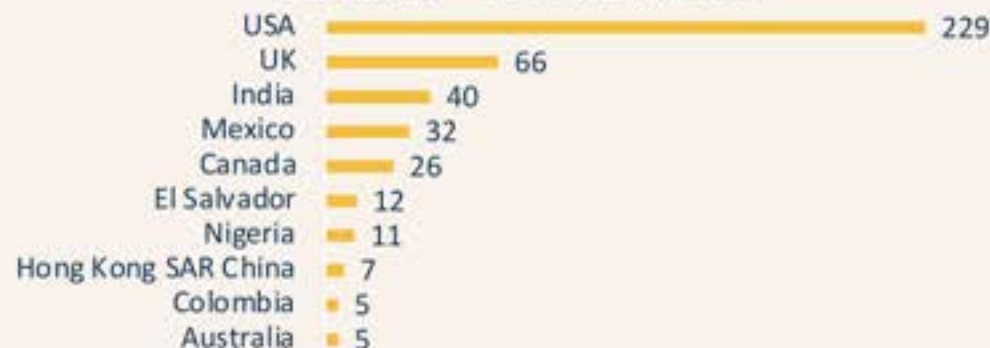
- An epidemiologist in the USA who alleged a link between long COVID and heart attacks was accused of ignoring the alleged dangers of ivermectin. A user accused the epidemiologist of **misdiagnosing the distinct facial lesions of people as mpox, instead of an alleged dysfunctional immune response induced by ivermectin**.



# Personal measures (French-language) +11%

Top locations for social media conversation on  
"Personal Measures":

31 January – 13 February 2023



Top keywords\* & phrases in social media conversation on  
"Personal Measures":

31 January – 13 February 2023



\*excluding keywords such as "monkeypox", "mpox virus" and "mpox"

The topic of **Personal Measures** generated **1.0K mentions**, with content published in the French-language increasing by **11%** compared to the previous reporting period.

**REGIONAL AND COUNTRY-LEVEL PUBLIC HEALTH AUTHORITIES HIGHLIGHT THE IMPORTANCE OF GOOD SANITATION TO AVOID THE SPREAD OF MPOX (AFRICA)**

- A video published on the [Facebook](#) and [Twitter](#) pages of a regional public health authority highlighted the **importance of handwashing to reduce the risk of spreading diseases such as COVID-19 and mpox**. The video was also shared by country-level offices such as in [Zimbabwe](#), which also stressed that handwashing is a key way of preventing cholera infections.

**RECOMMENDATION TO USE CONDOMS IN ORDER TO MINIMISE THE RISK OF MPOX INFECTION AND TRANSMISSION (GUATEMALA, MEXICO, COLOMBIA)**

- The use of condoms as a means to prevent infection with mpox was highlighted by several organisations, including local city halls, health agencies and LGBTQI+ organisations. A public health agency in Colombia [shared a post](#) about an upcoming carnival in a city which promoted the **use of condoms so people can enjoy the festivities without worrying about mpox infections**. A public health agency in Mexico also [shared an infographic](#) to stress that **using condoms decreases the risk of transmission of mpox**. Similarly, an LGBTQI+ media outlet [echoed this sentiment](#) and reminded people in the community to use condoms in order to decrease the risk of being exposed to mpox.

**NATIONAL PUBLIC HEALTH AGENCIES FOCUS ON SELF-QUARANTINING TO LIMIT THE SPREAD OF MPOX (EL SALVADOR, CANADA)**

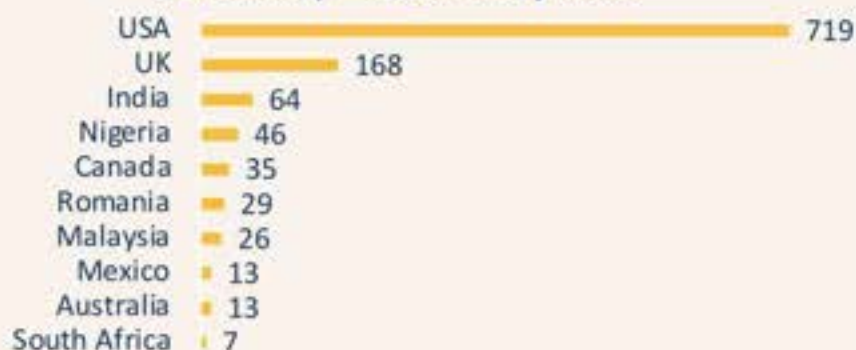
- National and local health agencies took to Twitter to provide advice about how to deal with mpox infection. A public health agency in El Salvador [advised](#) people infected with mpox **to stay active and do relaxing activities whilst self-isolating**. Meanwhile, a public agency in Canada [published an infographic](#) about the various symptoms of the disease and **the need to self-isolate if displaying symptoms**. This post from Canada also advised people to call a health care provider and quarantine.



# Testing (Spanish-language) +62%

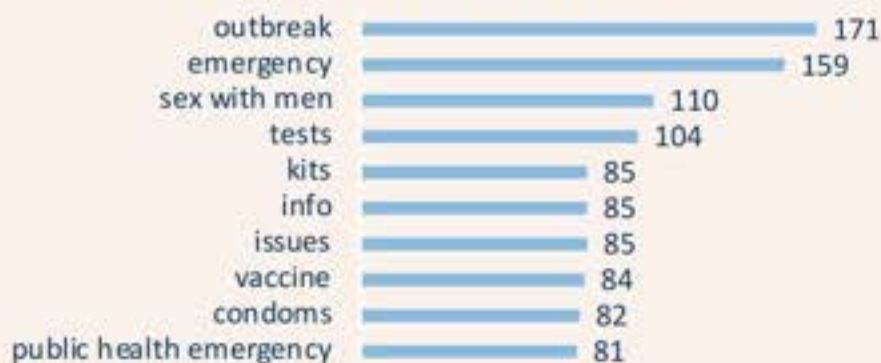
Top locations for social media conversation on "Testing":

31 January – 13 February 2023



Top keywords\* & phrases in social media conversation on "Testing":

31 January – 13 February 2023



\*excluding keywords such as "monkeypox", "mpox virus" and "mpox"

The conversation on **Testing** generated **2.2K mentions**, with mentions in the Spanish-language dataset increasing by **62%** relative to the previous fortnight.

## RESOURCE ABUNDANT COUNTRIES ACCUSED OF HOARDING TESTS FOR COVID-19 AND MPOX (ENGLISH LANGUAGE)

- Users engaged with warnings, provided by health experts representing a coalition of organisations, that **uneven global distribution of mpox and COVID-19 tests has created a significant diagnostics inequality**. In response, a user echoed this view and argued that resource abundant nations have "stacks" of tests.
- The coalition that produced the report shared a thread with the key findings of the document, including that **high prices and burdensome intellectual property rules on test components were among the issues impeding resource constrained countries from accessing COVID-19 and mpox tests**.

## PCR TESTS TO DIAGNOSE MPOX INFECTION RECEIVE APPROVAL BY PUBLIC HEALTH AUTHORITIES (USA, PERU)

- The governments of several countries rubber stamped their approval to use PCR tests in order to test patients for mpox infections. In the USA, a public health agency authorised Cepheid's Xpert mpox test for emergency use in order to detect the virus in lesion swab specimens from individuals suspected of being infected. Similarly, a public health agency in Peru approved the use of PCR tests in order to diagnose the presence of mpox in infected individuals, with the tests allegedly achieving 100% agreement.

## CLAIMS THAT MPOX TESTS ARE CENTRALISED AND REMAIN OUT OF REACH FOR MANY CITIES AND REGIONS (ENGLISH-LANGUAGE)

- A post highlighted that experts from a health research and policy group claimed that the availability of mpox tests is centralised in nature due to laboratory facilities being located in the biggest cities of the most resource abundant in the world. They further suggested this **impedes easy access to tests for people living in cities far removed from the places where the tests are produced**, and even more so for people who live in remote areas away from urban centres.



# Spotlight focus on Transmission

Top locations for social media conversation on "Transmission": 31 January - 13 February 2023



Top keywords & phrases\* in social media conversation on "Transmission": 31 January - 13 February 2023



\*excluding keywords such as "monkeypox", "mpox virus" and "mpox"

Discussion around updated guidance provided by a USA health authority with regards to mpox transmission featured prominently in the **Asymptomatic Transmission** and **Means of Transmission (Direct physical contact)** taxonomy sub-topics. Given its salience in social media discussion, this strand of conversation will be explored in more detail below.

## DISCUSSION ABOUT ASYMPTOMATIC TRANSMISSION FOLLOWING UPDATED PUBLIC MESSAGING (USA, MEXICO)

- Social media users reacted to updated findings shared in guidance by a USA public health authority stating that there is "growing scientific evidence that show[s] some people can spread mpox virus to others from one to four days before symptoms of mpox appear [...] there is currently no evidence showing that people who never develop symptoms have spread mpox virus to someone else".
- While some shared the findings in a factual manner, others questioned the research. For instance, a post appeared to suggest that the new information about mpox reminded them of public health **messaging around COVID-19**.
- Other users said they thought that asymptomatic transmission would mean that **mpox is most likely spread in the air**. For example, it was argued that asymptomatic transmission is associated with "aerosol spread".
- Furthermore, a user claimed that previous public health messaging conveyed that mpox does not spread asymptotically. In light of the perceived change in messaging, the user also **questioned whether mpox is airborne, and whether reinfections are possible**.

## TRANSMISSION THROUGH CONTACT (USA)

- Users engaged with a post from a USA public body outlining how individuals could get mpox through "**hugging, kissing, massage, sex or other intimate contact**" with people who are mpox positive. Other accounts sought to highlight that sexual contact is not the only type of physical contact that can result in mpox transmission between infected individuals, noting that skin-to-skin contact in closed spaces, including bars and clubs, can also lead to transmission.



# SPOTLIGHT FOCUS

Conversation from South America &  
Conversations from Africa

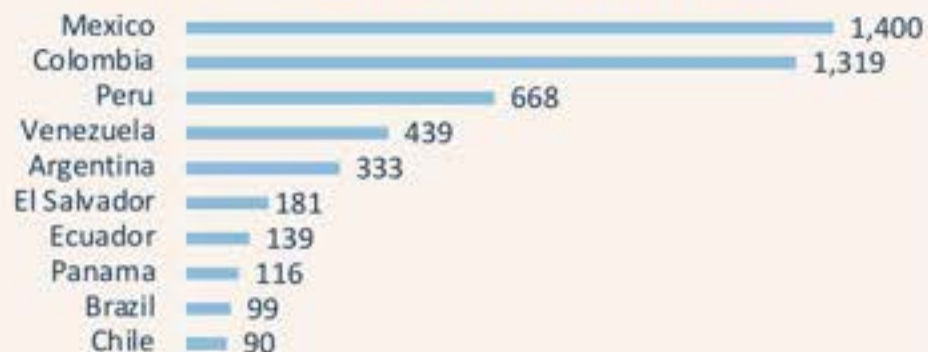


## Spotlight: Conversations from South America

Volume of social media conversation on mpox in South America : 17 November 2022 – 13 February 2023



Top locations for social media conversation on mpox in South America: 31 January - 13 February 2023



### LACK OF FAITH IN MANAGEMENT OF MPOX BY THE AUTHORITIES (MEXICO, COLOMBIA)

- A prominent theme that emerged in social media conversation in South America concerned expressions of mistrust and a lack of faith in the authorities' ability to effectively manage the mpox outbreak. In particular, the handling of mpox in Mexico came under scrutiny on social media (101 engagements). One post argued that Mexico should be a "case study on bad practices" (74 engagements). Another user expressed concern that "the authorities do not want to listen" and "things are worse than we thought" (628 engagements), feeding into perceptions that Mexico's management of the outbreak has been a disaster (120 engagements). Such sentiment was amplified by other users.
- A video depicting a politician from Colombia allegedly criticising medical professionals for fiscal strains affecting the healthcare system prompted further expressions of mistrust and neglect in the context of the management of the mpox outbreak (163 engagements). Meanwhile another user claimed that a public health agency has stopped responding when asked about deaths from mpox (140 engagements).

### CONCERN SURROUNDING THE LACK OF VACCINES (MEXICO)

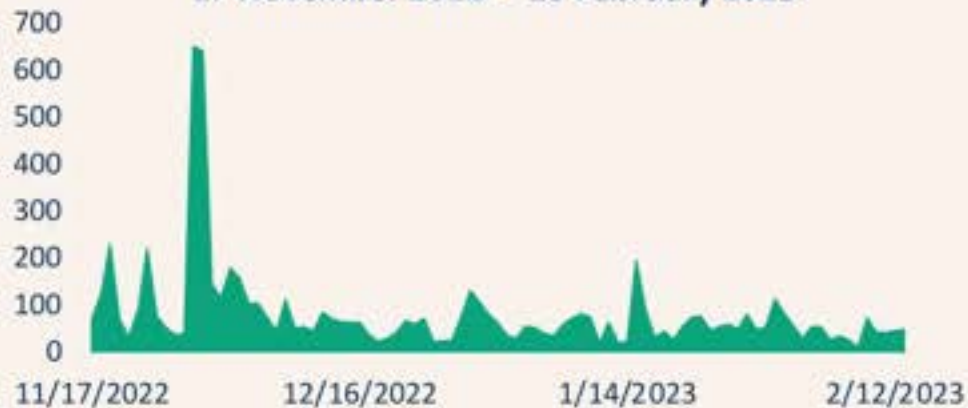
- Significant conversation centred around the vaccine rollout across South America and perceptions that vaccine distribution has not been effective. A user posted a tweet which linked to an article from a prominent medical journal discussing the alleged "neglect" of the mpox outbreak in South America (92 engagements). The user claimed that vaccines are slowly arriving in the region, but also highlighted that vaccinations and treatment for mpox in Mexico are in short supply.
- Furthermore, a self-proclaimed medical official from Mexico highlighted the purported lack of efficient vaccine programmes in the region (342 engagements) and implied that greater international cooperation is required to boost vaccine access.
- Other users expressed the view that the spread of mpox cannot be prevented through individual protective measures (184 engagements) and stressed the need for vaccines to arrive in South America (204 engagements). One user responded by questioning whether the vaccine is necessary.
- Another user suggested that the alleged lack of investment into mpox vaccines in Mexico is rooted in institutional homophobia (58 engagements).



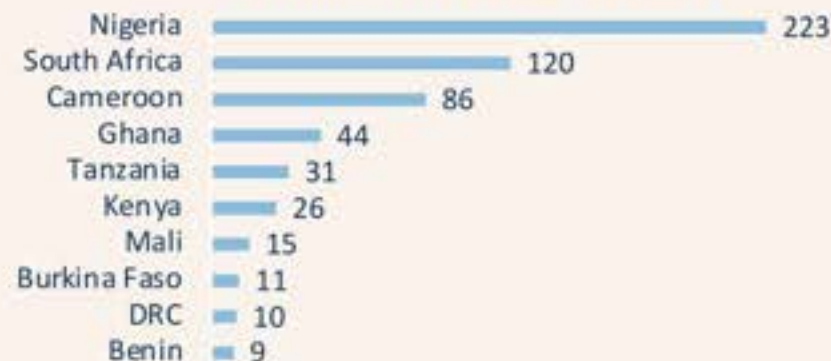
## Spotlight: Conversations from Africa

Volume of social media conversation on mpox from users geolocated in Africa:

17 November 2022 – 13 February 2023



Top locations of social media conversation on mpox in Africa: 31 January - 13 February 2023



### INTERVENTIONS TO TACKLE THE MPOX OUTBREAK (CAMEROON, DEMOCRATIC REPUBLIC OF THE CONGO)

- Interventions by non-government agencies to tackle mpox transmission in Africa drove social media conversation over the reporting period.
- In this vein, an organisation in Cameroon which focuses on zoonotic disease control and prevention posted about a meeting where participants advocated for the mobilisation of resources to tackle mpox (20 engagements). During the meeting, a finalised document was signed to create a strategic framework to better respond to the disease.
- Furthermore, a public health authority in the Democratic Republic of the Congo (DRC) posted a tweet noting the **emergency committee meeting** to consider whether the mpox outbreak should be constituted a public health emergency of international concern.
- Additionally, with financial aid from the USA, a group of non-governmental organisations operating in the DRC promoted their new programme to train laboratory and veterinary technicians to help control mpox. The training purportedly included the use of serological tests and molecular biology techniques to help diagnose mpox.

### CONVERSATION ON RISING MPOX CASES (GHANA, NIGERIA)

- Two news outlets in Nigeria reported that 763 mpox cases have been recorded in the country in January. Similarly, a radio channel in Ghana reported that 116 cases and 4 recorded deaths were recorded in Ghana.

# METHODOLOGY



# PROJECT BACKGROUND

---

Marble Global was commissioned to analyse and quantify the information – right and wrong – in digital media discussing mpox. The project consists of two workstreams:

1. These fortnightly summary reports to track and quantify fortnightly conversation trends and emerging citizen questions
2. Interactive Tableau dashboard to provide regular updates on the analysis models created

To create these reports, Marble has used a wide range of its enterprise social listening, media monitoring, online search, AI and data enrichment tools & expertise to provide an analysis of digital information discussed and reported on by citizens referencing the mpox pandemic.

The data collected for this study includes content publicly available on social media platforms (Twitter, Facebook, Instagram, YouTube, Blogs & forums) as well as online news content (including broadcast) that has resonated in the aforementioned social media platforms. Question and sentiment language is sourced from the aforementioned social media platforms (excluding blogs) to ensure consistent proximity between the searched entities and the linguistic cues used to detect sentiment and question language.

Data analysed will be collected in English-language, French-Language and Spanish-language.

# METHODOLOGY

| 5 CATEGORIES<br>See methods <a href="#">journal article</a> | 22 SUB-CATEGORIES                 | 40 TOPICS | LANGUAGES |
|-------------------------------------------------------------|-----------------------------------|-----------|-----------|
| Category A                                                  | Category A area<br>Sub-category 1 | Topic A1a | EN ES FR  |
|                                                             |                                   | Topic A1b | EN ES FR  |
|                                                             | Category A<br>Sub-category 2      | Topic A2a | EN ES FR  |
|                                                             |                                   | Topic A2b | EN ES FR  |
| Category B                                                  | Category B<br>Sub-category 1      | Topic B1a | EN ES FR  |
|                                                             |                                   | Topic B1b | EN ES FR  |

+ Questions data > 40 strings **AND** question words / phrases / syntax.

# 80

individual search strings





CONTENT SEARCHES



AUTOMATED DATA  
PROCESSING



INSIGHTS



+WEB SEARCH DATA

W.

# METHODOLOGY

## Fortnight-on-fortnight change

| Taxonomy             | Category                             | Week of Data | Count  | Previous weeks count | WoW %   |
|----------------------|--------------------------------------|--------------|--------|----------------------|---------|
| The Illness          | B2a Means of Transmission            | Week 28      | 28     | 187                  | -87.60% |
| The Cause            | A2a Further spread: Immunity         | Week 28      | 721    | 3,958                | -81.70% |
| The Interventions    | D4 Technology                        | Week 28      | 385    | 815                  | -52.60% |
| The Treatment        | C1c Research & Development           | Week 28      | 890    | 2,838                | -68.70% |
| The Cause            | A2a Further spread: Stigma           | Week 28      | 1,307  | 4,428                | -70.90% |
| The Interventions    | D5e Inequalities                     | Week 28      | 58     | 152                  | -61.80% |
| The Interventions    | D3a Supportive Care (Equipment)      | Week 28      | 3,108  | 8,754                | -64.60% |
| The Illness          | B1c Asymptomatic                     | Week 28      | 377    | 904                  | -57.80% |
| The Illness          | B2b Protection from Transmission     | Week 28      | 3,705  | 11,454               | -67.60% |
| The Illness          | B3c Risk - Demographics (Age)        | Week 28      | 653    | 1,628                | -59.90% |
| The Interventions    | D3a Personal Measures                | Week 28      | 2,194  | 7,029                | -68.30% |
| Types of Information | E1 Statistics & Data                 | Week 28      | 1,757  | 5,657                | -69.10% |
| The Interventions    | D5b Faith                            | Week 28      | 997    | 2,527                | -60.50% |
| The Interventions    | D1 Testing                           | Week 28      | 4,578  | 12,500               | -63.30% |
| The Interventions    | D5d The Environment                  | Week 28      | 1,477  | 3,209                | -53.80% |
| The Interventions    | D3b Measures in Public Settings      | Week 28      | 10,970 | 25,873               | -57.60% |
| The Illness          | B3d Vulnerable People                | Week 28      | 1,744  | 5,529                | -68.80% |
| The Treatment        | C1a Current Treatment                | Week 28      | 4,175  | 9,004                | -53.90% |
| The Interventions    | D3d Protection                       | Week 28      | 2,763  | 6,500                | -57.30% |
| The Illness          | B3b Risk - Demographics (Sex)        | Week 28      | 180    | 322                  | -44.10% |
| The Illness          | B1a Confirmed Symptoms               | Week 28      | 7,184  | 18,178               | -60.50% |
| The Interventions    | D3c Reduction of Movement            | Week 28      | 1,296  | 2,777                | -53.30% |
| The Interventions    | D3a Travel                           | Week 28      | 3,795  | 9,209                | -58.90% |
| The Illness          | B1d Pre-Symptomatic                  | Week 28      | 5      | 29                   | -82.80% |
| The Interventions    | D5c Unions and Industry              | Week 28      | 9,585  | 18,666               | -48.60% |
| The Treatment        | C2b Myths                            | Week 28      | 308    | 861                  | -64.30% |
| The Illness          | B3a Risk - Underlying Conditions     | Week 28      | 202    | 439                  | -53.80% |
| The Illness          | B3e Vulnerable Communities           | Week 28      | 1,541  | 2,279                | -33.30% |
| The Treatment        | C2a Non-proven treatment (Nutrition) | Week 28      | 205    | 461                  | -56.20% |
| The Treatment        | C1b Vaccines                         | Week 28      | 2,130  | 4,060                | -47.50% |
| Types of Information | E2 Misinformation                    | Week 28      | 196    | 386                  | -49.20% |
| The Interventions    | D3b Supportive Care (Healthcare)     | Week 28      | 7,390  | 12,662               | -41.70% |
| The Illness          | B3f Other discussed symptoms         | Week 28      | 345    | 430                  | -19.30% |
| The Cause            | A1 The Cause                         | Week 28      | 812    | 657                  | 23.60%  |
| The Interventions    | D5f Civil Unrest                     | Week 28      | 733    | 398                  | 83.90%  |

Identify rising topics



Contextualise the rise



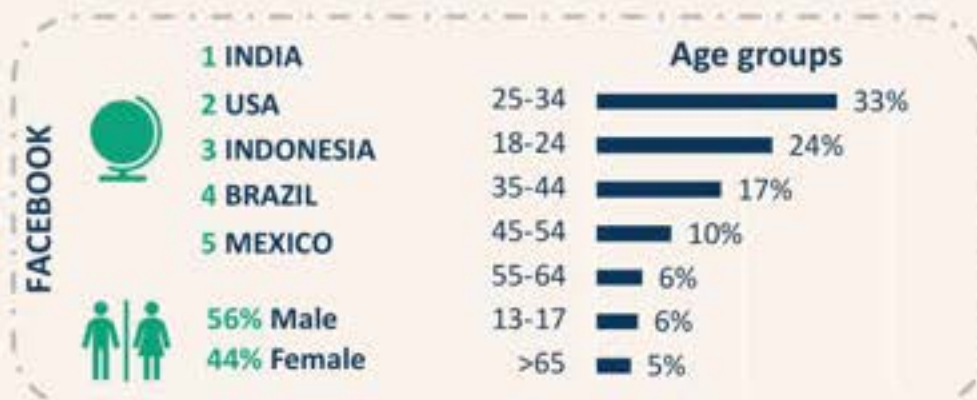
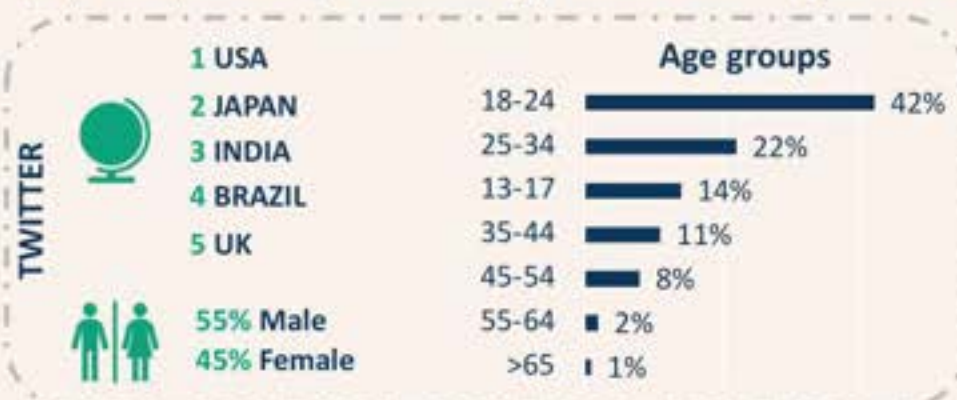
Narratives  
Engaging content  
Networks  
Emerging trends  
Patterns



# METHODOLOGY

## Top questions & platform demographics

Top questions are researched and identified through data feeds based on mpox key words (including misspellings) and grammatical features and/or markers that are used in English, French, and Spanish to build questions. Due to the nature of the platforms, data is most likely to originate from Twitter and forums (especially Reddit\*). Occasionally, Facebook also represents a source of viral questions on mpox.



\*According to the *GlobalWebIndex*, 19.9% of all internet users that access the web to seek for health-related information use Reddit.

# Note on representativity

The data is based on the publication of posts from populations that are digitally active and that are likely to use social media to discuss or share opinions about mpox and the mpox pandemic.

Note that demographics vary significantly from country to country and the availability of public social media data differs from platform to platform. Additionally, note an overrepresentation of English, French and Spanish speakers from all over the world due to scope limitations.

Twitter data is overrepresented in the data analysed in this report due to differing data sharing policies in place between individual social media platforms and social media data aggregators. Whilst the data aggregator used for this report offers firehose access to Twitter data, Facebook data is limited to a posts published by selected public pages and comments posted in these pages. The tracked sample of top global and local Facebook pages was selected based on recent engagement data retrieved from searches utilising the mpox public health social listening methodology. News pages have been prioritised, since these are particularly likely to attract public debates in comment threads.

The approach to writing insight and commentary consists of sorting content by engagement. Therefore, content which has been most shared is most likely to be referenced. Compared with following a methodology of sorting by highest reach, the methodology of sorting by highest engagement gives greater visibility to content from individual users.



# Appendix on WHO infodemic recommendations generation: Methodology for generation of insights and recommendation for infodemic management in three steps

This report is an intermediary analytical product that feeds into WHO's biweekly infodemic insights and recommendations generation related to the mpox outbreak.

The following slides describe the steps taken to arrive to the infodemic management recommendations, and where in the process this report fits in.

# Steps to generate biweekly infodemic recommendations on mpox

## STEP 1: Quantitative identification of potential topics of concern, questions, and information voids

### Tools /methods:

- Implemented and validated WHO mpox social listening taxonomy (see slide 37-40)
- NLP and AI for identification, aggregation of online content and categorization into 35 sub-topics using the

**Roles:** MG set up and validates the analytical pipeline and tools as per WHO-defined process and standards

**Output:** Summary dataset with annotations

## STEP 2: Weekly comparison, qualitative analysis and production of digital infodemic intelligence

### Tools /methods:

- Qualitative analysis by human analyst of weekly comparisons and changes
- Summary identification of velocity/virality of narrative themes and summary of questions

**Roles:** MG prepares report; WHO reviews for public health relevance and evidence

**Output:** **this report**, plus a whatsapp message summarizing the findings

## STEP 3: Integrated analysis and generation of recommendations to manage the infodemic

- Review of the MG report and identified themes
- Triangulation and comparison with other data sources freely available
- Assessment of themes by risk to public health based on risk matrix (see slides 35-36)
- **Roles:** WHO infodemic management team with external reviewers from WHO global IM community
- **Output:** top three themes of highest risk and accompanying recommendations for action



# Applied in step 1: Public health taxonomy for social listening on mpox conversations (updated on 23 August 2022)

**Objective :** Objective of the [taxonomy](#) is to monitor millions of conversations related to mpox on within thematic categories relevant to public health response. The subtopics are to capture breadth of conversations and help identify structure and changes in narratives. The taxonomy can be applied to online social media listening, as well as for offline social listening and can facilitate structured integrated analysis of the data to produce infodemic insights and recommendations.

**Background:** *What is the difference between social listening for marketing efforts and infodemic monitoring and intelligence gathering?* Social listening is often understood as an approach for monitoring online conversations on specific brands and topics, often used by marketing companies. Social listening is a limited label to use in infodemic management, since integrated analysis is best done with a diverse set of data sources across social, program, behavioral, media, and epidemiological domains. Infodemic monitoring and intelligence gathering consider as many relevant data sources as possible, recognizing they all individually have limitations and biases, but when analyzed in an integrated manner, can yield insights that data sources analyzed in isolation would not provide. Infodemic monitoring and insights generation encompasses systematic **analysis of different data sources**, generation of **intelligence**, turning the intelligence into infodemic **insights** and applying structured judgment and risk matrix approach to generate **recommendations** for action.

## Note to analyst:

- Compare the volume and themes of conversations and dynamics to overall net conversations vs COVID-19 conversations vs mpox-specific
- Compare velocity of conversations within mpox conversations over time
- Identify mpox specific themes of **questions, worries, concerns, information voids, circulating narrative and misinformation**, and crossover with COVID-19
- Focus not only on the content of conversations but also understanding people's reactions, confusion, questions, and conversations about issued health guidance.
- Pay attention to vulnerable populations and stigma, both on MSM, sex workers, inequities, as well as visual analysis of memes and images used associated with mpox in the media and social media.
- Refer to WHO-authored papers<sup>1,2</sup> for how to apply and validate its use.

Purnat TD, Vacca P, Czerniak C, Ball S, Burzo S, Zecchin T, Wright A, Bezbaruah S, Tanggol F, Dubé É, Labbé F. Infodemic signal detection during the COVID-19 pandemic: development of a methodology for identifying potential information voids in online conversations. JMIR infodemiology. 2021 Jul 28;1(1):e30971. <https://infodemiology.jmir.org/2021/1/e30971>

Purnat TD, Nguyen T, Ishizumi A, Yau B, White B, Cecchini S, Samuel R, Hess S, Bezbaruah S, Briand S. 2022. Delivering actionable infodemic insights and recommendations for the COVID-19 pandemic response. Weekly Epidemiological Record. 2022 Jul 8; 97 (27), 313 - 324. <https://apps.who.int/iris/handle/10665/359144>

# Applied in step 3: Risk Matrix for infodemic harm in relation to mpox outbreak- summary

The risk matrix is an important tool that helps infodemic analysts systematically translate infodemic insights into actionable recommendations.<sup>1</sup> As shown on the following slide, the overall structure of the risk matrix used in the mpox infodemic insights reporting is based on the risk matrix that was applied previously to COVID-19. However, the matrix reflects the following disease-specific considerations:

1. **Stigma** – one important feature of mpox is the potential for stigmatizing language and imagery about vulnerable population groups. Social listening may pick up more conversations *about* them, rather than *by* them.
2. **Stratifying voices and audiences** – what are conversations being had *by* vulnerable groups? And how might those conversations be dominated in the analytical datasets by other louder groups?
3. **At-risk population, population of focus** – the degree of harm to public health would be guided by the vulnerability of the population of focus, even if this population is a small one and therefore the volume of conversation is relatively small to the whole dataset.
4. **Context/region** – analytical approach and risk of harm of a narrative must take into account context and spread of narratives across geographies that may socially or legally address and treat LGBTQI+ and MSM populations differently.
5. **Evolving science** – there is evolving science about mpox and how it presents itself in new populations. For example, vulnerable populations other than MSM, have been identified as being underdiagnosed, which may lead to disproportioned harm of narratives (e.g. women and non-binary people).

**The risk matrix will be updated as the epidemiological and scientific situation around mpox evolves.**

1. Purnat TD, Nguyen T, Ishizumi A, Yau B, White B, Cecchini S, Samuel R, Hess S, Bezbaruaha S, Briand S. [Delivering actionable infodemic insights and recommendations for the COVID-19 pandemic response](#). Geneva: WHO 2022.



# RISK MATRIX TO DERIVE INFODEMIC-RELATED RECOMMENDATIONS FOR MPOX

Each key finding is classified by level of risk to public health. A risk matrix assesses potential for impact on seeking and uptake of PHSM, vaccines treatments and diagnostics, underrepresentation of vulnerable groups in data, stigmatisation\* of, and the experience of stigma in vulnerable populations, as well as narrative reach and dissemination. The risk level is indicated by colour.

- **High risk narrative** may lead to increased stigmatisation of vulnerable groups, reduced preventative behaviors and healthcare-seeking of recommended treatments and diagnostics. The narrative either has wide reach and is jumping geographies or platforms, or is pervasive particularly among at-risk and vulnerable populations (red colour).
- **Moderate risk narrative** may lead to stigmatisation of vulnerable groups, reduced preventative behaviors and healthcare-seeking of recommended treatments and diagnostics. It has moderate reach, may be crossing communities, platforms and formats, and has therefore has moderate dissemination (orange colour).
- **Low risk** narrative themes are a concern but pose a low risk to reinforcing stigmatisation, uptake of recommended health behaviour and guidance. They have limited reach and dissemination, only circulating in small groups and communities, and on one platform (yellow colour).
- **Positive sentiment** reflects thematic narratives that could decrease stigmatisation, increase uptake of health guidance and healthy behaviour. It may have variable reach and dissemination (green colour).

|                                                                |                                                                                                                                                                                                      | Reach, dissemination, at-risk population, population of focus                                                               |                                                                                         |                                      |
|----------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------|--------------------------------------|
|                                                                |                                                                                                                                                                                                      | Wide reach, high dissemination, particularly among at-risk and vulnerable populations (e.g., MSM, women, non-binary people) | Moderate reach and dissemination, may be skipping communities, platforms or geographies | Limited reach, limited dissemination |
| Impact on uptake of PHSM, vaccines, treatments and diagnostics | May lead to increased stigmatisation and silencing of vulnerable groups, refusal of recommended treatments and diagnostics, reduced healthcare-seeking, or lower adherence to recommended behaviours | High risk                                                                                                                   | High risk                                                                               | Moderate risk                        |
|                                                                | Potential to trigger stigmatisation, reduced healthcare-seeking, hesitancy to public health and social measures, vaccination, or pharmaceutical interventions                                        | Moderate risk                                                                                                               | Moderate risk                                                                           | Low risk                             |
|                                                                | Concerning, but low risk to uptake of recommended health behaviours and health guidance                                                                                                              | Low risk                                                                                                                    | Low risk                                                                                | Low risk                             |
|                                                                | Could increase uptake of health guidance, intent, and enactment of health behaviours.                                                                                                                | Positives sentiment                                                                                                         | Positive sentiment                                                                      | Positive sentiment                   |

\*Cultural contexts and legal barriers in some countries may contribute to reduced healthcare-seeking behaviour, and even the experience of stigmatisation in health service access and delivery.



# CONTACT

Marble Global

who@marbleglobal.com





**From:** PURNAT, Tina  
**Sent:** Fri, 14 Jul 2023 04:53:58 +0000  
**To:** Voegeli, Chris (CDC/OD/OADC); Mitchell, Betsy (CDC/OD/OADC)  
**Cc:** MACHIRI, Sandra; REIS, Andreas Alois  
**Subject:** need your contribution to WHO guidance on ethics of social listening and infodemic management  
**Attachments:** IM ethical principles case examples introduction.docx

Dear Chris and Betsy,

I hope your summer is going well!

I am writing to seek your help in adding a highlight of US CDC's work in the upcoming WHO ethics guidance on social listening, infodemic insights and infodemic management.

We are thankful that Betsy sits on the panel, and to you Chris for contributions to our recently published Infodemic insights manual and other technical documents.

We are looking for contributions of short case examples of how social listening and infodemic insights have been used with online or offline data sources, for a particular health programme, emergency response, or focusing on a particular vulnerable or marginalized group.

We would like to invite you to showcase Vaccine Confidence reports and the work of the insights unit.

So we are reaching out to you with an ask for a short write-up, which we would like to use as highlight boxes in the guidance to illustrate common ethics principles that will be identified in the guidance. Nothing would be published without your final ok.

There's more information in the attached information note, about what we are doing, why, and what types of questions we would want answered in the information you provide.

We would need the case contributions by end of July, for the first review by the guidance writing team.

Would you please let Sandra, Andreas and I know should you be able to contribute.

Best regards,

Tina

-----

Tina D Purnat (she/her)  
Team Lead for Infodemic Management  
High Impact Events Preparedness Unit  
Department for Epidemic and Pandemic Preparedness and Prevention (EPP)  
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## Ethical considerations on social listening in infodemic management

### Ethical principles implementation – Case example

A guidance document on ethical considerations for social listening in infodemic management is currently being developed by the World Health Organization (WHO) with a panel of experts. This document will profile the importance of ethical guidelines for conducting social listening and infodemic insights generation to inform infodemic management during health emergencies. There are a lot of ethical issues that should be considered in social listening, infodemic insights and infodemic management which include privacy, confidentiality, consent, truth-telling, fairness, autonomy, and respect for human rights. The document will exhibit general ethical values and principles to pursue, such as fairness, effectiveness, autonomy, accountability, and equity.

The guidance document will provide practical tools based on the ethical framework for health authorities to adopt and apply this guidance to promote ethical practices whilst analysing health-related questions, concerns, information voids and circulating narratives, mis- and disinformation and informing infodemic management interventions.

The World Health Organization seeks your interest and support in putting together some case studies that provide examples of social listening, infodemic insights generation and related infodemic management actions.

- Case examples will present the real-world situations that will aid in the discussion of the extensive and multi-dimensional considerations and questions when implementing the ethical principles in practice.
- The goal of these case examples is to showcase successful aspects of how specific projects or activities align or further the ethical principles in practice.
- Selected case examples will be analyzed to illustrate ethical principles and values of the WHO Ethical considerations on social listening in infodemic management guidance framework.
- The case examples will be presented as highlight boxes in the guidance document to illustrate practical challenges and diversity of implementations in the social listening and infodemic management practice in public health.

#### What is asked of you?

The reason why this ethics panel was set up by WHO is because there is no standard ethics guidance for social listening and infodemic management in public health. There has been an explosion of infodemic management activities fostered by the COVID-19 pandemic. Many countries and institutions have had to build these systems ad-hoc. **There is no expectation that your case example is going to be able to illustrate and document a robust ethical approach to a public health practice that is only now emerging. Instead, we hope to capture a diversity of case examples that may highlight one or several key principles from the ethics framework under development.**

- We are asking you to answer the following questions to the best of your ability. We are looking for a few sentences per question and we encourage you to provide links or other resources about the project that you'd like to share.
- If you don't have an answer to a question, that's ok and you can skip it.
- Feel free to discuss with Tina or Sandra if you have ideas on relevant information that the questions might not capture.

#### Commented [PT1]:

<https://www.who.int/news/item/10-02-2023-who-kicks-off-deliberations-on-ethical-framework-and-tools-for-social-listening-and-infodemic-management>

- Specifically, we are looking for case examples of projects or activities that implemented social listening, integrated analysis for infodemic insights, or other use of data and evidence to inform infodemic management interventions by a health authority or an implementing partner supporting public health.

Questions to guide description of your case example:

- Can you briefly describe the social listening or infodemic monitoring function in your organization or project?
- How is it organized? What kind of organizations or teams are involved?
- What is the public health objective of the project/activity?
- Is there a public facing web page, publication, conference abstract about this project or team?
- What community or population are your social listening or infodemic management efforts focused on?
- Who is the intended user of the social listening and infodemic insights analysis that you produce?
- What are some privacy, human rights, ethics and governance considerations that you take into account across data collection, analysis, reporting and use of the social listening and infodemic insights? How do these considerations apply to people working with you through different contracting or staffing mechanisms (staff, consultant, institutional contactor, service provider, etc)?
- Are there overarching or institutional governance or ethics frameworks that guide your work?
- What types of training or capacity building have you provided to staff involved in social listening and infodemic management activities that address ethics, governance and privacy topics?
- Are there any types of support that you provide to staff to help them cope with the information overload, exposure to misinformation and cognitive effects of working on this professional area?
- Are there any best practices or lessons learned that you have derived from your project or activities in relation to social listening and infodemic management and ethics?
- Looking ahead, are there new potential challenges or opportunities that you are considering related to ethics, human rights, privacy and governance in context of social listening for infodemic management?
- What suggestions or recommendations would you have for other health authorities in early stages of setting up social listening and infodemic insights functions as it relates to ethics, human rights, privacy and governance considerations?
- Is there anything else you would like to share with the WHO expert group on social listening and infodemic insights for infodemic management?

If you do not have the time to write things down for these questions, please let Tina ([purnatt@who.int](mailto:purnatt@who.int)) and Sandra ([machiris@who.int](mailto:machiris@who.int)) know and we will set up an interview via zoom to collect this information from you.

#### What will take place after case example is submitted to WHO?

- WHO team will review the cases and select those that best illustrate the practice and principles of the ethical framework that is under development.
- Answers to the above questions will be paraphrased and summarized. If the case examples is selected for inclusion into the guidance document, the contributing organization/individual will sign off on the final version of the text for inclusion in the guidance.



- Selected case examples will be analyzed and referenced in the text of the guidance in relation to ethical values, principles and framework that the guidance will describe.

**Suggested topics/case examples:**

| Topic                                                                                    | Contact                                                                                                                  | Why is it interesting? |
|------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------|------------------------|
| Social listening in humanitarian crises and fragile contexts                             | Alejandro Posada/Internews                                                                                               |                        |
|                                                                                          | Terri                                                                                                                    |                        |
| Data analysis to support UK immunization?                                                | Cherstyn                                                                                                                 |                        |
| Applying motivational interviewing to online engagement/or field work in other countries | David Scales                                                                                                             |                        |
| US CDC vaccine confidence insights                                                       | Chris Voegeli/Betsy Mitchell                                                                                             |                        |
| MAFINDO, Indonesia, community level listening                                            | Harry Sufehmi/Santi Indra Astuti                                                                                         |                        |
| UNICEF example of social listening and infodemic management in a country                 | Surangani Abeyesekera/UNICEF                                                                                             |                        |
| Social listening and infodemic insights in SBC during COVID-19 and other health topics   | UNICEF Indonesia (Rizky Syafrintri)                                                                                      |                        |
|                                                                                          | WHO EMRO                                                                                                                 |                        |
| Nigeria CDC infodemic insights                                                           | Dr Disu Yahya. Head of Risk Communication at the Nigeria Center for Disease Control and Prevention.<br>copy Joseph Njoku |                        |
| Africa infodemic response alliance infodemic insights reporting                          | AIRA/Elodie Ho                                                                                                           |                        |
| Ghana digital social listening and SBC                                                   | Ana Leena Lohiniva/UNICEF                                                                                                |                        |
| Infodemic insights analysis                                                              | Infodemiology laboratory, University of Belgrade, Serbia                                                                 |                        |
| German social listening framework                                                        | Sonia Boender, RKI                                                                                                       |                        |
| Subnational - New York Health department misinformation management unit                  | Equity unit NYCHD                                                                                                        |                        |
| PAHO antiinfodemic center                                                                | PAHO Marcelo Dagostino/ Ian Brooks UICI                                                                                  |                        |

|                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                       |  |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------|--|
| Kenya - Online/offline social listening since precovid                                                                                                                                                                                                                                                                                                                                                                                                    | Kenya/Wycliffe matini |  |
| Social listening and integrated analysis in Crete                                                                                                                                                                                                                                                                                                                                                                                                         | Elena Petelos         |  |
| Any case studies from the AI projects of the European Healthcare Fraud and Corruption Network (EHFCN)                                                                                                                                                                                                                                                                                                                                                     | Dimitra lingri        |  |
| <a href="https://www.who.int/teams/epi-win/infodemic-management/3rd-virtual-global-who-infodemic-management-conference/country-health-authorities-track/digital-posters-on-country-experience-in-COVID-19-infodemic-management">https://www.who.int/teams/epi-win/infodemic-management/3rd-virtual-global-who-infodemic-management-conference/country-health-authorities-track/digital-posters-on-country-experience-in-COVID-19-infodemic-management</a> | Mexico                |  |
| <a href="https://www.who.int/teams/epi-win/infodemic-management/3rd-virtual-global-who-infodemic-management-conference/country-health-authorities-track/digital-posters-on-country-experience-in-COVID-19-infodemic-management">https://www.who.int/teams/epi-win/infodemic-management/3rd-virtual-global-who-infodemic-management-conference/country-health-authorities-track/digital-posters-on-country-experience-in-COVID-19-infodemic-management</a> | Phillipines           |  |
| <a href="https://www.who.int/teams/epi-win/infodemic-management/3rd-virtual-global-who-infodemic-management-conference/country-health-authorities-track/digital-posters-on-country-experience-in-COVID-19-infodemic-management">https://www.who.int/teams/epi-win/infodemic-management/3rd-virtual-global-who-infodemic-management-conference/country-health-authorities-track/digital-posters-on-country-experience-in-COVID-19-infodemic-management</a> | Niger                 |  |
| <a href="https://www.who.int/teams/epi-win/infodemic-management/3rd-virtual-global-who-infodemic-management-conference/country-health-authorities-track/digital-posters-on-country-experience-in-COVID-19-infodemic-management">https://www.who.int/teams/epi-win/infodemic-management/3rd-virtual-global-who-infodemic-management-conference/country-health-authorities-track/digital-posters-on-country-experience-in-COVID-19-infodemic-management</a> | Finland               |  |
| <a href="https://www.who.int/teams/epi-win/infodemic-management/3rd-virtual-global-who-infodemic-management-conference/country-health-authorities-track/digital-posters-on-country-experience-in-COVID-19-infodemic-management">https://www.who.int/teams/epi-win/infodemic-management/3rd-virtual-global-who-infodemic-management-conference/country-health-authorities-track/digital-posters-on-country-experience-in-COVID-19-infodemic-management</a> | Cameroon              |  |



|                                                                                                                                                                                           |                            |  |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------|--|
| <a href="#">management/3rd-virtual-global-who-infodemic-management-conference/country-health-authorities-track/digital-posters-on-country-experience-in-COVID-19-infodemic-management</a> |                            |  |
| Subnational level - Ask Oommen John                                                                                                                                                       | india                      |  |
| HIV social listening, MoH Italy                                                                                                                                                           | Italy/ michaela sabbatucci |  |
|                                                                                                                                                                                           | Yahya, Nigeria CDC         |  |
|                                                                                                                                                                                           |                            |  |

**From:** infodemicmanagement  
**Sent:** Tue, 29 Oct 2024 10:05:09 +0000  
**To:** infodemicmanagement  
**Subject:** Online global CoP infodemic manager meet-up

**CAUTION: This email originated from outside of the organization. Do not click links or open attachments unless you recognize the sender and know the content is safe.**

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Dear past participants of the Global WHO infodemic manager training,

We are writing to let you know of an online infodemic manager meet-up being organised by members of the community of practice for next Wednesday, 6th November, 12pm CET, 11am GMT.

The details of the event are below:

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**Misinformation management project at Nigeria Health Watch**

Join Abara Erim from Nigeria Health Watch as he outlines his work leading the misinformation management project. In it's 4th year of implementation, the project works with partners to conduct research, train health educators, conduct social listening and manage the new health misinformation management fellowship programme.

We look forward to having you attend the event!

Date: November 6th, 2024  
Time: 12pm CET, 11am GMT

Please register with this link

<https://events.teams.microsoft.com/event/89d1c388-68ff-4a9d-8516-701b4d4bfd1b@5a740cd7-5768-4d09-ae13-f706b09fa22c>

---

Please contact the organisers with any questions.

Kind regards,

Infodemic Management – RCCE-IM  
Community Readiness and Resilience Unit  
Country Readiness Strengthening Department  
WHO Emergency Programme (WHE)



World Health Organization, Geneva, Switzerland

**From:** Wardle, Claire  
**Sent:** Tue, 22 Aug 2023 10:34:19 -0700  
**To:** Voegeli, Chris (CDC/IOD/OC)  
**Subject:** Out of Office until August 25 Re: FW: Protecting the Public Health Workforce: Discussing Occupational Intimidation and Harassment during COVID-19 and Beyond

I am in Europe taking a little holiday!

If you are writing to me about the Information Futures Lab, please contact Samantha Stanley at [samantha\\_stanley@brown.edu](mailto:samantha_stanley@brown.edu).

If you need me urgently, please contact me at (b) (6) (text, Signal or WhatsApp)

Best wishes  
Claire

--

**Claire Wardle, PhD**

Professor of the Practice  
Co-Director, Information Futures Lab  
Department of Health Services, Policy and Practice | Brown University  
School of Public Health



(b) (6)

[claire\\_wardle@brown.edu](mailto:claire_wardle@brown.edu)

121 South Main St, Providence,  
RI 02903





**From:** Voegeli, Chris (CDC/IOD/OC)  
**Sent:** Wed, 16 Aug 2023 15:14:25 +0000  
**To:** Stefanie Friedhoff  
**Subject:** Panel on 8/28 @ 2pm?

Morning Stefanie!

On August 28th, we are hosting an online panel about the harassment of public health employees during COVID. We have been working with a doctoral student that did interviews of public health workers to get their experiences and suggestions for how victims and public health institutions could mitigate future harassment. The student is Liz Chesney from George Washington and another speaker on the panel is Rebekah Tromble who is a professor at GW and focuses on this topic.

The reason I am bugging you is that you were an phenomenal moderator at NCHCMM and we were hoping to have 3 10 minute presentations followed by a 15 minute moderated discussion then closing it out with 10-15 minutes of Q&A. Would you be interested in moderating it? Its Monday August 28<sup>th</sup> from 2-3. Kind of late notice, and I know you're busy so absolutely no pressure if it would be a bother. I just thought of you and figured I would ask.

We are also looking for one more panelist. Kyla recommended Claire, which I think would be great, but we were hoping to find someone from ASTHO or NACCHO to give that more local/state perspective. Would you happen to know anyone from those orgs or someone to give that perspective?

Chris

-

Christopher Voegeli, Ph.D., MPH  
Behavioral Scientist | Acting Inaccurate Health Information Mitigation Team Lead  
Email: [OOO2@cdc.gov](mailto:OOO2@cdc.gov)  
Work Phone: (404) 498-0176  
Cell Phone: (b) (6)  
Division for Communication Science and Services  
Office of Communications, CDC

**From:** PURNAT, Tina  
**Sent:** Wed, 13 Apr 2022 19:11:56 +0000  
**To:** infodemicmanagement  
**Subject:** please circulate in your networks: call for applications for promotion of vaccine demand to maintain and restore routine immunization and promote COVID-19 vaccination

Dear Colleagues in Immunization, Behavioral Science, Infodemic Management, Digital Health, Emergency Preparedness, Health Systems Strengthening, Health Information Systems, Field Epidemiology, and Public Health,

Please forward this opportunity to all your networks.

Applying learning design experiences from WHO infodemic manager trainings and combining it with expertise from immunization programmes and partners, this global training is going to be innovative, challenging and rewarding and your partners will not want to miss it—it will be offered in English and French!

-----

## **Call for applicants for comprehensive training for promotion of vaccine demand to maintain and restore routine immunization and promote COVID-19 vaccination by leveraging social data, behavioral insights, infodemic management, service experience and digital strategies**

*Online training over 4 weeks during 11 June-07 July 2022*

*Co-hosted by WHO, UNICEF, US CDC and GAVI*

*Deadline for application: **8 May** 2022 at 18:00 Geneva Switzerland time*

This training, for the first time, ties together the interrelated threads of infodemic management, behavioral insights and social data and intervention design into a training and rostering strategy that addresses country needs now. Trainees will be equipped with the latest tools, resources and expertise to comprehensively promote vaccine demand, supported by expertise from WHO, UNICEF, US CDC, GAVI and partners from the Vaccination Demand Hub. The training will bridge science with extremely practical applications and best practices across the following:

- Social data and science of vaccine demand
- Immunization program, preparedness & service strengthening
- Behaviorally-informed public health intervention design
- Digital interventions and infodemic management
- Community engagement



- Science, risk and health communication
- Service experience and delivery improvement

**WHO webpage for call for applicants with application instructions:** <https://www.who.int/news-room/articles-detail/call-for-applicants-for-comprehensive-training-for-promotion-of-vaccine-demand-to-maintain-and-restore-routine-immunization-and-promote-COVID-19-vaccination>

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Social media-friendly versions in English and French:

  **Gain skills in applying social data, behavioral insights, digital & infodemic management, and improving health service experience**

...and help immunize the world! 

 **Call for applications for  
COMPREHENSIVE TRAINING**

for promotion of vaccine demand to maintain and restore routine immunization and promote COVID-19 vaccination by leveraging social data, behavioral insights, infodemic management, service experience and digital strategies

  **Online training**  
 **11 June-07 July 2022**

 **Application deadline**  
 **8 May 2022 at 18:00 Geneva Switzerland time**

 **Co-sponsored by GAVI, WHO, UNICEF, US CDC**

**FREE to selected candidates**

 **Apply now here:** <https://forms.gle/cXky4AmxYnBGGiTq5>  
(you will also need this CV template:  
<https://1drv.ms/w/s!AtPoc3YQw0ufgdtNqo96hwJsbm8TJw?e=7PLUQe> )

  **Who is invited?**

 **Staff currently working at international, national and subnational health system levels, as well as consultants and academics are invited to apply.**

 **People previously trained by WHO, UNICEF, US CDC, GAVI or other immunization program partners on above topics are encouraged to apply, as advanced topics and new tools will be covered in this training.**

For any questions, email [infodemicmanagement@who.int](mailto:infodemicmanagement@who.int)

\*\*\*\*\*  
**🔗 Acquéirir des compétences dans l'application des données sociales, des informations comportementaux, la gestion numérique et infodémique, et l'expérience des services de santé**

...et aidez à immuniser le monde ! 🌐

Appel à candidatures

**POUR UNE FORMATION COMPLÈTE**

pour la promotion de la demande de vaccins afin de maintenir et de rétablir la vaccination systématique et de promouvoir la vaccination COVID-19 en tirant parti des données sociales, des connaissances comportementales, la gestion infodémiques, l'expérience de service et les stratégies numériques

📺 Formation en ligne

📅 11 juin-07 juillet 2022

🕒 Date limite de candidature

🕒 8 mai 2022 à 18h00 heure de Genève (Suisse)

🤝 Co-organisé par GAVI, l'OMS, l'UNICEF, et le CDC américain

GRATUIT pour les candidats sélectionnés

🔗 Appliquer maintenant: <https://forms.gle/ji2btiD8SEA8CZhD8>

(CV au format ci-joint (à télécharger ici

<https://1drv.ms/w/s!AtPoc3YQw0ufgdwIJERwxtwEDZsc7A?e=AEvdPf> )

📄 Candidatures

🍎 Les personnes travaillant actuellement au sein des systèmes de santé aux niveaux international, national et infranational, ainsi que les consultants et les universitaires sont invités à postuler.

🍎 Les personnes précédemment formées par l'OMS, l'UNICEF, le CDC américain, GAVI ou d'autres partenaires du programme de vaccination sur les sujets ci-dessus sont encouragées à postuler puisque des sujets avancés et de nouveaux outils seront couverts dans cette formation.

Pour toute question, envoyez un e-mail à [infodemicmanagement@who.int](mailto:infodemicmanagement@who.int)

---

Best regards,

Tina

\*\*\*\*\*



Tina D Purnat  
Team Lead for Infodemic Management  
High Impact Events Preparedness Unit  
Department for Epidemic and Pandemic Preparedness and Prevention (EPP)  
Preparedness Division, WHO Emergency Programme (WPE/WHE)  
World Health Organization, Geneva, Switzerland

[puernatt@who.int](mailto:puernatt@who.int) | WhatsApp/Signal: (b) (6) | [www.linkedin.com/in/tinadpuernat](https://www.linkedin.com/in/tinadpuernat) | @tdpuernat |

Sign up for the WHO infodemic management News Flash: <https://bit.ly/flashsubscribe>

**From:** O'NEILL, Rhys John  
**Sent:** Wed, 20 Jul 2022 14:22:23 +0000  
**Cc:** CECCHINI, Sergio  
**Subject:** Public Health Infodemic Trends in ESAR - June 2022  
**Attachments:** Joint Monthly Trends Report\_June 2022.docx.pdf

Good morning/ afternoon/ evening,

Attached is the Monthly Infodemic Trends in Africa report from June.

Key trends last month were as follows:

**Monkeypox**

1. Concerns over origins, symptoms, remedies, and preventative measures

**Routine Vaccinations**

2. General concerns regarding HPV, measles, and BCG vaccinations and their side effects

**COVID-19**

3. Concerns regarding vaccine side effects, child vaccinations, and vaccine "shedding"

Please do not hesitate to send any questions or feedback that I can assist with, and points of contact for each contributing organization can be found on the final page of the report.

Warm regards,

Rhys and the AIRA team



## Public Health Infodemic Trends in ESAR – June 2022

### Scope

This report presents operational recommendations based on online and offline community feedback trends analysis around COVID-19 and other key public health issues in the East and Southern African Region (ESAR) for the month of June 2022. It aims to enable evidence-based decision-making at regional and national levels.

**A key theme** related to Monkeypox remained in social listening and community feedback:

- Concerns over origins, symptoms, remedies, and preventative measures

**A key theme** related to routine vaccinations gained traction in social listening and community feedback:

- General concerns regarding HPV, measles, and BCG vaccinations and their side effects

**Key themes** related to COVID-19 remained in social listening and community feedback:

- Concerns regarding vaccine side effects, child vaccinations, and vaccine “shedding”

### Key Themes

**Monkeypox:** *Origins, symptoms, remedies, and preventative measures*

**Kenya, Mozambique, South Africa, Tanzania, Uganda, Zimbabwe**

- Some online users in the ESAR region pushed the claim that Monkeypox is not spreading across the globe. Some users have stated that there are no cases in Africa and the alleged monkeypox outbreak is serving as a new way to discriminate and stigmatize African countries.
- However, interest in the monkeypox virus rose in the region following the detection of cases in South Africa. A large part of the content tracked focused on remedies, diagnosis, and spread in the region.
- There was also significant traction for conspiracy claims that the monkeypox outbreak stems from a laboratory leak from a facility in Nigeria that receives USA funding. These claims included photographs of the “secret laboratories” that have already been reviewed and established as normal operating facilities with no level of secrecy assigned to their practices.
- Others have compared the outbreak to the COVID-19 pandemic and are encouraging Africans not to buy into the claims of a new disease outbreak. There were also claims that monkeypox was a side effect of the COVID-19 vaccines.



### Recommendations

- Consistently promote accurate information regarding monkeypox symptoms, transmission, and mitigation methods as online communities have expressed confusion about the disease. (Viral Facts content on monkeypox symptoms and transmission [here](#) and WHO's Q&A sheet [here](#)).
- Historical evidence of monkeypox outbreaks in Africa and globally combined with response efforts that have mitigated and eliminated outbreaks in the past should serve as evidence that this is a real disease.

## **Routine Vaccinations:** *General concerns regarding HPV, measles, and BCG vaccinations and their side effects*

### **Botswana, Kenya, Malawi, Somalia, South Africa**

- Online search interest regarding HPV, measles and BCG vaccines rose through the month of June, and conversations regarding side effects of routine vaccines also gained traction.
- Conspiracy claims regarding the impact of routine vaccines on children and women's health were visible in the region; a newly released video from a US anti-vaccine group brought back old claims that a tetanus vaccine campaign in Kenya was aimed at sterilizing young women.



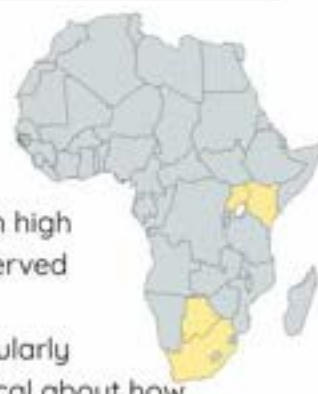
### **Recommendations**

- o Encourage caregivers to keep their children up to date with routine vaccination, underlining the safety profile of childhood vaccines, emphasizing their efficacy, and addressing the dangers of missing scheduled vaccinations.
- o Collect and analyze qualitative data to inform whether COVID-19 vaccines should be administered alongside other antigens, at which points of service and for which specific population groups.
- o Flag conspiracy claims to social media platforms and response partners to ensure de amplification and development of messages to debunk harmful content.

## **COVID-19:** *Vaccine side effects, child vaccinations, and vaccine "shedding"*

### **Botswana, Kenya, South Africa, Uganda**

- Misinformation targeting the COVID-19 vaccine brand, Pfizer, was prevalent through the month of June, as comparisons were made between countries with high vaccine rates and high monkeypox cases in Europe and North America. This served as validation for some online users to continue to reject COVID-19 vaccination.
- Concerns regarding COVID-19 vaccination for children remain persistent, particularly in relation to rollout in schools and parental consent. People also remain skeptical about how necessary it is to vaccinate children or whether it's a way for pharmaceutical companies to make money. Other conversations regarding vaccine safety for children and young people were fueled in part by conspiracy claims that the jab causes infertility and cardiovascular issues.
- Vaccine "shedding" misinformation shifted in June to conversations regarding the ability for COVID-19 to be sexually transmitted to unvaccinated individuals that have come into contact with individuals that were vaccinated within a three week period.



### **Recommendations**

- o Share the message that serious health events following vaccination are rarely caused by the vaccine, and that reports of side effects are taken seriously and thoroughly investigated.
- o Build literacy on how pediatric vaccines are tested to reassure parents that approved vaccines are safe for children. (Viral Facts link [here](#))([WHO's Science in 5 video on COVID-19 vaccines and children](#))



- o Disseminate localized evidence showing that severe side effects following vaccination are rare and that vaccines are safe. (Viral Facts link [here](#))

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## Methodology

The report is based on online social listening feedback from UNICEF ESARO and AIRA, online and offline community feedback provided by a partner network that contributes to the ESAR RCCE Community Feedback Sub-Working Group, and radio listening feedback from UN Global Pulse. Monitored online channels include Facebook, Twitter, Instagram, digital news, and WhatsApp messages forwarded to the researchers. Online and offline information is also obtained through the feedback form that RCCE partners fill out on a monthly basis and can be collected from partner feedback mechanisms including hotlines, community meetings, community feedback via volunteers, and partner staff. Currently, radio audio data is collected from five radio stations in South Africa by UN Global Pulse. For each trend, the report specifies the countries in which relevant content was tracked. This information may nonetheless be circulating in other African countries not mentioned in this report.

### Report Focal Points

*[Africa Infodemic Alliance \(AIRA\)](#) • [UN Global Pulse](#) • [African Field Epidemiology Network \(AFENET\)](#) • [RCCE ESAR Community Feedback Group](#) • [RCCE Collective Service ESAR](#) • [UNICEF ESAR](#)*

**From:** PURNAT, Tina  
**Sent:** Fri, 18 Nov 2022 14:31:04 +0000  
**To:** Voegeli, Chris (CDC/DDID/NCIRD/ISD)  
**Subject:** Question about ethics in social listening and infodemic management  
**Attachments:** Draft concept note ethics and infodemic management\_3March2022.docx

Dear Chris,

We are about to convene an ethics panel to produce the first WHO guidance on social listening and infodemic management.

We will have equal representation of ethicists who work with WHO, and also people who can speak to IM practice and public health. I attach draft concept note for this.

We would like to know whether your line manager would be interested in taking part? I remember you said he is chief scientist for your division and we think he could bring good points to discussion, especially when practical considerations are being drafted.

The time commitment would be about 10 2-hour zoom meetings over the next 6 months. First meeting would be on 12 Dec, so, very soon.

Sorry for short notice - we've been waiting in stalemate on this for most of the year, and now it's moving quickly overnight.

Please let me know if we should send an invite for your boss to consider, or whether we should take a pass. BTW, I would need the name and email, if yes :)

Invitations are going out on Tuesday, so we can receive responses one way or another before the meeting.

Thanks for considering this.

Kindest regards,

Tina

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Sent from my mobile. Sorry for brevity and typos.



## **WHO Panel of Experts on Ethical considerations in Infodemic Management and Social Listening**

### **What is the problem?**

Any successful response to an infodemic requires robust social listening, which is a method for identifying people's questions, narratives of concern, confusion, information voids and circulating health misinformation where there is a lack of reliable health information. These insights are then used to inform actions for addressing the infodemic. In the context of infodemic management (IM), social listening includes both online and offline data collection, including but not limited to data from social media. Data gleaned from social media platforms are being used in a number of ways to identify and understand outbreaks, geographic and demographic trends, networks, sentiment and behavioural responses to public health emergencies. Offline data collection may include rapid surveys, townhalls, or interviews with people in vulnerable groups, communities of focus and specific populations.

These activities present unresolved ethical challenges related to purpose, legitimacy, user privacy and consent, as well as those related to the way in which such data may be processed and used, for example to profile groups or to feed automated predictive algorithms. Currently there is no international consensus on minimum ethical requirements for IM activities including social listening and wide variation in practice. WHO is in a good position to develop a framework and guideline that may gain widespread acceptance. This proposed convening targets ethical considerations associated with social listening in all WHO regions.

### **Background**

The consequences of pandemics and other public health emergencies call for the effective use of data-driven response. Experience of using novel forms of data derived from people's interactions with online resources is growing and people's behaviour on social media platforms is increasingly being used by public health programmes. In the context of disease surveillance, this form of data mining may look for key words related to symptoms, treatments, geographic clusters or sentiment, to examine trends indicative of disease incidence and spread. It may also be used to investigate social and behavioural influences, such as in determining the sources and spread of misinformation, or evaluating its effects on behaviours such as vaccine uptake. Sophisticated multi-source platforms, mainly used by the marketing industry, also allow for more ambitious data analytics, providing early-warning systems or indications of social contagion. While much social listening still takes place with conventional quantitative/descriptive methods (supplemented by qualitative/interpretive methods), advances in AI/machine learning offer potential to make earlier and more precise predictions, and to inform response based on signals not normally obvious to human beings or statisticians.

There are also other types of non-social media data sources increasingly being used to inform IM activities, including novel forms of offline data (e.g., mobility data) or health system data sources (e.g., hotline call logs). Furthermore, offline data collection methods that have traditionally been used in other related fields, such as surveys or participatory methods developed in social sciences, are being applied to assess and manage the impact of infodemics.

While these types of social listening activities offer advantages in terms of forming real-world insights about disease trends, societal responses, and influences, and while much of the data is already in the public domain, the data may be 'dirty' and unreliable as it may deal with sensitive information normally protected under law. The increasing dependency of social listening on proprietary data mining platforms designed for the advertising and marketing industry is also raising ethical challenges, related to uncertainty over data control, commercialisation, transparency, accountability and the 'common good'. Moreover, users may feel differently to researchers or governments about the legitimacy of the data mining or its use for informing policy or seeding behavioral interventions. Likewise, there can be a fine line between academic research and public health practice, each of which are expected to work within different ethical guidelines and parameters. Beyond the use of online data, it also remains unclear how rigorously ethical guidelines are being followed for offline data collection used in IM. These questions present unresolved challenges for the field.

### **Purpose of the expert panel**

WHO will convene a group of experts who will deliberate on ethical considerations of IM, with a particular focus on social listening. The objective of the panel will be to reach a consensus about ethical principles or requirements for social listening and other related IM activities and deliver a set of evidence-informed recommendations for governments and researchers so that they can undertake such activities in ways that meet ethical standards.

### **Potential questions to be discussed by the panel**

#### Recommendations for ethical standards in social listening (primary questions to be answered)

- What minimum ethical requirements or principles should be recommended moving forward for social listening in IM, including considerations for:
  - Data collection (e.g., user privacy, consent, data control, dependence on commercial marketing tools)
  - Application of social listening insights to develop behavioral interventions or inform public health and social measures (PHSM)
- What should be the roles of a health authority in ethically conducting social listening for IM, within the context of whole of government emergency response?
- In what ways should ethical principles of IM in public health practice be different from that of research?

#### Special considerations for vulnerable and at-risk populations (secondary questions to be answered)

- What are the ethical considerations for conducting social listening in/for vulnerable and at-risk populations, especially in fragile contexts e.g., humanitarian emergencies?
- What are the ethical considerations for making recommendations for action based on scarce data due to language barriers or limitations (e.g., social media data skewed towards widely spoken languages)?



#### Review of current landscape (secondary questions to be answered)

- What are the existing and emerging ethical issues in social listening?
- What are the existing and emerging ethical issues in IM intervention design and implementation informed by social listening?
- What is currently being done to address these issues? What ethical guidelines or standard practices currently exist, if any?
- What aspects of ethical standards developed in other related fields are applicable to social listening in IM?

#### **Expected deliverables**

- Primary deliverable of the panel
  - A written report that details how the panel was formed, what questions were discussed in each meeting, and the outcomes of discussions
- Secondary deliverables (to be produced by IM team)
  - An ethical framework, principles, or guidelines written for infodemic managers and researchers
  - A policy brief
  - An Open Access slide deck or animated video that may be used in the WHO Infodemic Managers training course and more broadly
  - An academic paper

#### **Profiles of experts to be invited (tentative list from infodemic management perspectives, to be complemented by suggestions of the Ethics Unit)**

| Expertise or field of focus           | Name                   | Institution                                   | Title                                                                 | Email                                                                          |
|---------------------------------------|------------------------|-----------------------------------------------|-----------------------------------------------------------------------|--------------------------------------------------------------------------------|
| Data, digital or AI ethics            | Claudia Pagliari       | University of Edinburgh                       | Senior lecturer in primary care and informatics                       | <a href="mailto:claudia.pagliari@ed.ac.uk">claudia.pagliari@ed.ac.uk</a>       |
|                                       | Eleonore Fournier-Tomb | UN University Institute in Macau              | Senior researcher                                                     | <a href="mailto:fourniertombs@unu.edu">fourniertombs@unu.edu</a>               |
|                                       | Oommen John            | The George Institute for Global Health, India | Senior research fellow                                                | <a href="mailto:ojohn@georgeinstitute.org.in">ojohn@georgeinstitute.org.in</a> |
| Disease surveillance and epidemiology | Dimitri Prybylski      | US CDC                                        | Deputy Director for Science and Program, Global Immunization Division | <a href="mailto:hit1@cdc.gov">hit1@cdc.gov</a>                                 |

|                                                               |                    |                                                                          |                                            |                                                                        |
|---------------------------------------------------------------|--------------------|--------------------------------------------------------------------------|--------------------------------------------|------------------------------------------------------------------------|
|                                                               | Isabella Ballalai  | Brazilian Immunization Society                                           | Vice-president                             | (b) (6) @gmail.com                                                     |
| Health and gender equity                                      | Agnes Binagwaho    | University of Global Health Equity, Rwanda                               | Vice Chancellor                            | (b) (6) @gmail.com                                                     |
|                                                               | Ana Lorena Ruano   | Center of Studies for Governance and Equity in Health Systems, Guatemala | Research and learning coordinator          | Ana.Lorena.Ruano@uib.no                                                |
| Qualitative and quantitative methods in social media research | Terri Senft        | Macquarie University, Australia                                          | Senior lecturer                            | Terri.senft@mq.edu.au                                                  |
|                                                               | Timothy K Mackey   | University of California, San Diego                                      | Associate Adjunct Professor                | tmackey@ucsd.edu                                                       |
|                                                               | David Scales       | Weill Cornell Medicine                                                   | Assistant Professor of Medicine            | david.scales@aya.yale.edu                                              |
| Civil society and community-based organizations               | Santi Indra Astuti | Mafindo (fact-checking organization based in Indonesia)                  | Head of Research and Development Committee | (b) (6) @gmail.com                                                     |
|                                                               | Lee Mwiti          | Africa Check (fact-checking organization working across Africa)          | Chief Editor in South Africa               | info@africacheck.org<br><br>*was unable to find personal email address |

## Key references

1. WHO public health research agenda for managing infodemics: <https://www.who.int/publications/i/item/9789240019508>
2. Association of Internet Researchers: Ethics guides. <https://aoir.org/ethics/>
3. Ferretti A, Ienca M, Sheehan M, Blasimme A, Dove ES, Farsides B, Friesen P, Kahn J, Karlen W, Kleist P, Liao SM. Ethics review of big data research: What should stay and what should be reformed?. BMC medical ethics. 2021 Dec;22(1):1-3. <https://bmcomedethics.biomedcentral.com/articles/10.1186/s12910-021-00616-4>



**From:** ISHIZUMI, Atsuyoshi  
**Sent:** Wed, 6 Apr 2022 11:17:10 +0000  
**To:** Hanh Vu Hong; Gabrielle Schittecatte; John Kinsman  
(john.kinsman@ecdc.europa.eu)  
**Cc:** PURNAT, Tina; Wilhelm, Elisabeth (CDC/DDPHSIS/CGH/GID); Voegeli, Christopher (CDC/DDID/NCIRD/OD); Quartarone, Richard (CDC/DDID/NCIRD/ISD); Yee, Daiva (CDC/DDPHSIS/CGH/GID)  
**Subject:** RCA and rapid generation of infodemic insights  
**Attachments:** 2\_Day3\_AI\_IM workshop\_RCA\_final.pptx

Hi John, Gabrielle, and Hanh,

As discussed, I am sharing with you an introductory PPT deck describing RCA/rapid generation of infodemic insights. And here's the [link to the RCA package](#) on US CDC's website, including data collection tools. There are also guides for conducting RCA with special populations, which may be of interest.

I am also copying US CDC colleagues who are experts in this area, who can perhaps provide additional resources. Daiva is a member of the Demand for Immunization Team and is currently working with refugees in Thailand. Richard leads state and jurisdictional support for the domestic immunization program. Chris has been the lead of the insights unit that produces state of vaccine confidence insights reports. And I think you already know Lis.

@US CDC colleagues

For your context, Tina and I had a meeting this morning with colleagues from ECDC and they expressed interest in learning about RCA as they are currently working with Ukrainian refugees in Poland. Given your expertise and experience with RCA, we thought it would be good to connect you guys.

Thank you!

Kind regards,  
Atsu

**Atsuyoshi (Atsu) Ishizumi**

Technical Officer | Infodemic Management Team

High Impact Events Preparedness Unit, Department of Epidemic and Pandemic Preparedness and Prevention  
Division of Emergency Preparedness, World Health Organization, Geneva HQ, Switzerland

# How to generate rapid insights to inform infodemic management interventions

Atsuyoshi Ishizumi Technical Officer, Infodemic Management Team Unit for High Impact Events  
Preparedness, Department of Epidemic and Pandemic Preparedness and Prevention, WHO 7-10 March  
2022



# In infodemic management, we need an approach for rapidly developing interventions that are also evidence-based

Core principles: Define and better understand your target population by challenging the assumptions you may have about them Conduct integrated infodemic insights analysis by identifying epidemiological, information ecosystem, and social and behavioral data beyond social media analytics (most available behavioral data are too old and not segmented enough to inform interventions in a particular population of focus) Quickly design data-driven interventions and adapt to changing needs and situations in communities of focus during a health emergency

*Ensure interventions are informed with current data, even if imperfect: To address public health challenges such as demand for vaccines or adherence to masking, we must understand what the population's behaviors, attitudes and infodemic influences are now, to develop interventions that address these now.*

## 5 Steps to Rapid Community Assessment to inform infodemic management interventions

1. Identify objectives, at-risk populations or communities of focus  
Plan for the assessment  
Collect and analyze data, review existing evidence  
Report findings and identify solutions  
Evaluate efforts



## **Step 1**

Identify  
objectives and  
populations of  
focus

### **Formulate objective(s) as a question**

How are misinformation, information overload, or information voids influencing alternative treatment perceptions among the elderly in Town A/in home-based care? What are the social and behavioral determinants of PHSM adherence among vulnerable populations or communities of focus in Town B/attending announced mass gathering event and how does the infodemic contribute to them? How can communications, infodemic management and behavioral strategies for increasing vaccine uptake among the youth in Town C/in specific online community be tailored based on their needs?

## Step 2

# Plan for the assessment

## Secure key stakeholder support

Consider asking these 3 key questions

- Who is requesting or commissioning this assessment? (Often the Ministry of Health.)
- Who are you collecting data from? (not merely the community of focus, but also from other available data sources in and outside health system)
- Who can act on insights and recommendations from your assessment? (effective interventions will address multiple pain points and will take the form of communication, health programme and other interventions).

Stakeholders can include but are not limited to:

- Members of community of focus
- Ministry of Health, Institute of Public Health
- Province or local health departments
- International organizations and partners (e.g., WHO, UNICEF)
- Leaders of local health systems, hospitals, and clinics
- Trusted messengers where people work, live, play, pray, learn and gather, such as faith-based organizations or religious leaders, and other relevant



## Step 2

# Plan for the assessment

## Form an interdisciplinary insights team

Experts with varied skills can facilitate data collection and strengthen integrated analysis – for example, the skills needed in the team can include:

- Infodemic manager with experience in social listening, both online and offline
- Social or behavioral scientist with fieldwork experience
- Health communication specialist who has worked with vulnerable or at-risk populations
- Health education specialist who has worked in health promotion with segmented populations
- Epidemiologist who understands disease situation (e.g., distribution, determinants) in target population
- Member of community-based organization who speaks the local language and understands cultural nuances in the community of focus

The insights team must include experts that speak the local languages.

## Step 2

# Plan for the assessment

## Choose assessment methods based on time and resources

Consider these factors when choosing methods

- Available budget
- Available time
- Available staff
- Expected or desired timeline
- What data sources are already available and up-to-date
- Existing partnerships or links to communities

Form a plan based on above prior to data collection to avoid duplicating data that already exist



## Step 3

Collect and  
analyze data,  
review existing  
evidence

### Perform integrated analysis continually and iteratively

Remember the principles of integrated analysis  
Triangulate data sources as much as possible  
Bring multiple perspectives by allowing assessment team members to discuss and interpret data in a group setting  
As you collect data, continue to analyze and interpret data on a daily basis  
Iterative analysis can help you guide or improve your data collection as it happens, and expedite the entire assessment process

**For example: in a 5-day participatory data collection, perform iterative integrated insights analysis every evening.**

## Step 4

# Report findings and identify solutions

### **Suggest action-oriented solutions in your report**

A report should include at minimum the following:

- Assessment objectives
- Target population
- Methods or data sources used
- Key findings
- Proposed solutions

Proposed solutions and interventions must recommend actionable and accountable follow-up:

- What should be done and how
- Who is best suited to follow up on and/or implement suggested actions

points



## How to identify actionable solutions: tips and example

Identify solutions by answering strategic questions What are the main barriers affecting your target population's willingness or ability to adopt a health behavior? What, if anything, is already being done to address these barriers? How effective are they and where the room to improve? Which issues can be more easily and quickly addressed than others? Example: misinformation about vaccine safety among mothers Finding: Key informant interviews with HCW and listening sessions with young mothers suggested that there are vaccine safety concerns around infertility, which have been amplified by misinformation Solution: Work with OB-GYN and other HCW who serve young women to improve their interpersonal communication skills when talking to mothers who have been exposed to misinformation; seek partnership with OB-GYN professional associations to support in this effort



## Step 5

# Evaluate efforts

## Ground your insights and recommendations in data and evidence

Even after a “rapid” assessment, your efforts should be informed with relevant and current data as in anything else we do in infodemic management. Consider answering these questions, if necessary, by checking back in with your target population: Have you achieved your primary objective(s)? Are there new challenges to understand among your target population? Are additional assessments be needed either with the same population or different populations?



## References

WHO infodemic manager training: Infodemic manager's intervention toolbox  
WHO infodemic manager's training: Key takeaways for infodemic managers and managers of infodemic managers  
US CDC: How to Conduct a Rapid Community Assessment (Principles adapted to infodemic management from tool to develop evidence-based interventions to remove barriers to enacting health behaviors for immunization: Rapid Community Assessment, US CDC, which was adapted from behaviorally-informed WHO Europe TIP tool.)



**Thank you! Stay tuned for a tool-kit that WHO  
will be releasing soon for infodemic  
managers working in the field**



World Health  
Organization

EPI•WIN

infodemic  
MANAGEMENT



[www.who.int/epi-win](http://www.who.int/epi-win)

[infodemicmanagement@who.int](mailto:infodemicmanagement@who.int)



**From:** PURNAT, Tina  
**Sent:** Thu, 25 May 2023 13:46:02 +0000  
**To:** Voegeli, Chris (CDC/DDID/NCIRD/ISD)  
**Subject:** Reference check for (b) (6)

Dear Chris,

I am writing to you to request a letter of reference for (b) (6) who is being considered for a P3 position of an infodemic manager in my team. The position she is being considered for will focus on implementation of the WHO research agenda for managing infodemics and responding to health misinformation, and development of practical tools and training materials for people fulfilling the functions of infodemic management in the field. This position will also support coordination and development of working relationships with partners and WHO regional and country offices.

I would appreciate your feedback on her suitability for the role, and also any other comments in relation to her work in a multicultural, multidisciplinary setting that requires tact and stakeholder management.

Thank you so much for returning your comments to me as soon as possible, at latest by 2 June EOB or earlier if possible.

Best regards,

Tina

-----  
Tina D Purnat (she/her)  
Team Lead for Infodemic Management  
High Impact Events Preparedness Unit  
Department for Epidemic and Pandemic Preparedness and Prevention (EPP)  
Preparedness Division, WHO Health Emergencies Programme (WPE/WHE)  
World Health Organization, Geneva, Switzerland

[purnatt@who.int](mailto:purnatt@who.int) | WhatsApp/Signal: (b) (6)  
[LinkedIn profile](#) | [Google Scholar profile](#) | [@tdpurnat](#) |

Sign up for the WHO infodemic management News Flash: <https://bit.ly/flashsubscribe>

**From:** Wilhelm, Elisabeth  
**Sent:** Tue, 6 Jun 2023 11:42:18 +0200  
**To:** Elisabeth Wilhelm  
**Subject:** Reminder about today's (optional) information sessions on infodemic stories project + consent forms  
**Attachments:** Infodemic story evaluation project consent form.pdf

Dear Colleagues,

Thanks for your interest in the infodemic stories project! I am so grateful that you will be able to contribute your expertise and experience to this unique participatory evaluation project. This is a reminder that today we have two thirty-minute optional information sessions about the project, with links to join on Zoom below:

- **Session A:** Tuesday, June 6 at 7-7:30 AM EST (for Asia/ME/Europe/Africa) [\[click here to add to calendar and join\]](#)
- **Session B:** Tuesday, June 6 at 12:30-1 PM EST (for Americas/Europe/Africa) [\[click here to add to calendar and join\]](#)

If you can't make it, don't worry, it will be recorded and we will share the link to the recorded video with you, as well as key messages and next steps after both sessions today.

Additionally, if you have not yet returned your consent form (thank you for those who have), it is due today at 11:59 PM EST today, so please review, sign and email me back to be invited to the focus group discussions. I have reattached it here for quick reference.

I am also easily contactable on WhatsApp at (b) (6), so please send me a message if you have any last minute questions or experience technical difficulties.

Please don't hesitate to email me back if you have any further questions.

Warm regards,

Elisabeth Wilhelm

*Visiting Fellow, Information Futures Lab  
School of Public Health, Brown University*

<https://sites.brown.edu/informationfutures/fellows-program-2022-23/>



**BROWN UNIVERSITY**  
**CONSENT FOR RESEARCH PARTICIPATION**

**Community evaluation of stories of change by people working on the frontlines of the COVID-19  
infodemic**  
May 25, 2023

**KEY INFORMATION:**

You are invited to join a focus group discussion, organized by the Brown University Information Futures Lab (IFL), School of Public Health, in partnership with the Infodemic Management Team in the WHO Health Emergencies section at the World Health Organization (WHO), on stories shared by people working in health misinformation or infodemic management during the COVID-19 pandemic. Your participation is voluntary.

**PURPOSE:** The purpose is for focus group participants to read, analyze and discuss the stories and choose the stories that best represent the experiences of people working in infodemic management. The information learned in this focus group will inform a report on themes of the analyzed stories and include recommendations to help health authorities better prepare for the next emergency and the accompanying infodemic, and better support the people doing infodemic management work.

**PROCEDURES:**

As part of this project, you will be invited into a focus group discussion lasting up to 2 hours with 6-8 other people virtually on an online video conferencing platform. Before you join, you will receive some reading materials to review that will be discussed in the focus group, which has an estimated time commitment of 2 hours to complete. The discussion will be held in English and moderated by a skilled facilitator and assisted by notetakers. An interactive digital whiteboard will be used to help participants organize their thoughts and help them reach consensus. The discussion will also be audio recorded for reference.

**TIME INVOLVED:** The study will take an estimated 4 hours of your time.

**COMPENSATION:** You will receive \$100 for your time.

**RISKS:** No risks are anticipated for participants beyond what you may experience from a typical conversation.

**BENEFITS:** By participating, you may benefit from sharing your own experiences of the COVID-19 infodemic and learn about how to conduct a group analysis of stories as a participatory method that can be used for other infodemic projects in the future.

ALTERNATIVES TO PARTICIPATION: Outcomes of the discussions and project will be shared in Q2 of 2023 with the public in an online webinar, which you are welcome to join.

## 1. Researcher:

**Elisabeth Wilhelm** ([elisabeth\\_wilhelm@brown.edu](mailto:elisabeth_wilhelm@brown.edu))

### What is this study about?

The purpose of the study is to conduct a participatory evaluation of 68 global stories about health misinformation that were submitted as part of a World Health Organization (WHO) storytelling workshop in 2022 and use learnings to inform a lessons learned document for WHO and for health authorities wishing to strengthen infodemic management preparedness. The rationale for conducting this participatory evaluation is to understand the experiences of people who have been addressing health misinformation and infodemic-related issues in the time of COVID-19 globally, with a focus on those working in emergency response structures, health systems, front lines of health service delivery and health-focused civil society organizations. This analysis would help us identify common experiences, challenges, gaps and opportunities of infodemic managers globally—and how health systems have changed and adapted through a concurrent infodemic and pandemic.

You are being asked to be in this study because you are an adult over the age of 18 and have been involved in the WHO infodemic management community and have availability an adequate internet access to participate in the focus group discussion.

### What will I be asked to do?

You will be asked to join a focus group to discuss the stories that you had previously received about how the COVID-19 infodemic has impacted people working as infodemic managers personally and professionally. You will then discuss the stories that other participants have read and help thematically analyze and sort the stories and choose a small number of stories that best present the challenges and experiences of the community described in the stories. You may choose to withdraw from the focus group at any time.

Your participation in this study may last up to 4 hours.

## 2. Will I be paid?

You will be compensated \$100 USD in form of a gift card for your time and effort in this focus group discussion.



### **What are the risks?**

No risks are anticipated for participants beyond what you may experience from a typical conversation.

### **What are the benefits?**

By participating, you may benefit from sharing your own experiences of the COVID-19 infodemic and learn about how to conduct a group analysis of stories as a participatory method that can be used for other infodemic projects in the future.

### **3. How will my information be protected?**

All focus group participants will be given access to the virtual web conferencing link which is password-protected.

During the focus group discussion, all responses will be kept confidential and notetakers will record the flow of discussion and what topics are discussed, but will not attribute specific quotes to specific people. The overall summary of discussions will be included in the final report that would be published after the discussions have concluded. An audio recording of the focus group discussion will be made to aid note takers in checking their notes, but it will be deleted after the conclusion of this project.

We ask that all people who choose to participate, including you, to respect the privacy of other focus group participants and not disclose any of the content discussed during the focus group. Researchers from Brown University will analyze the data from the discussions, but as mentioned above, responses will not be attributable to individuals and only broad themes emanating from the discussion will be included in the final report.

With your permission, you will be acknowledged in the final report as a contributor in the focus group, or you can choose to remain anonymous.

All data associated with this activity will be stored on secure, password-protected servers administered by Brown University.

### **4. Are there any alternatives to this study?**

Outcomes of the discussions and project will be shared in Q2 of 2023 with the public in an online webinar, which you are welcome to join.

### **What if I want to stop?**

You do not have to be in this study if you do not want to be. Even if you decide to be in this study, you can change your mind and stop at any time.

If you refuse to participate in or leave the study, your current or future relationship with Brown University will not be affected.

5. [Who can I talk to if I have questions about this study?](#)

If you have any questions about your participation in this study, you can call Elisabeth Wilhelm at (+1 470.316.4912) or email Elisabeth\_wilhelm@brown.edu

6. [Who can I talk to if I have questions about my rights as a participant?](#)

If you have questions about your rights as a research participant, you can contact Brown University's Human Research Protection Program at +1 401-863-3050 or email them at [IRB@Brown.edu](mailto:IRB@Brown.edu).

7. [Consent to Participate](#)

Your signature below shows that you have read and understood the information in this document, and that you agree to volunteer as a research participant for this study.

You will be offered a copy of this form.

Participant's Signature and Date

/

PRINTED NAME

\_\_\_\_\_ / \_\_\_\_\_

**From:** NIKISINS, Sergejs  
**Sent:** Wed, 21 Aug 2024 06:56:32 +0000  
**To:** David Scales; Thomas Abraham; Christine Cool; TULLOCH, Olivia; iballalai; thomas; Keenan Duggal; Romer, Dan; David Scales; James (Jim) Duggan; jim.duggan@nuigalway.ie; Duggan, James; MACHINGAIDZE, Chiedza; External Partner - alawaidy, salah; MORAN, Thomas; VON HARBOU, Kai; HERAUD, Jean-michel; TAM, John SL [ABCT]; Voegeli, Chris (CDC/IOD/OC); Constanze Rossmann  
**Subject:** Reminder: Stream 5B - TC-8 (21 August)  
**Attachments:** Stream5B\_Minutes\_Meeting7\_August15th\_SNK.docx

**CAUTION:** This email originated from outside of the organization. Do not click links or open attachments unless you recognize the sender and know the content is safe.

Dear Colleagues,

This is a quick reminder to connect TODAY to the Stream #6 (Ex-5B) TC-8. [Join the meeting here](#)

Slides of today's meeting are available here:  [2024-08-21\\_S5B-TC8 Prioritization.pptx](#)

Minutes of the previous TC are attached and are available via the link: 

[Stream5B\\_Minutes\\_Meeting7\\_August15th\\_SNK.docx](#)

If you haven't done so, please register for the Zoom connection to the Geneva Stream Leads meeting next week (in a listen-in mode only)

<https://who.zoom.us/meeting/register/tJcodeisrT4uHtS2Y-Jge6vrvQ93RMY55qgb>

Kind regards,

Sergejs

## Microsoft Teams

[Join the meeting now](#)

Meeting ID: (b) (6)

Passcode: (b) (6)

Dear Colleagues, Stream-5B members,

We are pleased to invite you to attend TC of the Expert group on influenza research agenda review - [Stream 5](#): Promoting the development and application of modern public health tools (Sub-stream 5B: Social Media Tools and Risk Communication)

**The meeting time is 3 pm CET (Geneva, Switzerland).**

**If your Outlook doesn't support the time function, please double-check your calendars**



Please assess all relevant documents on WHO Teams Channel [WHO PUBLIC HEALTH RESEARCH AGENDA FOR INFLUENZA - 2024 UPDATE | Stream 5B Channel | Microsoft Teams](#)

Let us know if you have any access issues.

Kind regards,

John, Jean-Michel, Sergejs

---

## Microsoft Teams [Need help?](#)

### [Join the meeting now](#)

Meeting ID: (b) (6)

Passcode (b) (6)

---

### Join on a video conferencing device

Tenant key: (b) (6)

Video ID: (b) (6)

[More info](#)

For organizers: [Meeting options](#)

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## **WHO PUBLIC HEALTH RESEARCH AGENDA FOR INFLUENZA – 2024 UPDATE**

### **STREAM 6: Risk communication, community engagement & infodemic management**

WHO MS Teams Channel [WHO PUBLIC HEALTH RESEARCH AGENDA FOR INFLUENZA - 2024 UPDATE | Stream 5B Channel | Microsoft Teams](#)

7<sup>th</sup> TC / 15 August 2024

**Attended:** Thomas Abraham, Keenan Duggal, Daniel Romer, John Tam, Sergejs Nikisins, Isabella Ballalai, Jean-Michel Heraud, Chris Voegeli

**Chair:** Thomas Abraham

**Rapporteur:** Keenan Duggal

**The meeting recording is available** [via the link](#).

#### **Agenda**

- Work through the Google document to familiarize the group with what we have so far and continue the process of revising/adding/removing research recommendations.

#### **Minutes**

##### **Big picture discussion points:**

- Discussion to shift group structure from Sub-stream 5B to an entirely new Stream 6
  - o The consensus appears to be that we should make this shift
- Considerations for when we present to the larger task force:
  - o We will need to explain the rationale and intended focus for each new recommendation and for departures from the 2017 recommendations.
  - o Specifically, we ought to emphasize LLMICs as settings requiring further research
- On the matter of how specific vs. generalizable, our recommendations should be:
  - o We should look at principles that apply across the board and then look if there are potential variations in LLMICs or for influenza that require specification
    - Not just LLMIC context-specific but also community-specific (micro-level analyses).
  - o Consensus: recommendations should be generalizable with disclaimers of the need to analyze what is unique about different contexts.

##### **Line-by-line discussion of research recommendations:**

- 1.1:
  - o How broad should we be?
    - Answer: we can be broad for some (e.g., for 1.1), and specific for others (e.g., vaccination uptake)
- 1.4:

- Longitudinal studies are needed, not just one baseline study
  - Explicitly add phrasing “longitudinal.”
- Stratify by high income and LLMICs
- **New recommendation:**
  - Analyze how different community engagement frameworks facilitated risk communication during the COVID-19 pandemic?
    - We could potentially combine this with 1.6?
    - There are currently no questions in our document about the types of community engagement that effectively inform risk communication.
- 2.1:
  - Lots of people don’t like vaccines in general – this isn’t necessarily influenza-vaccine specific?
  - Expand to include misinformation pertaining to prevention and treatment
  - This recommendation is likely highly context-specific:
    - High trust in vaccines in Brazil
      - The population of Brazil largely wanted to be vaccinated during Covid-19
    - Korea: vaccination rate is close to 90% for all vaccines
      - Level of trust
      - Communication targeted towards trust in medical professionals
    - Cost is important in decision-making
- 2.2:
  - We should explicitly label the focus here on the Covid-19 pandemic
- 2.4:
  - The focus of this recommendation does not just have to be on social media
    - Misinformation is also picked up by other platforms (e.g., podcasts, newsletters, mass media)

#### **Action Points**

- The group to continue to providing feedback on research recommendations before the next meeting (ideally within the next two days).
- Keenan and Thomas to provide a more formalized draft for review at the next meeting.

#### **End of Minutes**



**From:** MACHIRI, Sandra  
**Sent:** Wed, 27 Nov 2024 22:05:10 +0000  
**To:** Voegeli, Chris (CDC/OD/OC)  
**Subject:** Request for Review of Your Case Study in Ethics Guidance Document  
**Attachments:** Ethics of SLIM\_WHO Guidance final\_MASTER - edited with queries clean.docx, Case example - CDC.docx

**CAUTION: This email originated from outside of the organization. Do not click links or open attachments unless you recognize the sender and know the content is safe.**

Dear Chris,

I hope this email finds you well.

I am reaching out to request your review of the case study you authored late last year, which is included on page **40** of the edited **Ethics Guidance** document (attached). It has been a long process to reach this stage, resulting in some delays, but we are now steadily approaching the publication phase.

As part of the editing process, we have shortened the text, and we kindly request your support in reviewing this summarized version. Your perspective as the original author is essential to ensure that the content remains accurate and reflects your insights and intentions. Also attached is the original text that you shared with us for your reference. We need to add your name to the acknowledgements section, kindly share the correct affiliation as it should reflect.

Please let us know if there are any updates, revisions, or additional points you would like us to incorporate by the **2<sup>nd</sup> of December**. Your feedback will be invaluable in helping us finalize this section.

Thank you for your time and expertise. We greatly value your contributions and look forward to your input.

Happy Thanksgiving.

Best regards,

**Sandra Varaidzo Machiri**

Technical Officer for Infodemic Management  
Community Readiness and Resilience Unit,  
Country Readiness Strengthening Department,  
WHO Health Emergency Program  
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Sign up for the WHO infodemic management News Flash: <https://bit.ly/flashsubscribe>

# Ethical considerations for social listening in infodemic management for public health emergencies

## WHO guidance

*Final Draft*

VERSION 02.10.2024

## Ethical considerations for social listening in infodemic management

ISBN XXX ISBN XXX

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**Design credit:** Report design & layout by Antonio Perez

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The Co-Chairs of the Expert Group, Calvin Ho (Monash Law School, Melbourne, Australia) and Isabella Ballalai (Brazilian Immunization Society, Rio de Janeiro, Brazil) provided overall guidance for the drafting of the report.

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## Abbreviations

|         |                                                                         |
|---------|-------------------------------------------------------------------------|
| AI      | artificial intelligence                                                 |
| AIRA    |                                                                         |
| AMA     | Ask Me Anything                                                         |
| CDC     | Centers for Disease Control and Prevention                              |
| CIHEB   |                                                                         |
| EARS    |                                                                         |
| PGHRPHE | Principles and Guidelines on Human Rights and Public Health Emergencies |
| THL     | Finnish Institute for Health and Welfare                                |
| UNESCO  | United Nations Educational, Scientific and Cultural Organization        |
| UNICEF  | United Nations Children's Fund                                          |
| USAID   | United States Agency for International Development                      |
| WHO     | World Health Organization                                               |

## Executive summary

- This document provides ethical guidance for governments, ministries, departments, agencies, organizations and individuals engaging in social listening for infodemic management practices in preparation for, and during and after, acute health events or public health emergencies.
- Infodemic management involves addressing the spread of overwhelming health information during acute health events or public health emergencies. It focuses on reducing misinformation and building trust in health authorities, and ensuring consistent public health messaging to prevent confusion and harmful behaviours.
- Social listening refers to the regular and systematic aggregation, filtering and monitoring of conversations and public discourse from a combination of sources, including traditional media, digital media and other offline and online sources of information representing different populations and geographies. Social listening provides insights that can inform evidence-based interventions for current, or potential, public health emergencies.
- Social listening has a crucial role in identifying community values and the beliefs, questions and concerns present in communities. Data gathered from social listening provide additional evidence to allow informed decisions and recommendations to be made to address health misinformation, disinformation, information voids and other critical issues that are related to recommended public health information for action.
- Although they are useful activities, social listening and infodemic management come with risks, including human rights violations, potential harm to populations in vulnerable situations, erosion of trust in health institutions, privacy breaches and misuse of data. To help address these challenges, this document offers an ethical framework to govern and ensure responsible and ethical social listening and infodemic management practices.
- The document covers technical definitions of terms, ethical challenges in infodemic management and social listening, alignment with human rights, substantive and procedural ethical principles and practical guidance for translating these principles into real-world practice.
- This document is intended for a broad audience, which includes regulators, governments, ministries of health, public health officials, health care providers, national and international organizations, professional societies, tech companies, community leaders, researchers, fact-checking organizations, influencers and all stakeholders performing infodemic management, social listening practices and generating infodemic insights.

Commented [AK25]: Would "gathering" be more simple?

Commented [AK26]: Please check that I have retained your meaning.

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## Aims and scope of the document

This guidance document has been developed by the World Health Organization (WHO) to guide governments, organizations and individuals seeking advice on how to ethically engage in social listening as part of infodemic assessment and mitigation strategies, in concordance with the protection of and respect for human rights, in preparation for, during and after public health emergencies. In the context of public health, social listening is the process of listening to and analysing conversations and narratives. It entails the capture and analysis of data from diverse sources to understand the conversations, feelings, attitudes, knowledge, beliefs and intentions of populations and communities with respect to health risks (e.g. disease outbreaks) and mitigating factors, as well as the scientific evidence and government policies surrounding them. These data have a range of sources, including health systems, epidemiological data, sociobehavioural or economic studies, traditional media and data generated by users of digital and social media platforms. The most common application of social listening as part of infodemic management is to generate infodemic insights that summarize a community's questions, concerns and areas of uncertainty or discord, which can help to inform appropriate, sensitive, proportionate and effective interventions [Fig. 1].

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Social listening, infodemic insights generation and infodemic management practices present several important ethical challenges highlighted in this guidance document. The guidance document outlines the importance of respecting ethical standards for conducting social listening and infodemic insights generation to inform infodemic management interventions during health emergencies.

Fig. 1 Infodemic management



This guidance document presents an ethical framework to guide social listening practices to generate insights on infodemics. Although this is especially relevant in the context of health emergencies, this guidance also applies to other, related, contexts, such as preparedness for health emergencies, prevention, capacity-building and recovery. This guidance document provides practical recommendations to relevant stakeholders based on the ethical framework presented here. The guidance demonstrates how the ethical framework can be applied in practice, with distinctions made between the different contexts in which it might be used.

Providing ethical guidance for social listening activities is vital to avoid risks, such as harming populations in vulnerable situations (including epistemic injustice, lack of access to health information, for example), eroding trust in health institutions and preventing the misuse of data. Therefore, organizations who are engaging in social listening are encouraged to adopt and implement this guidance to promote ethical practices when analysing a community's health-related questions, concerns, information voids, narratives and circulating misinformation and disinformation.

## Target audience

The primary target audience of this guidance document on ethical considerations for social listening and infodemic management includes regulators, governments, ministries of health, public health officials, agencies, national and international organizations, media and journalists, professional societies, researchers and academics, and other relevant stakeholders involved in managing infodemics, producing or utilizing infodemic insights or using other social listening techniques locally or globally.

This guidance document is also addressed to private businesses, such as technology companies and social media platforms, and also to companies who act as public service providers that conduct social listening and gather insights about infodemics. These companies are thereby acting on the behalf of the state or

**Commented [AK30]:** Would it be OK to use this instead – I've tried to bring out the important points: Engaging in social listening to generate insights on infodemics, and manage them effectively during health emergencies, presents several important ethical challenges. This guidance document addresses these challenges and emphasizes the importance of respecting ethical standards when conducting social listening and generating insights into infodemics.

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... or community data  
Categorization and characterization of  
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... policies or health  
... address or mitigate

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organization and/or as emanations thereof (UNESCO and WHO 2021b; HEPR and WHO 2023a; 2023b) (1, 2). These entities are urged to consider the recommendations outlined in this document and collaborate with public health organizations to better ensure the ethical implementation of social listening, infodemic insights generation and the recommendations for infodemic management.

Finally, this guidance document is also relevant for stakeholders representing communities, such as community leaders and civil society organizations, including, for example, patient or consumer organizations, grass roots fact-checking organizations, influencers and digital partners.

The identities of the key stakeholders in infodemic management, that is, the target audience of this guidance document, can vary significantly in different circumstances and context. In recognition of the diversity of stakeholders and their varying interests, this guidance document emphasizes the need for institutions, and individuals engaged in social listening, to recognize who the key stakeholders are in their own specific context. This level of specificity ensures that the strategies presented here are sensitive to context-specific concerns and dynamics.

By understanding and implementing the ethical guidance presented here, all stakeholders will be able to ensure that all social listening and infodemic insights practices are conducted in accordance with ethical standards and human rights requirements. This is crucial to maintain public trust, safeguard individual's rights and privacy, and adhere to legal requirements, while providing effective infodemic management. By adopting this guidance, stakeholders can enhance the effectiveness of social listening and the generation of infodemic insights as part of their infodemic management activities, which will contribute to the overall well-being and safety of the communities they serve.

## 1. Introduction

Our society is characterized by an unprecedented level of globalization, interconnectedness and information flow, amplifying both the magnitude and complexity of managing health emergencies. Such emergencies call for swift and ethically guided responses to protect individual rights, societal welfare and shared global health security (1, 3, 4). These emergencies simultaneously generate overwhelming volumes of diverse information, both accurate and not, a phenomenon recognized as an "infodemic". Infodemics, characterized by the rapid spread of misinformation, disinformation and the elevation of fear and uncertainty, can impede, slow down or hinder effective public health response efforts (5). The consequences of infodemics have been illustrated by recent health emergencies, such as the COVID-19 pandemic and the Ebola virus disease and mpox outbreaks, underlining the urgency of managing infodemics effectively (6).

As a response, WHO has developed this guidance document offering an ethical framework for social listening and generating insights into infodemics, as part of infodemic management activities, to be used during times of preparedness for health emergencies, response, prevention and recovery. To ensure policy coherence with established international standards, this framework draws upon key international regulations, including the International Health Regulations (2005) (7), the Siracusa Principles (8), the Sendai Framework for Disaster Risk Reduction (9) and the WHO guidelines on ethical issues in public health surveillance (WHO 2017)(10).

Social listening is a practice which involves observing and analysing public sentiments, opinions and beliefs (5). Social listening is important for generating insights into infodemics that can be used for evidence-informed infodemic management. It involves collecting and analysing data from diverse sources, including traditional media, offline sources and digital and social media, to identify and elucidate the beliefs, questions and narratives circulating within and between different communities. This document advocates for the practice of social listening to be conducted while adhering to relevant regulations and within the boundaries of human rights and ethical guidance, thereby safeguarding individual and community interests

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and also promoting broader societal well-being, preserving public trust and supporting effective infodemic management strategies.

This guidance document advocates for ethics to be centrally integrated within social listening and infodemic management activities. Ethics should not be viewed as a hindrance but rather as a fundamental tool. It provides guidance to ensure effective and fair practices rather than being seen as an obstruction to them. Although certain public health measures can be enforced, fostering understanding and building trust cannot. Trustworthiness and credibility, which are vital for successful infodemic management, can be promoted by adhering to ethical guidance (11). Upholding ethical guidance builds trustworthiness and can establish trust, which is a prerequisite for successful social listening and infodemic management. There is a strong need for an ethical framework to ensure proper management of infodemics to mitigate health emergencies and enhance global health security. This guidance document encapsulates such an ethical framework and provides practical recommendations to empower stakeholders to make informed ethical decisions on infodemic management, enabling the safeguarding of the public interest.

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## 2. Theory

### 2.1. Definitions

This section gives the definitions of the important terms used in this document.

#### 2.1.1 Ethics

Ethics, derived from the Greek *ethos*, or "behaviour", is concerned with questions about right versus wrong conduct and what constitutes a good or bad life, as well as the justificatory basis for such questions, the situations in which values conflict (e.g. ethical dilemmas), and the systematic analysis and resolution of these conflicts (12).

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In this guidance document, ethics refers to the principles and frameworks that guide moral decision-making, which are traditionally focused on principles specifying the desired outcomes or values advanced by decisions. In this context, ethics includes both the foundational principles and the procedural principles that are intended to guide the processes by which decisions are made, translating values into practical, actionable steps. This dual approach ensures that ethical considerations are not only theoretical but are also operationalized, addressing the dynamic and evolving challenges posed by infodemics. In this way, ethics seeks to balance moral guidance with effective, real-world application (11).

#### 2.1.2 Acute public health event

An acute public health event is defined as any occurrence that poses an immediate threat to human health, and which necessitates prompt action in the form of control and/or mitigation measures to safeguard public well-being. This definition includes events of both known and unknown origin. This term encompasses events that have not yet resulted in disease or injury in humans, but possess the potential to do so through exposure to infected or contaminated sources, such as food, water, animals, manufactured products and environments, or as a consequence of natural events, conflicts or disruptions to critical infrastructure, either directly or indirectly (12-14).

Acute public health events can escalate into impending public health emergencies, necessitating more urgent and coordinated responses. As these events evolve, the immediate implementation of effective control and mitigation measures becomes critical to prevent widespread harm. Public health emergencies demand robust response strategies, including the mobilization of resources, deployment of health care personnel, and engagement with international health agencies. The potential for these acute events to turn into emergencies underscores the importance of early detection, rapid response and continuous monitoring. Efficient management of such situations can significantly reduce the risk of large-scale health crises and protect the health and well-being of communities.



### 2.1.3 Health emergency

A health emergency is a situation with the potential to overwhelm the capacity of the existing infrastructure and systems. Some emergencies, such as disease outbreaks, floods, storms, landslides and earthquakes, are triggered by naturally occurring hazards; others, such as transport crashes, terrorist attacks and conflicts, are human-induced hazards. Small-scale emergencies are often of short duration and are self-limiting; other emergencies may have a much longer-term, more protracted profile and go on to have far-reaching and deep implications for health care delivery and health systems and for the broader socioeconomic-political systems.

There are a range of hazards with the potential to pose threats to public health, including infectious diseases, chemical and radio nuclear incidents, food contamination and threats associated with climate change, such as extreme weather events, landslides, droughts and sudden deforestation. Risk factors for health emergencies increase people's exposure and vulnerability to these hazards, making individuals and communities more susceptible to adverse health outcomes, and these risk factors include poverty, gender, age, migration, health and nutritional status, displacement and unplanned urbanization (15).

### 2.1.4 Public interest

In the context of infodemic management, public interest refers to the collective well-being and benefit of the entire community in relation to public health communication; that is, the dissemination and reception of health-related information (16). Public interest emphasizes the importance of ensuring that information is accurate and clear and is disseminated in a manner that upholds the principles of justice, equity and respect for human rights. Here, justice refers to the fair treatment of individuals and communities, and equity emphasizes the provision of resources and opportunities in a manner that accounts for differences in circumstances, ensuring that everyone has the opportunity to achieve optimal health outcomes. In recognition of the potential for power imbalances to distort the definition of public interest, it would be ideal for social listening practices to be grounded in robust governance, transparency, inclusion, participation and accountability mechanisms. This would ensure that the essence of public interest is preserved, centring the well-being of the affected communities and individuals over any individual's or group's vested interests, and upholding the duty of care that public health systems owe to their populations.

### 2.1.5 Information ecosystem

An information ecosystem comprises the actors, structures and relationships that impact the transmission, production and consumption of information in a given environment (17). A person's information ecosystem is the complex, dynamic infrastructure, sources and relationships through which information flows before it reaches an individual. In the context of health, the information ecosystem includes digital and physical environments. It is influenced by interactions with the health system and is related to social dynamics, health behaviours and information-seeking behaviours (5).

### 2.1.6 Misinformation and disinformation

Misinformation refers to unintentionally misleading or inaccurate information that is shared without the intent to deceive. It may arise from misunderstandings or errors but still has the potential to confuse or mislead. Disinformation refers to intentionally false or partially false information that is deliberately created and spread with the aim of deceiving or misleading others (18).

### 2.1.7 Infodemic

An infodemic is an overabundance of information, accurate or not, in the digital and physical space, accompanying an acute health event, such as an outbreak or epidemic (5). It causes confusion and influences attitudes and behaviours that can harm health. It also contributes to mistrust in health authorities and undermines the public health response. An infodemic can intensify or lengthen outbreaks when people are unsure about what they need to do to protect their health and the health of people

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around them. With growing digitization – an expansion of social media and Internet use – information can spread more rapidly (19).

### 2.1.8 Infodemiology

Mitigating public health problems resulting from an infodemic brings together many scientific disciplines to address the complexity of infodemic management (20, 21). Infodemiology was originally defined as the study of the determinants and distribution of health information and mis/disinformation. Since the 1st WHO Infodemiology Conference held online in June–July 2020, the working definition of infodemiology has been expanded to go beyond studying the use of data produced and consumed on the web and to include an integrated understanding of the online–offline information exchange and interactions, and how these lead to behaviours that impact health outcomes (22, 23). Infodemiology includes elements of data science, information science, epidemiology, anthropology, computer science, behavioural sciences, sociology, psychology, philosophy, political science, user experience and design, and communication (5).

### 2.1.9 Infodemic management

Infodemic management refers to the systematic use of risk and evidence-based analysis and approaches to manage the infodemic and reduce its impact on health behaviours during health emergencies (5). Infodemic management looks at narratives, questions and concerns for the purpose of understanding and anticipating the needs of communities and informing response strategies.

Infodemic management interventions are strategies, policies or health programmes designed to identify, address or mitigate the harms of an infodemic. These interventions include listening to community concerns, communicating risk and translating science, promoting resilience to misinformation and disinformation, designing and tailoring health communication and promotion campaigns, enhancing content moderation approaches, labelling data associated with mis/disinformation, and engaging and empowering communities, while protecting freedom of expression and access to information (5) (Fig. 2).

Fig. 2 Elements of infodemic management processes



Source: Adapted from WHO (24).

### 2.1.10 Social listening

The conventional definition of social listening comes from the business context, in which it has been used to track online conversations among consumers about brands or products to inform marketing. Social listening in infodemic management is more expansive and can be defined as any form of data collection and analysis activity conducted across social media and traditional media. When integrated with other data sources, such as user search trends, epidemiological data, health system and sociobehavioural data, it

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1 Social listening and ... and misinformation present in populations

2 Delivering high-quality health information and health programming

5 Strengthening preparedness and prevention...

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yields infodemic insights to identify, categorize and understand the concerns and narratives expressed. Social listening and infodemic insights use an integrated method for public health analysis and insight generation to inform evidence-driven infodemic interventions (5). Social listening involves monitoring narratives at an aggregated community level rather than focusing on individual opinions. This approach differs from surveillance because it does not target or monitor individual behaviour, but, instead, gathers and analyses data to understand the broader trends and sentiments within affected communities. The goal is to gain insights into collective discussions and opinions without infringing on individual rights, particularly freedom of expression and privacy, by following a human rights-based approach. This distinction is crucial to maintain ethical standards in data collection and ensure that social listening remains a tool for public good rather than an invasive practice.

#### 2.1.11 Infodemic insights

Infodemic insights are learnings about circulating narratives that are generated through an integrated analysis of diverse data sources. Infodemic analyses are often presented in infodemic insights reports and published research studies that describe narratives, outline the risks they might pose and identify accompanying recommended actions to address the learnings from the infodemic insights so that public health can be protected (25).

#### 2.1.12 Data

Data used for infodemic insights, social listening and infodemic management can originate from both online and offline sources. These sources can provide valuable insights into public sentiment, awareness levels and the spread of misinformation. Social listening leverages the collection of quantitative, qualitative or mixed-methods data to provide a deeper understanding of community perceptions, concerns and information needs. Online data include information gathered from social media platforms, online forums, news articles, blogs, messaging applications and other digital sources (26). Offline data comprises traditional media sources, such as newspapers, television, radio and public health reports. Community data include data from surveys, interviews and focus groups (25) (Table 1).

Table 1. Types of data used in social listening.

| Activity                                                                                                                             | Data sources: category and examples                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
|--------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Monitoring or tracking people's questions, concerns, information voids, narratives and circulating misinformation and disinformation | <b>Emergency response (ad hoc set-up for a specific emergency)</b> <ul style="list-style-type: none"> <li>• Situational reports</li> <li>• Requests for technical assistance</li> <li>• Detection of narratives and mis/disinformation</li> <li>• Field reports</li> <li>• Emergency hotlines</li> <li>• Ad hoc networks of responders</li> <li>• Outbreak investigation-related datasets</li> <li>• Feedback from formal mechanisms (e.g. accountability to affected populations in a humanitarian emergency)</li> </ul> |
|                                                                                                                                      | <b>Health system communications</b> <ul style="list-style-type: none"> <li>• Hotline call log</li> <li>• Email/chat queries</li> <li>• Press enquiries</li> <li>• Patient feedback surveys</li> <li>• Other formal feedback mechanisms</li> </ul>                                                                                                                                                                                                                                                                         |

|                                                                                                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
|--------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                                                                                  | <p><b>Digital environment and user behaviour</b></p> <ul style="list-style-type: none"> <li>• Website analytics</li> <li>• Search trends</li> <li>• Social media monitoring</li> <li>• Digital infodemic insights analysis (external reports)</li> <li>• Discussion forums</li> <li>• Customer feedback/review sites</li> <li>• Other digital data sources</li> </ul> <p><b>Society and community</b></p> <ul style="list-style-type: none"> <li>• Media monitoring</li> <li>• Feedback from community events</li> <li>• Opinion polls</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| Tracking health behaviours and downstream health system effects related to the topic of interest | <p><b>Health system data</b></p> <ul style="list-style-type: none"> <li>• Use of medicines and diagnostics</li> <li>• Service usage</li> <li>• Poison control hotline and surveillance systems on the use of medicines and medical devices</li> <li>• System for adverse events reporting (if relevant)</li> <li>• Cluster surveys, seroprevalence surveys and other epidemiological datasets</li> <li>• Health campaign data (e.g. independent monitoring reports)</li> <li>• Health data collected by apps for outbreak investigation or management</li> </ul> <p><b>Regulatory data on medicines and medical devices</b></p> <ul style="list-style-type: none"> <li>• Adverse event monitoring (if relevant)</li> <li>• Data supporting marketing authorization applications</li> </ul> <p><b>Sociobehavioural studies</b></p> <ul style="list-style-type: none"> <li>• Ethnographic studies</li> <li>• Community assessments</li> <li>• Knowledge, attitude, practice and belief studies</li> <li>• Behavioural risk factor surveillance datasets</li> <li>• Mobility and location data</li> <li>• Population-based surveys, such as multiple indicator cluster surveys, demographic health surveys, health interview surveys, etc.</li> <li>• Peer-reviewed research</li> <li>• Grey literature</li> </ul> |

Source:

## 2.2. Architecture of this document

Social listening requires a clear ethical structure to guide interventions and policies. This guidance document offers this structure through five core elements (Fig. 3). The document highlights the challenges inherent in social listening and infodemic management, offers an alignment with the human rights

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frameworks, outlines the substantive and procedural ethical principles to consider when performing social listening and infodemic management practices, and defines an implementation framework to guide stakeholders in using these ethical principles in social listening and infodemic management.

Fig. 3. Layers of the architecture of this guidance document



Source:

### 2.2.1 Challenges

The challenges element of this guidance document describes the ethical complexities and issues that make managing an infodemic difficult, such as the risk of harm to people in vulnerable situations, or the erosion of trust. These challenges highlight the intrinsic difficulties faced by organizations and individuals when navigating large volumes of information, or when designing effective health communication strategies, especially during health emergencies. Challenges are discussed in detail in section 8 of this document.

### 2.2.2 Alignment with human rights

The advice given in this guidance document is rooted in human rights requirements; in particular, in the Universal Declaration of Human Rights (27); the Principles and Guidelines on Human Rights and Public Health Emergencies (PGHRPHE), developed by the Global Health Law Consortium and the International Commission of Jurists (28); and in digital human rights (29). In formulating recommendations to implement ethical social listening in infodemic management practices, this guidance calls for approaches designed and implemented in a manner that is consistent with human rights requirements. This alignment ensures that all interventions and measures advocated in the guidance address the challenges of infodemics effectively and in a manner that respects and upholds the rights, freedoms and values that are enshrined in the principles of universal human rights. The alignment with the human rights frameworks is discussed in detail in section 9 of this document, in the subsection "Alignment with human rights and human rights-based approaches".

### 2.2.3 Substantive principles

Substantive principles specify the desired outcomes or values advanced by decisions. They constitute the fundamental theoretical concepts that form the ethical foundation of the framework. Principles represent foundational values, providing a consistent ethical base for every decision and action in social listening for

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infodemic management. Substantive principles are discussed in detail in section 9 of this document, in the subsection entitled "Substantive principles".

#### 2.2.4 Procedural principles

Although substantive principles provide an ethical foundation, procedural principles are intended to guide the processes by which decisions are made, and constitute actionable targets, translationally derived from substantive principles. They have tangible, practical implications for social listening in infodemic management practices, helping stakeholders to apply the foundational principles in real-world contexts (30). Procedural principles are designed to solve potential tensions between ethical concepts by giving a more hands-on approach to the abstract concepts highlighted by substantive principles. Procedural principles are discussed in detail in section 9 of this document, in the subsection entitled "Procedural principles".

#### 2.2.5 Implementation

The implementation section of this document provides practical steps and highlights strategies aimed at fulfilling the established objectives of the process (see section 3). It provides a roadmap of actionable directives grounded in ethical principles and objectives, which are adaptable to varying contextual circumstances. This approach ensures a coherent and efficient strategy for conducting social listening and managing infodemics.

### 2.3. Methodology and approach

#### 2.3.1 Development of ethical framework and guidance

The WHO expert group on ethical considerations of social listening in infodemic management was established to provide advice to WHO on defining an ethical framework for social listening, and producing guidance and related implementation tools (31). The objectives of the WHO expert group were to:

- advise WHO on developing guidance on ethics matters for social listening in infodemic management, in the context of programming, emergency preparedness activities and emergency response;
- advise WHO on developing practical tools to apply the guidance for social listening in infodemic management for infodemic managers and implementation researchers who conduct social listening to monitor the infodemic and guide infodemic management interventions;
- discuss and advise WHO on the ethical considerations in social listening in infodemic management that need further exploration, identifying emerging issues and the application of the guidance in the field;
- prepare this guidance document, comprising definitions, general principles, practical ethical guidance and implementation tools, aimed at providing effective support for infodemic management actions in the context of preventing health emergencies or during public health crises.

The plenary meetings of the expert group took place at least once per month from March 2023 to March 2024. The experts were expected to attend these meetings regularly, contribute to the discussions within the expert group or any assigned subgroups, and to review and comment on draft materials.

#### 2.3.2 Systematic scoping review

The development of this document was supported by a systematic scoping literature review which had the objective of mapping the current state of ethical issues in social listening and infodemic management (11). The outcomes of this review directly informed and validated the discussions and efforts of the expert group, contributing to the content of this guidance document. The search strategy was developed iteratively by expanding the original query with text-mined keywords, which were then expanded further and validated by the expert group. The focus of the search strategy was journal articles that explicitly or

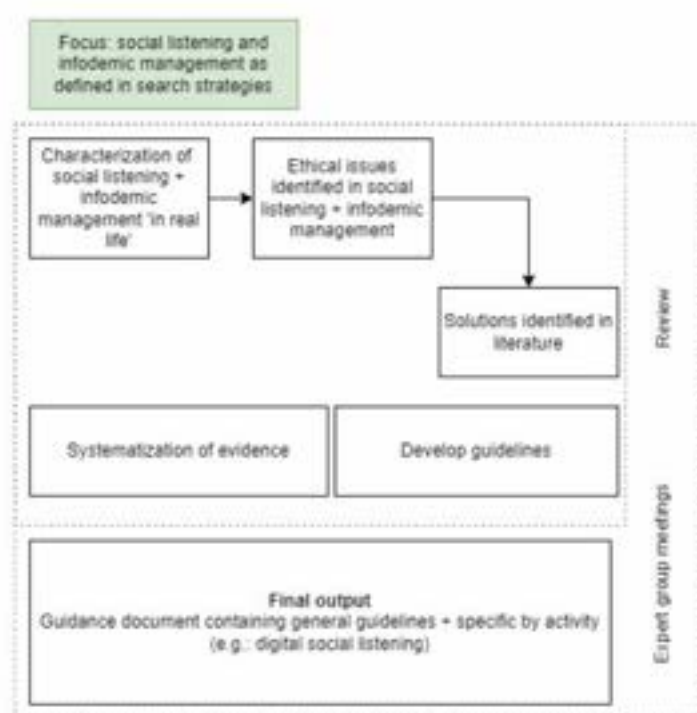
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implicitly mention infodemics, infodemic management or social listening in the context of a public health emergency, and the ethical aspects of infodemic management and social listening. The queries were run on three major databases: PubMed, Web of Science and Scopus. The resulting entries were complemented with additional material identified by the expert group (in particular WHO and United Nations policy documents). The review process, including the full methodology, inclusion criteria, exclusion criteria, assessment criteria and other relevant details, is documented and available for public access on an [Open Science Framework repository \(32\)](#). The role of the systematic scoping review in supporting and informing the work of the expert group to produce this guidance document is summarized in Fig. 4.

Fig. 4. Role of the systematic scoping review in supporting and informing the work of the expert group



Source: Authors.

The review revealed important insights concerning ethical standards in social listening and infodemic management and identified core principles, such as community engagement, education, inclusiveness and fairness, which are vital in improving the impact and efficiency of communication and social listening initiatives. These principles contribute to building trustworthiness, a crucial emerging, and pressing, aspect in the literature on ethics of social listening and infodemic management. The review highlighted the importance of maintaining transparency, safeguarding privacy and ensuring cybersecurity in data handling when performing social listening and infodemic management practices. It emphasized that ethical practices are essential to augment the effectiveness of social listening and infodemic management during, and in preparation for, health emergencies. Adhering to ethical norms is key to establishing trust and achieving success when designing infodemic management and social listening strategies. The findings stress the necessity of an approach to infodemics and public health that is both ethically and empirically grounded.

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### 2.3.3 Outreach and engagement with the academic community

As part of the effort to develop a comprehensive ethical framework and guidance for social listening in infodemic management, extensive outreach and engagement activities with the academic community were undertaken. These activities gathered diverse perspectives, fostered collaborative discussions and ensured that the guidance was informed by the latest research and practical insights. Key outreach activities are listed below.

- A specialized workshop focused on the governance of social listening in response to serious health threats was organized. This event, held in August 2023, was hosted by the Centre for Medical Ethics and Law at the University of Hong Kong. The event brought together experts and practitioners to discuss ethical considerations, practical challenges and governance frameworks for infodemic management (33).
- The expert group's work was presented at the 16th European Public Health Conference 2023, held in Dublin, Ireland, in November 2023 (34) and November 2024.
- The expert group actively participated in online forums to disseminate findings and engage with a broader audience, including a contribution made to the Petrie-Flom Center's blog at Harvard Law School, emphasizing the importance of a rights-based approach to infodemic management during public health emergencies (35).
- Key aspects of the ethical framework were presented at the 17<sup>th</sup> World Congress of Bioethics meeting held in Doha, Qatar, in June 2024, which also involved engaging with bioethics scholars and practitioners from around the world. This platform provided an opportunity to receive valuable feedback and foster international collaboration on the ethical governance of social listening practices.

These outreach activities were essential to ensure that the ethical framework and guidance developed by the WHO expert group are robust, well-informed and practically applicable across different contexts and regions. The collaborative efforts and insights gained from the academic community have greatly contributed to the comprehensiveness and relevance of this document.

## 2.4. The risks of unethical practices for social listening in infodemic management: challenges

### 2.4.1 Harm to people in vulnerable situations

Addressing the harm faced by people in vulnerable situations, or for specific population groups, is a crucial challenge. Heightened vulnerabilities amplify the risks associated with infodemics, and the potential for negative effects resulting from unethical practices in social listening and infodemic management. Factors influencing people's vulnerability include (but are not limited to) socioeconomic status, education level, age, gender, health status, digital literacy and geographical location (11). These characteristics often intersect, intensifying vulnerabilities and creating intricate challenges for infodemic management (36). Misinformation and disinformation pose severe threats, potentially leading to misguided health decisions, propagation of disease and a profound mistrust in health care systems (22). The challenge has two components: firstly, ensuring that timely and accurate information reaches communities to support informed decision-making about health; and secondly, navigating the distorted information landscape wrought by infodemics.

Infodemic management strives to address this disparity but involves ethical complexities. The gathering and analysis of information, and the deployment of suitable evidence-based interventions, are paramount to preventing further harm to these at-risk populations: there is a substantial risk of amplifying mis/disinformation, infringing upon privacy and freedom of expression and undermining trust (11).

Addressing harm experienced by people in vulnerable situations necessitates a profound comprehension of their distinctive needs and contexts (37). This involves acknowledging the varied ways information is accessed and processed by these individuals, including cultural nuances, language differences and the

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varying levels of digital or information literacy. Thus, social listening practices must be flexible, culturally sensitive, and inclusive, ensuring equitable interventions (36, 38).

Building trust with people in vulnerable situations is particularly important, especially given the systemic inequalities they may experience, and their underrepresentation in health strategies and narratives. Infodemic management practices should demonstrate transparency, accountability and cultural competency to foster and sustain trust (39-42).

It is crucial to highlight that unethical infodemic management practices themselves pose a significant threat. Manipulation of data, biased interpretation and the dissemination of information without proper context can exacerbate vulnerabilities and contribute to the negative effects of infodemics, rather than helping mitigate these issues. Ensuring ethical conduct in all stages of infodemic management is a matter of protecting people in vulnerable situations, while ensuring the integrity of public health responses (43-45).

#### 2.4.2 Erosion of trust

Trust represents the confidence individuals have in the integrity, reliability and competence of an actor or institution (46). Trust is foundational to effective communication, adherence to public health measures and the overall success of health interventions (47). If unethical practices infiltrate infodemic management, trust in institutions, health responders, the health care system, pharmaceutical interventions and social/behavioural guidelines can be compromised (48). Social listening involves tracking narratives at an aggregated level rather than focusing on individual opinions. The emphasis is on the conversations of communities as a whole. Although its aims may be ethical (that is, beneficence (49)), its processes and effects may not be (e.g. stigmatization) (50-52). This is why such measures should ideally only be taken in collaboration with and for the affected groups, if trust is to be preserved. The challenge revolves around maintaining public trust while trying to measure and curb infodemics, alongside dealing with the ethical complexities of data management. Trust is fragile, and once eroded, it is difficult to rebuild (53).

Unethical infodemic management practices could potentially manifest in various forms, including bias in data interpretation, manipulation of information, lack of transparency and inadequate data protection (40, 48). Such practices harm the integrity of infodemic management efforts, and fuel scepticism and distrust among the public (11). This erosion of trust hampers effective communication, reduces compliance with health guidelines and undermines the health system's capacity to respond swiftly and effectively to public health challenges.

Infodemic managers and practitioners need to recognize the profound impact that trust has on public health outcomes and be vigilant in their efforts to uphold ethical standards. This involves constant monitoring and evaluation of practices, as well as openness to feedback and willingness to make necessary adjustments to ensure ethical conduct (54, 55).

Finally, there is a need for clear and consistent communication to convey the importance of trust in public health interventions and the steps being taken to protect individual privacy and uphold ethical standards.

#### 2.4.3 Ineffective health systems response

Ineffective health system responses emerge as a significant challenge in social listening and infodemic management (56). When these practices are misaligned with ethical standards, there is a risk of generating a discord between health guidance and the actual behaviours of the population, resulting in suboptimal public health outcomes. Various components of health systems can exhibit inefficiencies that hinder effective management of infodemics (57). Health information systems may lack interoperability, resulting in fragmented data collection and analysis, impeding the timely identification of emerging health threats. Inadequate health communication may fail to reach diverse populations with accurate and accessible information, exacerbating the spread of mis/disinformation and hindering public understanding of health risks. Weaknesses in health policy systems can lead to delays in enacting evidence-based interventions or policies, reducing the system's agility in responding to evolving infodemic challenges (58). Additionally,

health care delivery systems may face capacity constraints or resource shortages, limiting their ability to provide timely care or preventive measures, further exacerbating public health crises. These challenges are intensified during health emergencies with cross-border impacts, such as infectious disease outbreaks or pandemics. Although governments are typically expected to lead the response, no single government can effectively address such crises alone.

The main challenge lies in the potential misinterpretation of data gathered through social listening tools. The information collected is crucial to understanding public sentiment, identifying the questions and concerns people have and the infodemic trends, and guiding health interventions. However, if the data are mishandled, the insights derived can be skewed, failing to accurately represent the needs, concerns and behaviours of the community (59). Further, the failure to consider the cultural, social and economic contexts in which health-related behaviours occur can result in misguided health strategies (60). Social listening might successfully detect prevalent narratives and trends, but without a nuanced understanding of the underlying factors influencing these patterns, the resulting health guidance could be out of touch with a community's reality (5). This misalignment can create a gap between what health systems advocate for and what communities are willing or able to implement, rendering interventions ineffective or less effective.

This challenge is compounded when health systems are slow to adapt, or fail to recognize the shortcomings of their infodemic management strategies. This further exacerbates the issues related to the ineffective health systems responses mentioned above. Approaches considered in the literature to evaluate the effectiveness of infodemic management interventions include "process indicators, such as how well the intervention is reaching its target audience", "effects on health outcomes" and "cost-effectiveness" (5). This issue is considered as one of the most pressing issues in the field of infodemiology to be evaluated and solved in preparation for future infodemics (5). In a rapidly evolving information landscape, the ability to swiftly identify and rectify missteps in data interpretation and intervention design is crucial. An ineffective health system response not only fails to mitigate the harms of infodemics, but can also contribute to a prolonged state of public confusion and mistrust.

#### 2.4.4 Data misuse, dual use or unintended negative consequences of data collection

The potential for data misuse, dual use of data or unintended negative consequences of data collection represents a significant and complex challenge (61). The very nature of social listening in infodemic management, which involves gathering and analysing large volumes of data, leads to numerous potential avenues for misuse (10, 26).

A paramount concern that may arise from these practices is the discriminatory or stigmatizing treatment of individuals or groups. The data collected, although invaluable for managing infodemics and guiding public health responses, could also be exploited to target specific demographics, potentially leading to biased or unfair treatment (62). This risk is exacerbated when data is handled without proper ethical oversight or when the safeguards in place are insufficient to prevent misuse or dual use.

The susceptibility of infodemic management data to exploitation is a grave concern. There exists a real danger that this information could be repurposed for mass surveillance on topics and for purposes other than public health, such as discriminatory practices or political manipulation, resulting in infringements on privacy and a significant damage to individuals and societies (Hendi, Chung and Wild 2020; Pulignano 2021; WHO 2017) (10, 63, 64). It is important to exercise caution regarding the emergence of surveillance states, where the constant monitoring and meticulous tracking of citizens' behaviours could lead to undesirable outcomes.

Furthermore, the information collected through social listening tools could be leveraged for other purposes, such as targeted advertising or manipulative marketing practices (10, 65). These practices compromise individual autonomy and contribute to a broader culture of exploitation in which data are treated as a commodity to be traded and used for profit.



Misuse of data and the dual use of information collected for infodemic management pose significant threats to the integrity of these practices and the trust that the public places in them, with far-reaching implications, undermining the very goals that infodemic management seeks to achieve.

2.4.5 Managing power imbalance, promoting good governance and establishing governance policy  
In the context of infodemics, power imbalances may arise due to the uneven distribution of authority, resources and influence among individuals, organizations and institutions. These imbalances create ethical challenges for various reasons (45, 66, 67).

In the digital realm, power imbalances may result in certain voices and narratives being disproportionately amplified, drowning out valid information and perspectives (68). This undermines the ideal of a diverse and inclusive dialogue. Powerful actors may exploit the information ecosystem to manipulate public opinion, sow discord or advance their own agendas. Such manipulation undermines the public's trust in information sources and can have far-reaching social and political consequences (69).

Addressing power imbalances, and promoting good governance in infodemic management, is essential for several ethical reasons. For democratic societies, a cornerstone of democracy is the fair representation and participation of all individuals in public discourse. By addressing power imbalances, institutions and individuals engaged in social listening and infodemic management can ensure that marginalized voices and communities are included, thereby fostering a more inclusive and democratic society (70). In non-democratic political systems, these challenges can be more pronounced, making them more vulnerable to issues such as the misuse or dual use of social listening data (71). In these contexts, it is critical to explore strategies that mitigate these risks. One approach is for the public health sector to strive for as much independence as possible, advocating for this autonomy where feasible. Additionally, the inclusion of civil society organizations and nongovernmental organizations (NGOs) with a minimum threshold of legitimacy can help provide checks and balances, ensuring that power imbalances do not undermine public health efforts. These approaches help upholding information as a public good, as per the Windhoek+30 Declaration, whose principles were unanimously endorsed by the UNESCO General Conference 41st session (72).

Infodemics can also have severe consequences, including public health risks, social unrest and erosion of trust in institutions (6, 73, 74). By managing power imbalances, it is possible to mitigate these risks and protect the welfare of individuals and communities. Managing power imbalances and ensuring good governance (including data governance) require a robust governance policy, particularly in terms of data accessibility for infodemic management, social listening and public health surveillance (75). One established way to minimize power imbalances and guarantee good governance entails fostering strategic partnerships between governments and private enterprises, including tech companies and social media platforms (76). These actors can collaboratively cultivate a more inclusive and ethical information ecosystem. This collaborative approach, however, necessitates the establishment of clear and transparent expectations regarding the responsibilities of private enterprises involved in infodemic management. It also underscores the paramount importance of upholding human rights principles in alignment with the United Nations' Guiding principles for business and human rights (77), and UNESCO's Guidelines for the governance of digital platforms (41).

Companies engaging in partnerships with governments or organizations should remain cognizant of their shared responsibilities and obligations. They should adhere to the standards that are set out in section 2.5, Normative elements. Technology companies, social media platforms and any organizations contracted by key stakeholders to conduct social listening and gather insights about infodemics effectively act as extensions of the state or relevant organizations. These entities are also strongly encouraged to embrace the recommendations outlined in this document and actively collaborate with public health organizations to ensure the ethical implementation and efficacy of social listening, infodemic insights generation and infodemic management strategies. In the procurement of technology services, it is incumbent upon

governments and organizations to ensure that contracted companies, social media platforms, or other relevant providers, understand and fulfil their shared responsibilities, including adherence to established standards and collaboration with public health organizations for ethical implementation and efficacy.

In the pursuit of good governance, for governments or organizations delegating social listening practices to third parties, it is necessary to maintain vigilant oversight of contractors and partner organizations. This oversight ensures that the principles of transparency, accountability and ethical conduct are upheld throughout the entire spectrum of infodemic management activities (41, 77).

#### 2.4.6 Restrictions to freedom of expression

This challenge is rooted in the tension between two crucial principles, both of which hold significant weight in society (69). On one hand, there is the necessity to curb the spread of infodemics, grounded in the duty of care of public health institutions. On the other, safeguarding individuals' rights to express their opinions and share information is paramount (78). Freedom of speech is recognized as a human right in the preamble of the Universal Declaration of Human Rights, underpinning the exchange of ideas, the functioning of societies and the protection of individual liberties (27). Freedom of speech plays a crucial role in fostering diversity of thought. The challenge, therefore, is to balance the goal to curb the spread of harmful mis/disinformation without infringing upon the right to free expression. This balance must be struck thoughtfully and ethically, recognizing that the suppression of information carries its own set of ethical implications (41).

Infodemic management should not become a tool for identifying, tracking and silencing dissenting voices or unpopular opinions. Instead, it should encourage the inclusion of diverse viewpoints in the discourse, fostering open dialogue and a more comprehensive understanding of complex health issues. Lawful restrictions to freedom of expression should be viewed as a last resort measure (79). Their implementation can be challenging, as this may not always be within the authority of the infodemic manager to regulate or remove content and this decision may rest with the platform hosting the content. Furthermore, certain sources of mis/disinformation, such as chatbots and hacker groups operating outside legal jurisdictions, may be impossible to restrict. Therefore, lawful restrictions to freedom of expression should only be considered after exhausting all prior measures, including active social listening, empowerment through education fostering media and information literacy, prebunking and effective communication.

Accountability is another central tenet in managing the challenge posed by restrictions to freedom of expression. Those responsible for evaluating and removing misinformation and disinformation could be held accountable for their actions: accountability mechanisms help ensure that content moderation decisions are made with integrity, without conflicts of interest, and in alignment with ethical principles (79).

#### 2.4.7 Navigating uncertainty (epistemic underdetermination, truth, revisability, reliability, certitude)

Infodemics present formidable epistemic challenges related to knowledge acquisition and evaluation for those tasked with managing them (80-82). Decision-makers in such situations often find themselves working in conditions of uncertainty, in which a complete, definitive picture is elusive and the available data continually evolves. The concept of epistemic underdetermination refers to the philosophical notion that multiple theories or hypotheses can explain the same evidence (83). In infodemic management, this concept means that decision-makers may grapple with conflicting information and interpretations, or the lack of evidence necessary to provide guidance.

This uncertainty creates ethical challenges for several reasons. Firstly, it raises profound questions about truth and revisability. Working with incomplete data leads to concerns regarding the reliability and accuracy of the information at hand. Decision-makers must grapple with the understanding that their comprehension of the situation is provisional and subject to revision as fresh evidence emerges. Ethical responsibility lies, therefore, in the ongoing process of updating and revising decisions to harmonize guidance with evolving evidence (39, 82). Secondly, in conditions of uncertainty, decision-makers may feel

pressure to provide definitive answers even when they lack confidence in the available information. Balancing the necessity for swift action with the necessity to avoid overconfident assertions is pivotal in mitigating the potential risks and unintended consequences of misguided interventions. In this context, transparency and honesty are important. Decision-makers bear an ethical obligation to openly acknowledge the inherent limitations and uncertainties within the information they possess. This acknowledgement of the unknown unknowns, and the communication of the provisional nature of information, play pivotal roles in building trust with the public.

Prudent decision-making is another relevant aspect to navigating uncertainty. This requires a careful weighing of the available evidence, expert advice and potential harm. Ethical decision-making mandates a meticulous consideration of the risks and consequences to ensure that the most responsible course of action is undertaken.

#### 2.4.8 Identifying legitimate actors

Identifying actors who are legitimized to perform social listening in infodemic management is a challenge, but is a necessary action to ensuring positive outcomes for public health (84). This involves determining who holds the authority, expertise and credibility to collect and analyse data of relevance for infodemic management activities, and to deploy intervention strategies. The legitimacy of actors is based on the two main factors outlined below.

- **Expertise and qualifications:** legitimate actors possess expertise and qualifications relevant to the field of infodemiology, public health, epidemiology or related disciplines, ideally based on the training resources provided by WHO. They have a deep understanding of scientific principles, research methodologies and data analysis. Their expertise enables them to critically evaluate and interpret complex information, and to distinguish reliable sources from mis/disinformation, based on the available scientific evidence.
- **Transparency and accountability:** legitimate actors demonstrate transparency and are held accountable for their actions (54, 80). They are open about their sources of information, methodologies and potential conflicts of interest. They adhere to ethical guidelines, ensuring their actions are driven by the best interests of public health rather than personal or commercial gain. Transparency requires that scientific evidence is analysed, interpreted and scrutinized by legitimate actors without biases due to commercial or other personal interests, or due to power dynamics or other imbalances that distort and manipulate truth.

Trust plays a pivotal role in shaping how actors in infodemic management are perceived in terms of legitimacy and credibility. Legitimacy serves as the foundational element upon which trust is constructed. Legitimate actors tend to instil greater trust because they possess the necessary qualifications, expertise and authority, inspiring confidence in their ability to provide accurate information and make informed decisions.

However, the concept of perceived legitimacy holds even more significance than legitimacy itself (85). Perceived legitimacy refers to how individuals within affected communities view an actor or institution as being legitimate. It is influenced by various factors, including reputation, perceived transparency and alignment with societal values. When individuals trust legitimate actors, they are more likely to be exposed to accurate information, to adhere to recommended guidelines and to make well-informed decisions.

The task of establishing perceived legitimacy for legitimate actors is particularly challenging due to the intricate nature of information landscapes and the presence of infodemics. The challenge for legitimate actors is to adopt transparency by openly sharing details about their expertise, methodologies and potential conflicts of interest, thus providing clear and easily accessible information about their information sources, data analysis processes and decision-making methods, and fostering trust while enhancing perceived legitimacy.

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#### 2.4.9 Ensuring infodemic management effectiveness and adhering to ethical standards

Infodemics demand effective management strategies to mitigate their harmful impacts, with “effectiveness” defined here as the ability to produce real-world benefits (86). However, ensuring the effectiveness of infodemic management introduces ethical challenges, particularly when it comes to balancing effectiveness, individual autonomy and fairness.

Infodemic management strategies must strive for effectiveness. Timely and efficient interventions are crucial during public health crises. However, the pursuit of effectiveness and of duty of care often intersects with individual rights and freedoms. For example, the use of data for social listening can raise concerns about privacy and personal rights; the ethical challenge lies in ensuring that these tools serve their purpose effectively while safeguarding individual freedoms.

Social listening in infodemic management processes should proceed only when the benefits demonstrably outweigh the risks, and when less intrusive alternatives are considered less effective. Any process must protect individual rights, requiring rigorous evaluations and risk-mitigating designs (87).

Although effectiveness is crucial, it should not compromise the ethical values that are relevant for public health. For example, preserving autonomy involves respecting individuals’ right to access information, make their own choices and participate in decision-making processes (that is, understanding, intentionality and non-control) (49). Fairness, inspired by Rawls’ Liberty Principle, involves balancing the autonomy of different individuals in society, ensuring that every individual has a consistent set of basic rights and freedoms that do not infringe upon the similar rights of others (88). Respecting individual autonomy entails allowing individuals to access information freely, promoting critical thinking and supporting their capacity to make informed choices. Measures that overly restrict autonomy in a way that is not justifiable based on public interest, such as censorship or surveillance, raise human rights and ethical concerns, including privacy and freedom of expression.

Social listening should consider fairness by ensuring that there is no disproportionate burden on specific groups or individuals. Fairness requires equitable access to accurate information, inclusive decision-making processes and measures that consider the diverse needs and circumstances of different populations. Overly aggressive or draconian measures, including censorship or restrictions on personal freedom, may have unintended consequences, such as reinforcing polarization or eroding trust. Ethical social listening demands a careful evaluation of potential harms and benefits, striving to minimize negative consequences.

Balancing the effectiveness of infodemic management while preserving ethical values is a significant challenge (see section 9.2). Achieving this balance requires transparent communication, evidence-based approaches and inclusive decision-making processes. By addressing these tensions, infodemic managers can develop strategies that effectively combat infodemics while upholding individual autonomy, promoting fairness and minimizing unintended consequences. Ethical infodemic management prioritizes both short-term and long-term effectiveness, ensuring the preservation of fundamental rights, fostering a healthier information ecosystem and building resilient societies.

#### 2.4.10 Challenges of artificial intelligence

Artificial intelligence (AI) has rapidly emerged as a double-edged sword in the realm of infodemic management and social listening, presenting both unprecedented capabilities and significant ethical concerns. Although AI offers the promise of efficiently processing and analysing vast amounts of information, it simultaneously harbours the potential to become a powerful tool for the creation and amplification of narratives.

The use of AI in social listening can introduce additional ethical concerns related to bias, explainability and transparency. AI can play a role in social listening by collecting and analysing extensive data from online sources. It can be used for classification tasks, to monitor public sentiments, to identify emerging trends, and to recognize patterns in online conversations (89). AI-driven sentiment analysis enables the

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understanding of public opinions about specific topics or events, and user profiling can be used to develop targeted strategies. When data are available in real time, AI can also be used to achieve near real-time classification and analysis, thus providing rapid and continuous insights into evolving conversations and trends, enabling organizations to stay proactive in responding to public concerns. However, AI systems are not immune to biases, and they may inadvertently perpetuate or even amplify existing societal biases when used in social listening (90). Ensuring that AI algorithms are trained on diverse and representative datasets and implementing robust measures for bias detection and mitigation is very important. However, the lack of explainability and transparency in AI decision-making processes can pose significant challenges in understanding and addressing issues of bias and fairness.

Addressing these challenges requires a multifaceted approach, such as those detailed in the European Union's AI Act and in UNESCO's Recommendation on the ethics of artificial intelligence (91, 92). It is advisable to harness the potential of AI for good, while actively combating its misuse in the creation and dissemination of infodemics. This involves the use of technological solutions and also regulatory frameworks and public awareness campaigns. Such measures are essential to safeguard the integrity of information ecosystems and protect society from the harmful effects of AI-driven content. Achieving this balance is vital to harnessing the benefits of AI for social listening in infodemic management while minimizing its ethical risks.

## 2.5. Normative elements

### 2.5.1 Advancing human rights

Infodemic management should be designed and implemented in a manner that is consistent with, and gives expression to, human rights requirements (27, 93) and the adoption of a human rights-based approach, including digital human rights (29). Infodemic management and social listening measures should uphold and advance human rights standards, and align with international and domestic laws. This ensures that measures to combat infodemics are conducted within a legal framework that protects human rights and fundamental freedoms. The significance of human rights in infodemic management is evident from the reasons set out below.

- **Preserving individual autonomy:** human rights include essential principles, such as freedom of expression, access to information and privacy. Protecting and respecting these rights acknowledges the autonomy of individuals to make informed choices, participate in public discourse and safeguard their personal information.
- **Mitigating potential abuses:** infodemic management measures that disregard human rights may inadvertently lead to abuses, such as surveillance or discrimination. By adopting a human rights-based approach, the risk of limiting civil liberties and exacerbating social inequalities can be reduced.

Respecting human rights in infodemic management demonstrates ethical responsibility and fosters accountability. The following factors highlight the significance of these principles.

- **Ethical decision-making:** a human rights-based approach requires ethical decision-making that weighs the potential impact of infodemic management measures on individual rights. This includes considering the necessity, proportionality and effectiveness of interventions while safeguarding fundamental liberties.
- **Public trust and legitimacy:** by respecting human rights, infodemic management initiatives gain public trust and legitimacy. This trust is essential for fostering cooperation, ensuring compliance with interventions and creating an environment conducive to effective information dissemination.

Protecting and respecting human rights and adopting a human rights-based approach is a normative cornerstone of infodemic management. This alignment is fortified, specified and contextualized by the Principles and Guidelines on Human Rights and Public Health Emergencies (PGHRPHE) developed by the

Global Health Law Consortium and the International Commission of Jurists (28). The PGHRPHE seeks to elucidate the principles and obligations integral to human rights, particularly in the challenging landscape of public health emergencies. By anchoring this guidance within the foundational tenets of the PGHRPHE, the aim is to ensure a harmonized approach that upholds human rights and addresses the ethics of social listening and infodemic management.

Human rights are as applicable in digital spaces as they are offline. Digital human rights refer to the rights that individuals possess in the digital realm. These rights include the right to privacy online, the right to freedom of expression and access to information on digital platforms, the right to data protection and control over personal information, the right to be free from discrimination and harassment in online spaces, and the right to access and participate in the digital world without barriers or restrictions. In essence, digital human rights seek to ensure that individuals can fully exercise their rights and freedoms in the digital age, while also addressing the unique challenges and risks posed by digital technologies (29) (Fig. 5).

Fig. 5



Source:

## 2.5.2 Substantive principles

### Freedom of expression

Freedom of expression is based on a moral right to communicate with others, and it is recognized as a human right. It emphasizes the importance of upholding individuals' rights to express their thoughts, opinions and ideas, and to engage in public discourse as hallmark of a thriving society (27). Ethically, respecting this freedom acknowledges the intrinsic worth of individual autonomy, encourages inclusivity and open dialogue, and recognizes that knowledge is not solely the domain of experts but is enriched by the contributions of a wide range of individuals.

Although freedom of expression is a human right, there is a degree of consensus (based on the Siracusa Principles and on the International Covenant on Civil and Political Rights) that restricting the exercise of this right may be justified if the restriction supports a legitimate aim and is: provided by law; strictly necessary; proportionate; of limited duration; the least intrusive approach; and subject to review against abusive

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Reference should also be made to the finalised version of the PGHRPHE by the ICI: <https://www.ici.org/principles-and-guidelines-on-human-rights-and-public-health-emergencies-featured-in-new-documentary-film-and-blog-symposium/>

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Universal Declaration ...  
Principles and Guidelines on Human Rights and Public Health Emergencies

Digital rights

Remove full points for RH boxes

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applications (8, 93). The following points clarify the meaning of "necessity", "utility" and "proportionality", framing their role in this aggregated principle.

**Provided by law:**

- **Strictly necessary:** Necessity requires decision-makers to provide a clear and compelling justification for any interventions they plan to undertake. This ensures that the restriction is needed to reduce or avoid harm, avoiding unnecessary infringements of individual rights and freedoms.
- **Proportionality** demands that any restrictions imposed should be directly proportional to the severity of the threat. Decision-makers should carefully balance the potential impact on individual rights and freedoms against the need to achieve the desired public health outcomes. This ensures that measures are neither excessive nor inadequate in addressing the challenge at hand.
- **Least intrusive approaches** prioritize voluntary measures that empower individuals to make informed choices, in line with the role and significance given to individual autonomy in the framework. Decision-makers should strive to minimize undue influence or coercion, in order to foster trust and cooperation between authorities and the communities affected;
- **Of a limited duration and subject to review against abusive applications.**

Restricting the freedom of expression should generally be considered only as a matter of last resort. Constructive measures that advance the freedom of expression and other human rights should first be considered when developing and/or implementing an infodemic management strategy. For instance, promoting media and information literacy and critical thinking skills equip an individual to discern between credible and unreliable sources of information, and empowers them to make informed decisions and navigate the information landscape effectively. This approach helps lowering the risk of an infodemic spreading within a community, while also enhancing the freedom of expression.

*Equity and vulnerability*

Equity is a core principle that emphasizes the importance of ensuring that all individuals and communities have fair and equal access to information, resources and interventions, regardless of their socioeconomic, cultural or demographic background (23, 47). Equity in infodemic management extends to addressing disparities in the impact of infodemics on populations in vulnerable situations. This principle underscores the importance of recognizing and addressing the unique needs and challenges faced by individuals and communities who are particularly susceptible to the harmful effects of misinformation and disinformation. Vulnerability can result from various factors, including age, health status, socioeconomic conditions and cultural backgrounds, that can influence an individual's ability to access accurate information and make informed decisions.

The following points elaborate on the significance of promoting equity within the context of social listening and infodemic management.

- **Recognize populations in vulnerable situations:** Equity acknowledges that some individuals and communities may be more vulnerable to the adverse effects of infodemics due to various factors, such as limited access to information, language barriers or low health literacy. Identifying these vulnerabilities is the first step in addressing disparities.
- **Tailored interventions:** Equity in infodemic management involves designing interventions that are tailored to the specific needs and challenges faced by populations in situations of vulnerability. This includes translating information into multiple languages, using culturally sensitive messaging and employing channels that reach underserved communities.
- **Inclusive decision-making:** Social listening in infodemic management efforts should include the voices and perspectives of populations in vulnerable situations and individuals in the decision-making

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process. This ensures that interventions are not only well-informed, but also are genuinely responsive to the needs of those most affected.

- **Data and evidence:** Equity is closely tied to data collection and evidence-based decision-making. Decision-makers need to collect data that disaggregates information by demographic factors to identify disparities in the impact of infodemics. These data should then guide the design of interventions that promote equity.
- **Structural inequities:** Equity also calls for an examination of and action against structural inequities that perpetuate disparities in access to information and health care. This involves advocating for policies and practices that address underlying socioeconomic and systemic inequalities.
- **Education and empowerment:** Recognizing vulnerability also requires efforts to educate and empower individuals to navigate the information landscape safely. This includes enhancing digital literacy, critical thinking skills and providing tools to help individuals verify information and discern credible sources.
- **Transparency and accountability:** Decision-makers should be transparent about their commitment to equity and be held accountable for the impact of their interventions on populations in vulnerable situations. Continuous evaluation and adjustment of strategies to address disparities are essential.

Promoting equity and safeguarding vulnerability in infodemic management is a moral and strategic necessity. Failure to address disparities can result in a disproportionate burden on populations in vulnerable situations, exacerbating existing health and social inequalities. To ensure that infodemic management efforts are fair and inclusive, it is essential to prioritize equity as a guiding principle. By doing so, decision-makers can contribute to building a more just and resilient society that is better equipped to address the challenges posed by infodemics.

#### Epistemic justice

Epistemic justice is a relevant ethical goal to be achieved when drafting and performing infodemic management strategies for public health (94). Epistemic justice is important to address the challenges of knowledge inequalities and injustices in society, and plays a crucial role in ensuring fair and equitable access to knowledge and information.

Epistemic justice emphasizes the importance of including, in addition to evidence-based scientific processes, diverse perspectives and oppressed or marginalized voices in the production of knowledge. It recognizes that knowledge can be shaped by power dynamics and systemic biases (95). By promoting inclusivity, epistemic justice seeks to address these biases and produce knowledge that is more comprehensive and representative of the lived experiences of individuals, and local and global communities. Epistemic justice aims to empower marginalized communities by providing them with opportunities to participate in knowledge production and decision-making processes. Epistemic justice calls for a more nuanced understanding of knowledge and encourages individuals to actively seek out diverse perspectives, engage in respectful dialogue and collaborate across different knowledge systems.

The following points highlight the importance of epistemic justice within the context of social listening and infodemic management.

- **Addressing knowledge inequalities:** Epistemic justice is indispensable in the quest to rectify knowledge inequalities. Inequitable access to information and knowledge perpetuates disparities in health outcomes. Infodemic management that upholds epistemic justice aims to provide fair and equal access to information for all, irrespective of socioeconomic status, education or cultural background.
- **Countering systemic biases:** Systemic biases and power dynamics can distort the production and dissemination of knowledge. Epistemic justice seeks to counter these biases by promoting diversity and inclusivity. It aims to dismantle barriers that marginalize certain perspectives and to make knowledge more reflective of the experiences of individuals and communities.

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- **Empowering marginalized communities:** Epistemic justice empowers marginalized communities by ensuring they have a seat at the table in knowledge production and decision-making processes. It acknowledges that their voices are essential in shaping information and interventions that address their unique needs and challenges. This attempts to empower marginalized communities for achieving equitable public health outcomes.
- **Fostering inclusivity:** The principle of epistemic justice fosters inclusivity by encouraging open dialogue and collaboration across different knowledge systems. It recognizes that diverse perspectives enrich our understanding of complex issues. By actively seeking out these perspectives, infodemic management becomes more comprehensive and responsive to the needs of society.
- **Balancing perspectives with scientific evidence:** Although epistemic justice emphasizes the importance of diverse voices, it must recognize the foundational role of scientific evidence in understanding and addressing public health challenges. Scientific methodologies and empirical evidence provide a rigorous and reliable foundation for decision-making.
- **Enhancing trust and credibility:** Infodemic management rooted in epistemic justice builds trust and credibility with the public. When diverse perspectives are considered, and decisions are informed by robust evidence, confidence in the decision-making process is built. This trust ensures that public health recommendations and interventions are well-received and followed.
- **Promoting accountability:** Epistemic justice demands accountability from decision-makers. It necessitates transparency in acknowledging biases and addressing them through robust methodologies and evidence-based approaches. Accountability is essential for maintaining the integrity of infodemic management efforts.

A proper consideration of epistemic justice as an ethical goal for infodemic management requires balancing the recognition of the importance of diverse perspectives and marginalized voices with the importance of scientific evidence. Science provides a rigorous and evidence-based framework for understanding the world. It offers valuable insights into complex phenomena and helps establish reliable knowledge. Epistemic justice must recognize and uphold the importance of scientific evidence as a foundation for addressing societal challenges, especially when it comes to matters of public health. As epistemic justice acknowledges that power dynamics and biases can influence knowledge production and dissemination, often marginalizing certain perspectives, it is crucial to critically examine these biases through the validity of, and without undermining, scientific methodologies and empirical evidence.

#### *Guaranteeing integrity of actors and actions*

Guaranteeing the integrity of social listening and infodemic management actors and actions is a foundational element of the framework proposed in this document: infodemic managers – whether public health officials, data scientists or digital platforms – should operate from a position of trustworthiness. Their motivations should be transparent and rooted in the collective welfare. A single lapse in integrity can compromise the entire initiative, as trust, once eroded, is hard to rebuild (45, 54, 81). For instance, if a health organization disseminates information perceived as biased or misleading, it risks not only its reputation but also the broader adherence to well-intended public health directives.

Similarly, the actions undertaken in social listening should be held to the rigorous ethical standards detailed throughout this guidance document. The processes by which conclusions are drawn and decisions are made should be clear to all stakeholders. This transparency ensures that actions are not only effective but are also perceived to be effective, fostering public trust and cooperation (96, 97).

The stakes in infodemic management are high: mis/disinformation can hinder public health efforts, exacerbate societal divisions and cost lives (22, 74). Hence, the principle of integrity as outlined above is not just an ethical guideline – it is a practical necessity. When integrity is upheld, the public is more likely to trust and follow advice, facilitating more effective health interventions and a more harmonious societal



response. Conversely, the absence of integrity can lead to scepticism, resistance and chaos within the information ecosystem.

Infodemic managers bear an ethical responsibility to act with integrity, ensuring that their actions align with the best interests of the public. Integrity, in this context, includes various aspects, each tailored to the specific domain of operation.

- **Scientific integrity:** Within the realm of scientific research and communication (about infodemic management and beyond), integrity entails adhering to rigorous methodological standards, being transparent about research processes and accurately representing findings. It requires avoiding conflicts of interest, disclosing any relevant financial or personal interests, and committing to the pursuit of truth and knowledge.
- **Political integrity:** In the arena of politics and policy-making, integrity involves acting in a manner consistent with ethical governance. Decision-makers should prioritize the public good above personal or partisan interests. This includes transparency in decision-making processes, refraining from misinformation for political gain and fostering a climate of trust and accountability.
- **Professional integrity:** professional integrity emphasizes moral virtues, such as honesty, fairness and responsibility. Infodemic managers should exhibit these virtues by providing accurate information, treating all stakeholders fairly and taking responsibility for the consequences of their actions.

#### Transparency

Transparency, which involves clear sharing of information, the processes of decision-making and the reasons behind these decisions, has practical implications for managing the information landscape (80, 97). Transparency is a basic ethical principle and fundamental aspect of infodemic management. The following points highlight the importance of transparency.

- **Building trust:** A transparent approach helps in establishing trust among all involved parties, including the public.
- **Supporting collaboration:** Being open about information and insights can lead to collaboration between various stakeholders involved in infodemic management. Sharing data and insights with legitimate stakeholders can result in more effective and well-rounded infodemic management strategies.
- **Aiding understanding:** Open communication helps the public and stakeholders to better understand and evaluate decisions and recommendations. Providing clear and accessible information allows individuals to make more informed and better decisions.

Ensuring transparency in infodemic management actions builds credibility and trustworthiness among the public and stakeholders. When decision-makers are transparent about the involved stakeholders, potential conflicts of interest, data sources, methodologies and the limitations of evidence used, they demonstrate a commitment to evidence-based decision-making and instil confidence in the process (97). Transparency and information sharing engender trust, collaboration and effective decision-making, ensuring a more resilient response to the challenges posed by mis/disinformation (98).

#### For the common good

Social listening in infodemic management should advance the common good, particularly when they are justified as a requirement for the good of all, or when the benefits that they provide may be shared and cannot be subdivided into individual private benefits. This ethical framework recognizes that officials, public health agencies or organizations that conduct social listening or engage in infodemic management may become stewards of one or more communities and of the public. As stewards, they have a duty to safeguard and enhance the health, overall well-being and epistemic integrity of communities in the face of information challenges and crises.

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The common good principle requires social listening and infodemic management to be deployed if there is a reasonable prospect of benefit to communities or the general public, which includes the following points:

- **Public health impact:** The primary mission of social listening and infodemic management is to protect public health and well-being by preventing or reducing harm resulting from infodemics. By doing so, these actions empower individuals and communities to make informed choices about their health. A commitment to truth and evidence-based practices yields tangible benefits for both individuals and societies.
- **Engagement:** The values and concerns of individuals and communities should be taken into account in planning, implementing and using data from social listening, and, more broadly, for the purposes of infodemic management. Engagement is especially important when infodemics disproportionately burden a specific population, such as through stigmatization. Although there are different ways of engaging meaningfully with affected individuals and communities, engagement should be aimed at promoting inclusivity, participation and trustworthiness.
- **Empowerment and resilience:** Common good in this context underscores the importance of empowering both individuals and communities to navigate the information landscape effectively. This empowerment must be understood as an ongoing commitment, rather than as a one-time endeavour. Individuals and communities should be equipped with essential skills, such as critical thinking, and have access to accurate and reliable information. Empowering communities and building resilience to infodemics give expression to stewardship duties of protecting and promoting public health.

By adhering to the principle of common good, officials, public health agencies and similar organizations have a duty to ensure that communities are equipped with accurate information and empowered to make informed choices about their health and well-being. Although disaggregating the benefit of social listening in infodemic management for individuals or communities may not always be useful or practicable, the common good principle provides the ethical foundation for prioritizing both individual and collective well-being (13).

### 2.5.3 Procedural principles

#### Privacy

Although privacy is generally recognized as a substantive ethical principle and as a human right, we consider it here, in the context of infodemic management, as a procedural principle. This emphasizes that privacy considerations must be integrated into the broader framework of ethical and responsible data use, where the primary focus is on building and maintaining trust, minimizing harm (see section 8) and advancing human rights (see section 9.1).

Infodemic management should prioritize privacy protection and ensure robust data security measures. Privacy is a fundamental human right that should be respected. Infodemic management actions must adhere to data protection principles, collecting and using data only for legitimate purposes and, whenever possible, with informed consent (10). Further, adherence to data protection regulations is crucial to safeguard user information from unauthorized access, misuse or breaches. Infodemic management efforts should comply with relevant laws and regulations, ensuring that data is handled securely and responsibly.

Whenever applicable, data subjects should be made aware of the processing of data related to them; Depending on applicable regulations and specific applications and contexts, exceptions are in place, especially when data collection guarantees anonymity of data subjects (10). The processing of data should be carried out only if necessary and proportionate to the explicit, specified and legitimate purpose pursued. Before data collection and processing is started, it is advisable to carry out an impact assessment to ensure that privacy measures are robust enough to protect the security of data, in particular when related to special categories of data, such as health-related data. Special consideration should be paid to the

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Because of this distinction and because of the very practical implications, we consider privacy as procedural here.

Also, this sort of revisions would really shake the structure of the document and require a complete rewriting of the implementation. All of this (architecture) was already discussed several times with the EG. While content can be adjusted, at this point it would be a problem to change or move entire sections.

**Commented [CH89]:** Why is privacy a procedural principle? It is a substantive human right obligation under Article 8 of the European Convention of Human Rights, for instance. Perhaps this could be re-titled "Processing Personal Data"?

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anonymization process, implementing and detailing the strategies used to assess and mitigate the risk of data re-identification, such as obfuscation, scrambling or use of synthetic data.

In cases in which exceptions are being applied, these measures should be taken solely on a provisional basis and only for a period explicitly limited to the state of emergency. It is also crucial that specific safeguards are put in place and that reassurances are given that full protection is afforded to data once the state of emergency is lifted. This should include concrete measures and procedures for the return to "normal" data processing regimes. Data protection authorities should be invited to carefully assess the measures taken by state authorities against these conditions.

To ensure ethical and responsible use of data in infodemic management, it is crucial that any datasets used are aggregated and anonymized. This approach emphasizes the importance of focusing on population-level trends rather than individual-level data. Data points belonging to infodemic management datasets should be structured in a way that prevents the identification or re-identification of specific individuals. This means that the data should not be attributable to individual persons and should not be used for deploying measures at an individual level. This way, individuals and organizations involved in infodemic management and social listening can respect privacy concerns and ethical standards, while still gaining valuable insights into public health trends and sentiments. This anonymization and aggregation is essential for maintaining public trust and ensuring that the data are used solely for the purpose of understanding and managing the infodemic at a broader societal level.

#### *Responsible large-scale automated data processing*

Infodemic management, particularly in the context of extensive data collection and dataset generation through social listening, could use data processing approaches, techniques and technologies, such as Big Data and AI. This procedural principle underscores the ethical significance of processing such data by emphasizing the inherent respect for human dignity and data protection. It acknowledges that, in the pursuit of effectively combating infodemics, the responsible handling of data is paramount.

The Council of Europe's Committee of Convention 108 (99), and the General Data Protection Regulation (100), have articulated guidance, specifically in the context of Big Data and AI, which can serve as valuable tools for both developers and governments. These guidelines offer a framework for shaping data processing procedures that unlock the benefits of advanced technologies and guard against its potential pitfalls, such as voluntary misuse and unintended negative consequences, including the unjust discrimination of individuals or groups (99-101).

To operationalize this principle effectively, several key considerations are listed below.

- **Transparency and explainability:** Infodemic management processes should be transparent, and the analytics or AI solutions employed should be explainable. This ensures that decision-making processes are comprehensible and trustworthy, fostering public confidence. This requirement should also apply to organizations that use third-party providers to process their data.
- **Precautionary approach:** A precautionary approach should be adopted to identify and mitigate potential risks associated with data processing, including the risk of data repurposing and re-identification in the case of anonymized data.
- **Risk management strategy:** Developing a comprehensive risk management strategy is important, considering not only technical risks but also ethical and societal risks. This multifaceted approach ensures a well-rounded assessment and mitigation of potential issues.
- **Focus on data quality and minimization:** Data quality and minimization should be at the forefront of data processing activities. This involves collecting only the data necessary for the intended purpose, and ensuring the accuracy and reliability of the data collected.
- **Role of human oversight:** Human oversight plays a critical role in the process, ensuring that automated systems are in line with ethical and legal standards. The focus of automated data

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processing systems, including AI, should be to direct human attention towards the design of data collection and the evaluation of output data. Human oversight includes the ability to intervene when necessary and make judgement calls that automated systems may not be equipped to handle.

Responsible large-scale data processing in infodemic management emphasizes the dual objective of acknowledging the need to harness the potential of cutting-edge technologies while maintaining vigilance against unintended consequences and the infringement of individual rights, and upholding the ethical principles of data protection.

#### *Applying fair, equitable and inclusive processes of decision-making*

Infodemic management requires decision-making processes that prioritize inclusivity, equity and fairness. Inclusivity is essential in social listening for infodemic management as it acknowledges the diverse needs, perspectives and contexts of different publics and stakeholders. Inclusive decision-making ensures that the voices of populations in vulnerable situations are heard, and their specific challenges and needs are considered. This promotes equity and fairness in infodemic management efforts, preventing the exacerbation of existing disparities and ensuring that interventions benefit all segments of society.

Infodemic management strategies should be culturally sensitive, recognizing the diverse cultural, linguistic and socioeconomic backgrounds of individuals and their communities. Inclusive decision-making processes help identify and address specific cultural nuances and sensitivities to tailor interventions accordingly, enhancing their effectiveness and acceptance. Inclusive decision-making in infodemic management acknowledges the inherent diversity in the needs, perspectives and contexts of various publics and stakeholders. By actively engaging these diverse groups, communities in vulnerable situations are empowered to have their voices heard, and this ensures that these communities' unique challenges and requirements are given due consideration. This practice is a cornerstone for promoting equity and fairness within infodemic management efforts, thereby preventing the exacerbation of existing disparities and ensuring that interventions are beneficial to all segments of society.

Key facets of this principle include the following.

- **Diverse stakeholder engagement:** The principle encourages the active involvement of a wide range of stakeholders in the decision-making process, making certain that the insights and experiences of communities in vulnerable situations are integrated into the decision-making framework.
- **Cultural sensitivity:** This recognizes and respects the rich tapestry of cultural, linguistic and socioeconomic backgrounds within and across communities. By being culturally sensitive, infodemic management can identify and address specific cultural nuances and sensitivities, tailoring interventions for enhanced effectiveness and acceptance.
- **Equity-centred approach:** This approach necessitates that equity assessments be carried out to identify disparities and vulnerabilities within the community. These assessments help guide resource allocation and intervention planning to address specific challenges.
- **Transparency and accountability:** Making the criteria and rationale for interventions public through transparency fosters trust, and mechanisms for accountability ensure that interventions are administered fairly and equitably.
- **Customization and targeting:** One-size-fits-all approaches are not suitable for infodemic management. Customizing interventions to address the specific needs of different communities is essential to achieve equitable outcomes.

In essence, the principle of fair and inclusive decision-making for equitable infodemic management highlights the ethical significance of addressing the diverse and unique needs of all publics. It ensures that interventions are culturally sensitive, equitable and inclusive, and prevents the perpetuation of disparities. This principle serves as a guidepost for social listening that benefits all segments of society, creating a more equitable and fair information ecosystem.

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**Commented [CH97R97]:** I agree with Sandra. There appears to be quite a lot of overlap.

**Commented [AK98]:** "publics" hasn't been used before. Is it interchangeable with "populations" or "communities"? If not, does it have a specific meaning that needs to be explained?

## Trust

The role of trust as an overarching procedural ethical principle is crucial for addressing the challenges posed by the rapid spread of mis/disinformation during times of crisis or widespread health-related events. Trust plays a fundamental role in infodemic management for several reasons, which are outlined below.

- **Credibility and reliability:** During an infodemic, people are flooded with conflicting and often misleading information. Establishing trust helps individuals discern reliable sources from unreliable ones, enabling them to make informed decisions about their health and well-being.
- **Risk mitigation:** Trust is a critical factor in mitigating the risks associated with infodemics. By trusting credible sources of information, individuals are more likely to follow accurate guidelines, preventive measures and treatment options, reducing the potential harm caused by false or misleading information.
- **Public health measures:** Trust is important for an effective implementation of public health measures. During an infodemic, authorities and health care professionals must communicate accurate information about disease transmission, prevention strategies and vaccination efforts. Building trust ensures that the public adheres to these measures, increasing their effectiveness and reducing the overall impact of the infodemic.
- **Scientific integrity:** Trust is closely linked to scientific integrity. In infodemic management, it is crucial to rely on scientific research and evidence-based information. Trust enables individuals to have confidence in the scientific community's findings and recommendations, facilitating informed decision-making and preventing the proliferation of pseudoscience and unverified claims.
- **Social cohesion:** Trust fosters social cohesion and cooperation among individuals and communities. During an infodemic, social divisions and conflicts can arise due to the spread of mis/disinformation and conspiracy theories. Trust-building efforts promote unity and collaboration, leading to the overall response to the crisis being strengthened.

To ensure and maintain trust in infodemic management processes and outcomes, it is necessary to promote transparency, accountability and open communication. This involves engaging with the public, acknowledging uncertainties and providing regular updates based on the latest scientific evidence. Collaborations between authorities, health care professionals, researchers and the media are crucial for disseminating accurate information and countering mis/disinformation effectively.

## Feedback integration

Regular evaluation and the inclusion of so-called sunset clauses are vital components of fair and ethical decision-making in infodemic management. Regular evaluations allow for the assessment of the effectiveness and necessity of infodemic management measures. This ensures that interventions remain aligned with their intended goals and that they are not perpetuated beyond what is warranted by the situation. Sunset clauses help prevent measures from becoming permanent restrictions on rights and freedoms, providing a safeguard against overreach.

Regular evaluation holds decision-makers accountable for the impact of their actions. It enables the identification of shortcomings and the adjustment of strategies to address emerging challenges. By using a learning approach and being open to corrections, infodemic management efforts can continually improve and remain responsive to evolving circumstances.

In addition, infodemic management strategies must consider the broader context in which they are implemented. Past experiences with managing infodemics can provide valuable insights and lessons. By considering historical precedents and understanding the successes and failures of previous interventions, decision-makers can build upon good practices and avoid repeating past mistakes. Furthermore, the effectiveness of infodemic management strategies can be influenced by various contextual elements, including social, political and technological factors. Decision-makers should consider these factors to ensure

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that strategies are tailored to the specific context in which they are being implemented. This helps to mitigate potential obstacles and challenges that might undermine the effectiveness of infodemic management efforts.

#### *Community engagement*

**Community engagement** plays a crucial role in infodemic management, as it reduces epistemic injustice and promotes a collaborative and inclusive approach to tackling infodemics. Valuing community engagement ensures that the voices and perspectives of different communities and individual members of those communities are considered in infodemic management decision-making processes, thus further fostering equity, fairness and inclusivity, as discussed in previous sections.

The public possesses diverse knowledge, experiences and perspectives. By involving them in decision-making, social listening in infodemic management can tap into this collective wisdom and gain a better understanding of the specific challenges faced by different communities. Engaging the public also allows for co-creation of solutions. When individuals have a stake in decision-making, they may be likely to support and actively participate in the implementation of interventions, resulting in more effective and sustainable outcomes.

**Valuing community engagement** in infodemic management as an expression of transparency and inclusivity is also essential for building trust and credibility. In fact, engaging the public promotes transparency and openness in communication. By involving the public in the decision-making process and sharing information, infodemic management efforts become more accountable, credible and trustworthy. Public engagement also promotes collaborations between decision-makers, experts and the public. This enhances trust, encourages knowledge sharing and ensures that interventions are well-informed, comprehensive and tailored to the needs of the community.

Valuing community engagement can also lead to more effective infodemic management interventions. Each **public**, with its own characteristics, possesses first-hand knowledge of a local context, including cultural, linguistic and social factors. Thus, engaging with members of these communities can allow the development of contextually relevant infodemic management strategies that are responsive to the specific needs and challenges of the community. Engaging **publics** also allows for better communication strategies, tailored messaging and behaviour change initiatives. By involving the public, decision-makers can understand information needs, address misconceptions and develop targeted interventions that resonate with the intended audience.

Valuing community engagement is therefore a crucial procedural principle for social listening in infodemic management. Involving the community through community leaders, while ensuring they express a representative voice of members of their communities, in decision-making processes promotes inclusivity, encourages collaboration and harnesses the collective wisdom of diverse perspectives.

#### *Pursuing understandability of communication*

Pursuing understandability of communication, both in the context of prevention for prolonged public health challenges or in the context of a crisis (risk and crisis communication) is a critical procedural principle that aims to present information and communication in a clear, concise and accessible manner.

Pursuing understandability of communication stemming from infodemic insights ensures effective communication in infodemic management, directed at different **publics** and/or stakeholders involved in infodemic management. The following factors highlight the significance of this notion.

- **Clear and concise messaging:** Infodemic management relies on delivering key messages that are easily understood. By using simple and concise language, decision-makers can convey crucial information without confusion or ambiguity, making the information more likely to be absorbed and acted upon by the audience.

**Commented [MS102]:** This is a different area but complimentary to IM. It is also talking about risk comm but the social listening for IM insights is not clear

**Commented [CH103]:** It is not clear what "valuing" means. There are different levels of action, from recognition to inclusion to prioritisation. Is community engagement an expression of transparency and inclusivity?

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**Commented [AK105]:** Communities?

**Commented [AK106]:** Communities?



- **Overcoming information overload:** During an infodemic, individuals are flooded with a vast amount of information from various sources. Understandability helps cut through the noise by presenting information in a way that is digestible, reducing the risk of overwhelming the audience and facilitating comprehension.
- **Accessibility of information:** Ensuring the accessibility of information is very important. This involves making information available to individuals with diverse needs and backgrounds, including those with disabilities or language barriers. By providing information in multiple formats and languages and implementing inclusive design principles, infodemic management efforts become more equitable and effective, reaching broader and more diverse audiences, thus contributing to better public health outcomes.

Pursuing understandability ensures that information and communication are accessible to diverse publics. In fact, infodemic management requires recognition and respect for linguistic and cultural diversity. By using inclusive language and considering cultural nuances, decision-makers can bridge communication gaps and reach a broader audience, ensuring that no one is left behind due to language barriers or cultural differences. Furthermore, infodemic management efforts should employ communication formats and channels that are suitable for the target audience. This may include using visual aids, plain or emotionally resonating language, or incorporating multimedia elements to enhance understanding and engagement across different age groups, educational backgrounds and digital literacy levels.

Finally, pursuing understandability facilitates informed decision-making in the public. When information is presented in an understandable manner, individuals are better equipped to make informed choices. Understandable communication empowers individuals to assess risks, evaluate options and take appropriate actions to protect themselves and their communities. Clear and concise messaging also helps combat the spread of mis/disinformation by filling information gaps or debunking already circulating mis/disinformation. By presenting accurate and easily digestible information, decision-makers can counteract false narratives, enabling individuals to make decisions based on reliable sources and evidence.

### 3. Implementation

The successful management of infodemics, particularly in the context of social listening, demands a clear and structured approach. To bridge the gap between ethical principles and practical application, this part of the document offers a comprehensive set of recommended actions. These actions are designed to simplify the translation of procedural principles into effective practices to address the multifaceted challenges posed by infodemics during public health emergencies.

The recommended actions have been developed by crossing procedural principles with elements of infodemic management. As detailed in section 2.5.3, Procedural principles, the principles guiding these actions are: privacy; responsible large-scale automated data processing; applying fair decision-making; trust; feedback integration; community engagement; and pursuing understandability of communication. The elements of infodemic management addressed are: monitoring and detection of narratives, questions, concerns and misinformation in the information ecosystem; science and health communication; education and training to build resilience to misinformation; engagement; and governance systems, laws, regulations and ethics (5).

The proposed actions are organized into specific categories, each corresponding to a key element of infodemic management and listing the key stakeholders typically involved. By offering a list of proposed actions for each of these main aspects and categories, this part of the document equips decision-makers, authorities, health care professionals, researchers, community leaders and other stakeholders with practical guidance to navigate the complexities of infodemic management ethically and effectively. This integrated approach ensures that the actions are stakeholder-specific, practical, and aligned with procedural principles, providing an initial roadmap for "ethics-by-design" infodemic management (Fig. 6).

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T. Purnat 2023; T. D. Purnat et al. 2022;

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| Intervention category                                                                                           | Subcategory                                                                                                                                                                                                                                                                                                                                                                 |
|-----------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1. Monitoring and detection of narratives, questions, concerns, and misinformation in the information ecosystem | a. Public health social listening and integrated analysis                                                                                                                                                                                                                                                                                                                   |
| 2. Science and health communication                                                                             | a. Rapid content development to address emerging information needs<br>b. Quality health information materials and resources<br>c. Science and knowledge translation<br>d. Debunking and misinformation correction                                                                                                                                                           |
| 3. Education & training to build resilience to misinformation                                                   | a. Capacity building to identify and address health misinformation<br>b. Mediating<br>c. Improving self-efficacy to adhere to recommended health behaviors<br>d. Improving ability to identify a more accurate risk perception, and judge benefits of recommended health behaviors                                                                                          |
| 4. Engagement                                                                                                   | a. Individual and community level engagement<br>b. Psychological support to individuals and communities<br>c. Health worker-level engagement<br>d. Social media-based strategies<br>e. Coalition building and digital engagement<br>f. Digital design for the user experience of information environments                                                                   |
| 5. Laws, regulations and ethics                                                                                 | a. Cybersecurity laws to enhance resilience<br>b. Public advisory and guidelines with legal nondiscrimination<br>c. Legislative ban of misinformation spread or legislation for right to health information<br>d. Regulation of information and related platforms and actors<br>e. Content moderation policies, oversight and implementation<br>f. Consumer protection laws |

Source: WHO Evidence Gap Mapping Project commissioned. Study protocol: <https://bit.ly/evidencegapmapinfodemic> (102)

### 3.1 Monitoring and detection of narratives, questions, concerns and misinformation in the information ecosystem

Monitoring and detection of narratives, questions, concerns and mis/disinformation in the information ecosystem involves the systematic tracking, analysis and identification of information trends, public enquiries and the spread of both accurate and inaccurate information within the information landscape, as well as monitoring the feelings and sentiments related to these narratives. This process aims to discern patterns, emerging narratives and mis/disinformation to inform effective responses and interventions.

#### 3.1.1 Key stakeholders

Government and public health authorities are responsible for disseminating accurate information, countering mis/disinformation and responding to concerns during public health emergencies.

- **Media and journalism associations** play a significant role in reporting on and disseminating information, as well as fact-checking and countering mis/disinformation.
- **Technology companies** manage digital platforms and social media where information is shared and play a role in combating the spread of mis/disinformation.
- **Community leaders and advocates** represent the interests of various communities and help ensure their voices are heard.
- **Researchers, academics and institutional review boards (IRBs)** conduct studies and provide data-driven insights to inform strategies for addressing mis/disinformation.
- **The general public** act as both consumers and disseminators of information, and play a role in recognizing and reporting mis/disinformation.
- **NGOs** engage in awareness campaigns, fact-checking and educational initiatives to combat mis/disinformation.
- **International organizations** provide guidance, support and coordination in global infodemic management efforts.
- **Health care professionals** offer expert guidance and ensure that accurate health-related information is available to the public.

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Please add full points after numbers on LHS.

1.Remove comma after "concerns"

2.Education and training ...

3a Capacity-building

3c ... behaviours

3d ... behaviours

4c Health worker-level

4f ... of the information ...

5 ... regulations and ethics

5b Public advisory notices?

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**Commented [AK113]:** Is there a more specific source for this figure?

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- **Fact-checking organizations** specialize in verifying information and debunking falsehoods in the public domain.

### 3.1.2 Privacy

- **Prioritize anonymity and informed consent:** Whenever possible, operate on anonymized data. If not possible, obtain explicit and informed consent from individuals before collecting and using their data for infodemic monitoring and detection. Ensure that they understand the purpose and potential uses of their data.
- **Adhere to data protection regulations:** Comply with relevant data protection regulations and laws to safeguard user information. Ensure that all data handling processes adhere to legal requirements, such as the General Data Protection Regulation.
- **Privacy by design:** Incorporate privacy considerations from the outset of social listening in infodemic management processes. Ensure that privacy safeguards are integral to the design and implementation of data collection and analysis methods to guarantee that data points in the datasets are not attributable to individuals.
- **Proportionate data processing:** Only collect and process data that is necessary and proportionate for the specified infodemic management purposes. Conduct impact assessments to justify the need for such data processing.
- **Temporary restrictions:** If exceptions to privacy principles are deemed necessary, ensure that they are explicitly limited to the state of emergency and that they are legally justified, necessary and proportionate. Implement safeguards to protect individuals' data and plan for a return to normal data processing after the state of emergency is lifted.

### 3.1.3 Responsible large-scale automated data processing

- **Transparent data handling:** Ensure transparency in all data processing activities related to infodemic management. Maintain clear documentation of data processing steps and methodologies used, promoting public confidence in the process.
- **Explainable analytics and AI:** When using analytics and AI solutions, ensure explainability and understandability. This empowers affected communities to understand how decisions are made, enhancing trust and accountability.
- **Precautionary measures:** Adopt a precautionary approach when dealing with data, especially in cases involving anonymized data. Implement safeguards to identify and mitigate potential risks, including re-identification risks.
- **Comprehensive risk assessment:** Develop a robust risk management strategy that considers technical, ethical and societal risks. Regularly assess and address these risks to ensure the responsible handling of data.
- **Data quality and minimization:** Prioritize data quality and minimization in data processing. Collect only the data necessary for the intended purpose but maintain the accuracy and reliability of the data collected.

### 3.1.4 Applying fair, equitable and inclusive processes of decision-making

- **Engage diverse stakeholders:** Actively involve a diverse range of stakeholders, including marginalized or vulnerable communities, in the decision-making process for infodemic management. Ensure their voices are heard, and their perspectives are considered.
- **Cultural sensitivity:** Recognize and respect the diverse cultural, linguistic and socioeconomic backgrounds of communities affected by the infodemic. Tailor communication and intervention strategies to be culturally sensitive and relevant.
- **Collect and analyse disaggregated data:** Gather and analyse data that is disaggregated by factors, such as gender, age, race, socioeconomic status or other factors that may play a role in ensuring



the fairness of processes and interventions. This enables a better understanding of how different groups are affected and helps in designing targeted interventions. Ensure that it is not possible to re-identify data subjects based on such factors.

- **Equity assessment:** Conduct equity assessments to identify disparities and vulnerabilities within the community. This information can guide the prioritization and allocation of resources and interventions to address specific challenges.
- **Transparency and accountability:** Maintain transparency in decision-making processes and make the criteria and rationale for interventions public. Establish mechanisms for accountability to ensure that interventions are fair and equitable.

#### 3.1.5 Trust

- **Transparency and open communication:** Promote transparency by openly communicating with the public about social listening in infodemic management. Provide clear and accurate information, acknowledging uncertainties when necessary and offering regular updates based on the latest scientific evidence.
- **Accountability:** Hold individuals, organizations and authorities accountable for the information they collect and disseminate. Ensure that those responsible for managing the infodemic adhere to ethical standards and correct mis/disinformation accurately.
- **Credible sources:** Rely on credible sources for information and recommendations. Ensure that all information shared with the public comes from reputable sources and is grounded in scientific research and evidence-based findings.
- **Engage with the public:** Actively engage with the public, listening and addressing their questions and concerns. Encourage a two-way dialogue that allows individuals to express their worries and uncertainties, but also provides accurate and empathetic responses.
- **Collaborative efforts:** Foster collaboration between authorities, health care professionals, researchers and the media. By working together, these stakeholders can effectively support infodemic management efforts.

#### 3.1.6 Feedback integration

- **Regular evaluation:** Regularly conduct evaluations of infodemic management measures to assess their effectiveness and necessity over time. Ensure that interventions remain aligned with the social listening goals and adapt them as needed.
- **Sunset clauses:** Whenever applicable, infodemic management processes and activities should include sunset clauses to prevent consequences of these practices from becoming permanent restrictions on rights and freedoms.
- **Accountability:** Apply accountability measures by actively seeking and acknowledging feedback on the impact of infodemic management interventions. Use feedback, including evidence from research, to identify shortcomings and make necessary adjustments to improve the strategies.
- **Learning approach:** Maintain a learning approach in infodemic management, being open to corrections based on feedback, evolving scientific evidence and emerging challenges. Continual improvement is essential for remaining responsive to evolving circumstances.
- **Contextual considerations:** Consider the broader context in which infodemic management strategies are implemented. Take into account historical precedents, lessons from past interventions and various contextual elements (e.g. social, political, technological) to tailor strategies effectively.

### 3.1.7 Community engagement

- **Actively involve diverse communities** in all decision-making processes related to infodemic management, starting with the decision to track and provide tailored information and interventions in a specific community and details of the nature of those actions. Ensure that a wide range of voices and perspectives are considered.
- **Co-creation of solutions:** Encourage the co-creation of solutions by engaging the public. When individuals have a stake in decision-making, they are more likely to support and actively participate in the implementation of interventions.
- **Transparency and open communication:** Promote transparency and open communication by involving the public in decision-making. Share information and engage in dialogue to build trust, credibility and accountability.
- **Collaboration between stakeholders:** Foster collaboration between decision-makers, experts and the public. Collaborative efforts enhance trust, knowledge sharing and well-informed, holistic interventions tailored to community needs.
- **Contextually relevant strategies:** Recognize the value of community engagement in developing contextually relevant infodemic management strategies. Community members possess first-hand knowledge of local context, including cultural, linguistic and social factors.

### 3.1.8 Pursuing understandability of communication

- **Clear and concise messaging:** Deliver key messages in a clear, simple and concise language. Ensure that information is easily understood without ambiguity or confusion.
- **Overcome information overload:** Present information in a digestible manner to help individuals process and understand it amidst the information overload experienced during an infodemic.
- **Use inclusive language** that respects linguistic and cultural diversity. Recognize the importance of cultural nuances and ensure that no one is excluded due to language barriers or cultural differences.
- **Accessible communication formats:** Use communication formats and channels suitable for the target audience. This may involve using visual aids, plain language or multimedia elements to enhance understanding across diverse demographics.
- **Empower informed decision-making:** Aim to empower individuals to make informed choices by presenting information in an understandable manner. Clarity in communication helps people assess risks, evaluate options and take appropriate actions.

#### Box 2 Case study: United States Centers for Disease Control and Prevention

The United States Centers for Disease Control and Prevention (CDC) Insights Unit monitored different data sources including social media, news media, external polls and surveys, internal CDC surveys, CDC website metrics, questions received by CDC's national call centre (CDC-INFO), peer-reviewed literature and reports from the CDC's partners. National reports were published regularly. "Special" reports, which focused on a specific topic, demographic group, geographical location or a some combination of these three, were published more often.

Originally, the social listening carried out by the Insights Unit focused on narratives surrounding the COVID-19 vaccines, and was then expanded to include narratives surrounding all vaccines and other priority health topics, with the aim of identifying the public's questions, concerns and frustrations about these issues, and the information voids and any inaccurate health information that was circulating. Once the information had been gathered, the Unit's data analysts, writers, editors,

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**Commented [AK117]:** Would it be useful for readers if the titles of all the boxes gave a bit more information about the purpose of the case studies described, e.g Case study: United States Centers for Disease Control and Prevention – Social listening to combat the COVID-19 infodemic

Also – there is little or no information about when these activities were carried out and for how long.

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subject matter experts and graphic designers worked with staff from the CDC's other divisions and programme to identify ways to address the themes present in the reported narratives.

The objective of these efforts was to provide reports on current threats and opportunities in the information environment to CDC staff, and staff working in partner organizations and agencies. The Unit also provided solutions to address or leverage these opportunities, and resources to reduce the barriers to action, with the goal of increasing healthy behaviours in the public. To achieve this, the Unit worked with partners to disseminate the report and offer training sessions, consultations and technical assistance.

For the main part, the social listening work was focused to a national audience, but, at the request of leadership, the Unit would also look into specific demographic populations or geographical regions or both (e.g. cis-gender, heterosexual black women living in Atlanta, Georgia).

#### Ethical considerations

**Privacy:** To protect the privacy of individuals, the Insights Unit did not track or "follow" individual people or accounts, but monitored the responses to CDC social media posts. No social listening was carried out in private groups on social media, websites or forums, and no attempts were made to access any content that required the Unit to present itself as anyone or any body other than the CDC. The Unit increased the threat level of a narrative if it is spread was significantly among a group that would suffer a disproportionately negative impact from the existence of the narrative, which was considered to be an equity-based approach. The Unit did not advocate for any content published on social media to be removed.

**Mental health:** To protect the mental health of staff working on the Insights Unit, all staff involved received clear training on the ethical considerations of the work and the rationale for these considerations, and ethical dilemmas and considerations were discussed in weekly team meetings as they arose. The CDC provided all employees access to the Employee Assistance and Referral Program, which gives employees access to confidential and professional counselling and also to referral services to help them manage life events (e.g. legal matters, finances, education, family matters, etc.). Weekly check-in meetings were carried out to discuss the content that staff were seeing, and these meetings allowed the team a safe space to express their feelings about the content and how it was impacting them emotionally.

When analysts were collecting data, or writing up the findings of narratives that were especially troubling, they were allowed additional time for their work. All team members knew, and reemphasized to each other, the importance of expressing situation-specific ethical concerns. Team members were aware that their work could impact their mental health, and the management were clear that staff should stop working if they started to notice that their work was having a negative impact on their well-being.

#### Recommendations

- It is important to recognize that the response to infodemics must be rooted in human rights and should not infringe on individuals' freedoms, as established in the International Covenant of Civil and Political Rights that states "everyone shall have the right to freedom of expression; this right shall include freedom to seek, receive and impart information and ideas of all kinds, regardless of frontiers, either orally, in writing or in print, in the form of art, or through any other media of his choice" (93).
- A recent Secretary General's report noted that, "Approaches that seek simple solutions to this complex problem are likely to censor legitimate speech that is protected under international human rights law ... [and] are likely to exacerbate societal ills and increase public distrust and disconnections, rather than contribute to the resolution of underlying problems."
- Teams that provide insights into infodemics should have the autonomy to put forward the facts they have elicited, and health authorities have a responsibility to everyone that they serve, and not just those members of the public that express positive feelings towards health authorities.

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#### Box 2 Case study: How Ghana managed the COVID-19 infodemic and vaccine misinformation

This case study illustrates the approach that Ghana has taken to manage the infodemic related to COVID-19 and vaccine misinformation through partnerships between the Ghana Health Service, UNICEF and other stakeholders. With the recent increase in Internet and mobile phone usage in Ghana, social listening on digital platforms became crucial to effectively track and address misinformation. Social listening was carried out by a multisectoral National Misinformation Task Force, using the Talkwalker platform, among others. This Task Force worked as part of the Infodemic Management System that had four main steps: identifying misinformation, assessing risk, verifying information and responding appropriately. The Infodemic Management System process involved analysing online narratives, assessing the potential impact and risk associated with misinformation, and proposing responses based on a risk assessment matrix. A collaborative process involving experts from various fields was used to reach decisions on the appropriate responses. Various methods were used to disseminate accurate information and to counter misinformation, including online tools, such as Talkwalker, Brand 24 and Google Alerts, and more traditional methods, such as radio and television, and community engagement. This integrated approach ensured that the responses were culturally appropriate and were practical to use within the Ghanaian context.

#### Ethical considerations

**Privacy:** In this case study, privacy was maintained by using anonymization and aggregation techniques that focused on population-level data analysis, via tools such as Talkwalker. Individual tracking was not carried out. The approach used security measures to protect data and adhered to local data protection regulations, which was important as publicly available data were being analysed. The Infodemic Management System limited data collection and processing to only what was necessary to identify and address COVID-19 misinformation.

**Responsible large-scale data processing (big data and AI):** The principle of responsible large-scale data processing is implicitly aligned. The process underscores transparency and explainability, as data analytics are shared within a multidisciplinary task force, promoting understanding and trust. The Infodemic Management System involved precautionary strategies to mitigate risks, including data repurposing and re-identification. The systematic and targeted approach to data collection and analysis allowed data minimization and a focus on data quality. Experts guided the decision-making and response strategies, meaning that human oversight was integral to the process. This approach represents a balanced commitment to leveraging advanced technologies, with safeguards built in against the potential ethical and technical pitfalls, and aligns with global standards for responsible data use in infodemic management.

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### 3.2 Science and health communication

Science and health communication involves the effective dissemination of accurate, evidence-based scientific and health information to the public, with a focus on swift and precise content development to address information voids. This process includes the creation of high-quality health information materials and resources, as well as the translation and transfer of scientific knowledge to the public. It also includes activities related to debunking and correcting mis/disinformation. Science and health communication aims to bridge the gap between scientific knowledge and the public's understanding of health science, promoting informed decision-making and countering the harmful effects of mis/disinformation in the domains of health and science.

#### 3.2.1 Key stakeholders

- **Government and public health authorities** are responsible for crafting and disseminating accurate scientific and health information to the public during health crises and infodemics.

- **Health care professionals** offer expert guidance and contribute to creating accurate health-related materials for the public.
- **Scientific and medical research institutions, including IRBs**, conduct studies, research and clinical trials, providing the foundation for evidence-based health communication.
- **Academics and educators** develop educational materials and curricula that promote science and health literacy, enhancing public understanding of these topics.
- **Media and journalism associations** are responsible for reporting on and disseminating scientific and health-related information, and for fact-checking and countering mis/disinformation in these areas.
- **Community leaders and advocates** represent various communities and play an important role in ensuring that science and health information is culturally sensitive and accessible to all.
- **NGOs** engage in awareness campaigns, fact-checking and educational initiatives related to science and health topics, combating mis/disinformation in these areas.
- **Fact-checking organizations** specialize in verifying scientific and health information and debunking falsehoods in the public domain, contributing to the accuracy of information available to the public.
- **International organizations** provide guidance and support, and coordinate global efforts related to science and health communication, particularly during health emergencies.
- **Technology companies and digital platforms** manage digital platforms and social media, where science and health information are shared, and are responsible for combating the spread of mis/disinformation in these domains.
- **Patient advocacy groups** represent the interests and concerns of patients, providing valuable input on the communication of health information and ensuring it meets the needs of those it serves.

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### 3.2.2 Privacy

- **Ensure robust data security measures:** Implement strong security protocols to safeguard any scientific and health information that may be collected and disseminated (such as public feedback on the effectiveness of a communication campaign).
- **Comply with data protection regulations:** Adhere to relevant data protection laws and regulations to ensure that all communication activities are conducted in compliance with legal requirements, thus safeguarding user information from unauthorized access or misuse.
- **Anonymize data:** When using personal data for communication purposes (e.g. when giving examples or substantiating claims) ensure they are anonymized.
- **Public education:** Clearly communicate to the public about privacy rights and the importance of privacy considerations in social listening and infodemic management, empowering individuals to advocate for their privacy and hold stakeholders accountable.

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### 3.2.3 Responsible large-scale automated data processing

- **Transparent data handling:** Be transparent about data collection and use in health education initiatives to build trust with stakeholders, including the public. Demonstrate your commitment to ethical data practices by clearly explaining how demographic data are anonymized and aggregated to tailor health messaging to specific communities, ensuring that individuals understand and trust the process.
- **Precautionary measures in health messaging:** Adopt precautionary measures in data processing for health education campaigns to identify and mitigate risks associated with mis/disinformation or unintended consequences. Implement robust fact-checking mechanisms before disseminating health information to prevent the spread of false or misleading content.
- **Human oversight in health communication:** Ensure human oversight in health communication, especially when automated systems are used for large-scale data processing. Allow health care



professionals and subject matter experts to intervene as necessary to align social listening and health messaging with evidence, ethical and legal standards. This oversight addresses nuances and complexities that automated systems may miss, improving the accuracy and effectiveness of health education initiatives.

- **Collaboration for effective health messaging:** Foster collaboration among stakeholders, such as government agencies, health care providers, educators and community leaders, to enhance health education efforts. Leverage diverse expertise and perspectives to develop comprehensive and culturally sensitive health messaging strategies. This collaborative approach facilitates the sharing of best practices and resources, optimizing the impact of health education initiatives.
- **Evaluation and improvement:** Prioritize the evaluation and improvement of data processing practices in health education. Regularly assess the effectiveness of health messaging campaigns and solicit feedback from stakeholders to identify areas for improvement and refine approaches over time. This iterative process ensures that health education efforts remain responsive to evolving public health needs and adhere to responsible data processing principles.

#### 3.2.4 Applying fair, equitable and inclusive processes of decision-making

- **Diverse representation in content development:** Ensure a diverse representation among experts involved in developing health communication materials. Include voices and community leaders from marginalized communities to address their specific health concerns and ensure the relevance of information to all segments of society.
- **Cultural sensitivity in messaging:** Tailor health communication messages to be culturally sensitive and accessible to diverse populations. Collaborate with community leaders, organizations and groups to identify, test and use language and imagery that resonate with different cultural backgrounds to enhance understanding and engagement with health information.
- **Equity-centred approach to distribution:** Prioritize equitable distribution of health communication materials to reach underserved communities. Consider the unique challenges faced by marginalized groups in accessing information and implement strategies to bridge gaps in access.
- **Inclusive feedback mechanisms:** Establish mechanisms for gathering feedback from diverse stakeholders on health communication materials. Solicit input from community members, patient advocacy groups and other stakeholders to ensure that information addresses their sensitivities, concerns and preferences.
- **Continuous evaluation and adaptation:** Regularly evaluate the effectiveness of health communication strategies through an equity lens. Monitor reach, comprehension and impact among diverse populations and adapt messaging and distribution strategies accordingly to ensure equitable outcomes.

#### 3.2.5 Trust

- **Prioritize transparency:** Make all data and sources of scientific and health information open and accessible to the public. This includes the methodologies behind studies, the data supporting health recommendations, the principles that guide decision-making (e.g. minimizing morbidity and mortality, maximizing economic benefit, etc.) and any uncertainties or limitations in the current understanding. Transparency promotes trust by showing the public that there is nothing to hide, and that information is shared openly.
- **Ensure accuracy and reliability:** Rigorously fact-check all science and health communications before dissemination. This involves collaboration with experts, such as health care professionals,



scientific researchers and fact-checking organizations, to verify the accuracy of information. Maintaining a high standard of accuracy helps to build and sustain public trust.

- **Engage in active social listening and integrate feedback mechanisms:** Implement mechanisms for public feedback and engagement, allowing the community to express concerns, ask questions and receive prompt and accurate responses. Active listening demonstrates respect for the public's perspective and contributes to building relationships based on trust.
- **Create collaborative networks:** Encourage collaboration between all stakeholders involved in science and health communication, including government bodies, health care professionals, media and technology companies. A unified approach ensures consistency in messaging and amplifies the reach of accurate information.
- **Highlight scientific consensus:** When communicating scientific findings or health guidelines, clearly indicate when there is a consensus among experts. Public understanding of scientific consensus adds weight to the communicated information and reinforces its credibility.

#### 3.2.6 Feedback integration

- **Use multiple channels for feedback collection:** Leverage a variety of platforms – including social media, community forums and sources of offline data – to gather feedback from the public on their understanding and concerns, and the mis/disinformation trends related to health and science communication.
- **Monitor and evaluate communication impact:** Regularly assess the impact of science and health communication strategies through feedback mechanisms. Use this data to refine messages, address newly identified gaps or misconceptions, and improve the overall effectiveness of communication efforts.
- **Implement evidence-based content development:** Ensure that all health and science communication materials are based on the latest scientific evidence, and establish a process for regular updates to these materials as new information becomes available or as feedback indicates misunderstandings, or gaps in public knowledge.
- **Promote interactive and engaging communication:** Design science and health communication strategies that are interactive, allowing for two-way communication with the public. This can involve question and answer sessions, webinars and public forums, held online or in-person, where individuals can ask questions, express concerns and receive direct feedback from experts.
- **Enhance media literacy and critical thinking:** Work with educators and community leaders to develop programmes that identify and target media literacy and critical thinking skills gaps among the public. This includes educating the public on how to critically evaluate health information and recognize credible sources, which is essential for navigating mis/disinformation.

#### 3.2.7 Community engagement

- **Co-create projects and content with communities:** Involve community members and leaders in the creation of infodemic programmes and health communication materials. This collaborative approach ensures the content is culturally sensitive, linguistically appropriate and tailored to address the specific concerns and values of different communities.
- **Use diverse communication channels:** Distribute science and health information through a variety of platforms and media to reach a broad audience. This includes traditional media, social media, community meetings and digital platforms. Adapt the messaging to fit the format and audience of each channel.

- **Provide training for community advocates:** Equip community leaders and advocates with the necessary knowledge and resources to accurately convey science and health information within their communities. This empowers local voices and ensures that accurate information is disseminated through trusted community networks.
- **Facilitate open dialogues and question and answer sessions:** Host regular forums, workshops and online question and answer sessions at which community members can ask questions, express concerns and receive accurate information directly from experts. This promotes transparency and allows for direct engagement with the public.

### 3.2.8 Pursuing understandability of communication

- **Simplify and adapt communication language:** Convert complex scientific terms and jargon into simple, understandable language without sacrificing accuracy. This involves using plain language to explain complex concepts, ensuring that the information is accessible to non-experts. Use language that is specifically designed for the intended target audience.
- **Use visual aids:** Incorporate visual elements, such as infographics, charts and videos, to complement text-based information. Visual aids can help simplify complex information, making it easier for the audience to understand and retain scientific and health-related facts.
- **Iterative feedback and testing:** Before disseminating information widely, test it with a small, diverse group from the target audience to ensure it is understandable. Use their feedback to refine messages, ensuring clarity and effectiveness.
- **Leverage storytelling:** Use relatable stories and anecdotes to convey scientific and health messages. Storytelling can make abstract or complex concepts more tangible and memorable, promoting a deeper connection with the audience.
- **Provide context and relevance:** Explain why the information is important and how it applies to the audience's daily lives. Providing context helps the audience understand the relevance of scientific and health information, making it more likely they will pay attention and act upon it.

#### Box 3 Case study: The Eastern Mediterranean Regional Office

The social listening function in the WHO Eastern Mediterranean Regional Office comes under the remit of the Risk Communication and Community Engagement (RCCE) team, who are part of the Country Preparedness and International Health Regulations Unit in the Health Emergency department. During COVID-19, social listening used various sources of data, including the EARS platform, Talkwalker, the Johns Hopkins dashboard, Facebook Data for Good, CrowdTangle and Google Trends. These platforms were used to capture public conversations and media articles, and also identified misinformation and disinformation that were circulating across the various social media platforms in the WHO Eastern Mediterranean Region. This information was used to inform public health response activities, including risk communication messaging. The RCCE team worked closely with the information management teams using the Epidemic Intelligence from Open Sources initiative to build a comprehensive picture of the conversations about COVID-19 and data.

Social listening, and its wider application in infodemic management, started during COVID-19 with the UNICEF Middle East and North Africa's Data Portal sharing their social listening reports within the interagency working group activities. The Regional Office subsequently hired a dedicated consultant to develop social listening reports for COVID-19 and other disease outbreaks or health emergencies, such as mpox, cholera, the Türkiye–Syria earthquake and the conflict in Sudan. The consultant monitors public conversations during specific health emergencies to gather data to accurately and efficiently inform public health response. The data gathered includes misinformation, disinformation, health needs and practices, and behaviours which have wider health implications.

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The consultant passes on this information to the response teams, including the RCCE team, to allow them to develop appropriate messages to counter any disinformation and to provide any other information needed. Other activities carried out include training sessions for community volunteers and health workers, and other Incident Management Support Team members, including the Infection Prevention and Control and Surveillance teams, and also the interagency working group and ministries of health.

#### Ethical considerations

Data were collected from public portals that are available for everyone. However, data that included sensitive information, or that might have caused harm in specific contexts, were only shared among WHO staff to inform the response, and included a disclaimer to prevent further circulation. At the regional level, social listening and infodemic management activities were carried out for specific health risks and disease outbreaks. Capacity-building is done for RCCE focal points at country offices to strengthen the capacities of country office.

In the initial hours of the response to the Türkiye–Syria earthquake, the main focus was ensuring that critical life-saving information was shared with affected communities, for example, what to do during aftershocks, and how to avoid further risk and injury, along with operational information, for example, which health services were still operative and where to seek care. In the immediate aftermath of the earthquake, social listening was conducted daily by scouring digital platforms to understand pressing community issues and needs, and this information was fed into the overall health sector response. The collection and use of social and behavioural data captured via daily digital listening, and the establishment of community feedback mechanisms, helped detect emerging issues and allowed rapid dissemination of information and resources to ensure harmonized community outreach.

#### Recommendations

When developing management functions for infodemics within health ministries, it is important to adopt a systematic approach that strengthens infodemic management mechanisms and incorporates ethical considerations. This can be achieved by allocating resources, such as funds and personnel, to train staff on how to conduct social listening and effectively use the data generated for the benefit of the public. Building trust is crucial because if the public loses faith in the government, it can have negative effects on the accuracy of the data collected and, ultimately, impact the responses to public health crises.

### 3.3 Education and training to build resilience to misinformation

Education and training programmes aimed at building resilience to mis/disinformation are important components of infodemic management. These initiatives focus on enhancing individuals' abilities to identify, critically assess and effectively address health-related mis/disinformation. They also emphasize the importance of prebunking, which involves pre-emptively debunking potential mis/disinformation before it spreads. These programmes seek to improve self-efficacy, enabling people to adhere to recommended health behaviours, and also aim to enhance people's abilities to develop more accurate risk perception, while judging the benefits of recommended health behaviours.

#### 3.3.1 Key stakeholders

- **Educational institutions: schools, colleges and universities** play an important role in providing formal education and training programmes to build resilience to mis/disinformation among students, teachers and the broader community (4).
- **Health care professionals and organizations** offer specialized training to their staff and patients to ensure they can discern accurate health information from mis/disinformation.

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- **Government and public health authorities** are responsible for developing and implementing educational campaigns and initiatives to promote health literacy and mis/disinformation resilience at a population level.
- **Community-based organizations** work directly with communities to provide tailored education and training programmes that address local needs and concerns related to health mis/disinformation.
- **Information literacy organizations** focus on improving critical thinking skills and information literacy to help individuals identify and evaluate mis/disinformation and enhance their resilience to false health claims.
- **NGOs** engage in awareness campaigns, educational initiatives and training programmes designed to combat health mis/disinformation and improve community resilience.
- **Online platforms and social media companies** can contribute by offering resources and training modules that help users identify and report mis/disinformation on their platforms.
- **Researchers, academics and IRBs** conduct studies and research on effective educational interventions and provide evidence-based guidance on building resilience to health mis/disinformation.
- **Public libraries** offer resources, workshops and training programmes to enhance information literacy and critical thinking skills among the public.
- **Patient advocacy groups** play a role in educating their members about health mis/disinformation and advocate for accurate information dissemination in their respective health areas.
- **Professional associations** are organizations representing various professions (e.g. psychologists, medical doctors) and may offer training and resources to their members to build resilience to mis/disinformation.
- **International and global health organizations** provide guidance and resources for countries and regions to develop and implement effective education and training strategies to combat health mis/disinformation on a global scale.

### 3.3.2 Privacy

- **Respect participant privacy:** Ensure that if any personal data are collected during education and training programmes (e.g. evaluation data), these data are handled with the utmost respect for the privacy of the subjects' data, adhering to relevant data protection principles and regulations.
- **Obtain informed consent:** Prior to collecting any personal data for, or during, education and training purposes, obtain informed consent from data subjects, clearly outlining how their data will be used and protected.
- **Limit data collection:** Collect only the necessary data for education and training purposes, ensuring that it is relevant and proportionate to the objectives of the programme, and minimizing privacy risks.
- **Transparency:** Be transparent with participants about how their data will be used for education and training purposes, providing clear information on privacy protections and data handling practices.

- **Regular review and update:** Periodically review and update privacy policies and practices related to education and training programmes to ensure ongoing compliance with privacy regulations and best practices.

### 3.3.3 Responsible large-scale automated data processing

- **Empower participants with data, media and information literacy skills:** Include data literacy skills training as part of educational programmes to empower participants to understand the mechanics of large-scale data processing, to be able to critically assess information sources and to evaluate data credibility.
- **Facilitate active learning and engagement:** Use data-driven insights to personalize educational experiences and facilitate active learning and engagement. Analyse participant interactions with educational materials to identify areas for improvement and tailor content delivery accordingly.
- **Transparent data use and consent:** Clearly communicate to participants how their data will be used in educational programmes and obtain explicit consent for data processing activities.
- **Tailor data collection to educational needs:** Ensure that data collected for educational purposes is relevant to building resilience to mis/disinformation. Collect information on individuals' current knowledge levels, misconceptions and information-seeking behaviours to inform the design of effective training programmes.
- **Evaluate impact and iterate:** Continuously evaluate the effectiveness of educational programmes in building resilience to mis/disinformation using relevant metrics and data analysis techniques. Use insights gained from data analysis to iteratively refine training approaches and optimize outcomes.

### 3.3.4 Applying fair, equitable and inclusive processes of decision-making

- **Diverse representation in curriculum development:** Ensure that educational curricula and training materials are developed with input from diverse stakeholders, including representatives from marginalized communities. Incorporate diverse perspectives and experiences to address the specific needs and concerns of all learners.
- **Cultural sensitivity in training delivery:** Deliver education and training programmes in a culturally sensitive manner, considering the diverse cultural backgrounds and learning styles of participants. Use language and examples that resonate with different cultural groups to enhance understanding and engagement.
- **Equitable access to training resources:** Provide equitable access to training resources and opportunities for all individuals, regardless of their socioeconomic status or geographical location. Implement strategies to remove barriers to participation, such as offering online modules and providing scholarships or subsidies for disadvantaged learners.
- **Evaluation of impact on equity:** Regularly evaluate the impact of education and training programmes on equity outcomes, such as access, participation and knowledge acquisition. Collect data on demographic characteristics and assess whether the programmes are effectively reaching and benefiting diverse populations.
- **Improvement through feedback:** Solicit feedback from participants and stakeholders to identify areas for improvement and ensure that education and training programmes remain responsive to the evolving needs of different communities.

### 3.3.5 Trust

- **Integrate evidence-based content:** Ensure that all educational materials and training programmes are grounded in the latest scientific evidence and research. This includes using case studies, examples and data from reputable sources. By aligning content with current scientific understanding, educators and trainers can promote trust-based relationships with participants.
- **Leverage credible experts:** Involve health care professionals, scientists and other credible experts in the development and delivery of education and training sessions. The trustworthiness of the content is enhanced when participants see that information is being conveyed by individuals with expertise and authority in their fields.
- **Promote transparency and openness:** Encourage an environment where questions and scepticism are welcome, and provide clear, honest answers. Acknowledging uncertainties and explaining how scientific knowledge evolves over time can help build trust and understanding among learners.
- **Foster critical thinking and information literacy:** Equip learners with the skills to critically evaluate information sources, distinguish between evidence-based information and mis/disinformation, and understand the mechanisms behind the spread of mis/disinformation. Critical thinking and information literacy are foundational for building trust in accurate information while fostering scepticism towards unreliable sources.
- **Highlight the role of ethics in information sharing:** Incorporate discussions on the ethical implications of spreading mis/disinformation and the responsibility of individuals to verify information before sharing it. Emphasizing ethics in communication can help cultivate a sense of responsibility and trustworthiness among participants.

### 3.3.6 Feedback integration

- **Develop interactive learning modules:** Create educational programmes that include interactive elements, such as quizzes or scenarios, for which learners can provide immediate feedback on their understanding. This approach allows educators to assess and adapt the content to better suit learners' needs in real time.
- **Incorporate real-world examples:** Use current, real-world examples of mis/disinformation to discuss in training sessions. Encourage participants to provide feedback on these examples, including their thoughts and feelings, to foster a deeper understanding of the impact of mis/disinformation.
- **Regularly update training content:** Based on feedback collected from participants and the evolving nature of mis/disinformation, regularly update educational materials to ensure they remain relevant and effective. This also involves adapting training methods to incorporate new insights and learning techniques.
- **Implement follow-up sessions:** After the initial training, conduct follow-up sessions or surveys to gather feedback on the long-term effectiveness of the training, challenges encountered in applying the learned skills, and areas where additional support is needed. This ongoing engagement can help refine future training efforts and provide continuous support to participants.

### 3.3.7 Community engagement

- **Leverage local leaders and community influencers:** Engage community leaders, influencers and trusted figures in the education process. Their involvement can lend credibility to the information, encourage wider participation and facilitate the acceptance of critical thinking and information literacy concepts within the community.



- **Involve and engage with the target audience at different levels:** Involve the targeted audience in both designing the educational strategy and providing feedback on its functionality. This inclusive approach ensures a collaborative effort in shaping the educational process and refining its effectiveness.
- **Collaborate with educational and health institutions:** Partner with schools, colleges, health care facilities and public health agencies to integrate mis/disinformation resilience training into existing educational and health promotion programmes. This collaboration can extend the reach and impact of these initiatives.

### 3.3.8 Pursuing understandability of communication

- **Design inclusive and accessible training materials:** Ensure that educational content is accessible to individuals with varying abilities, learning styles and language proficiencies. Use clear, simple language and include visual aids, such as infographics and videos, to explain complex concepts.
- **Foster critical thinking and information literacy:** Include exercises that enhance critical thinking, such as evaluating sources, identifying biases and distinguishing between opinion and fact. Information literacy skills are crucial for understanding and assessing the credibility of information.
- **Provide tools and resources for continued learning:** Offer participants resources, such as checklists and guides, and access to reputable information sources for ongoing reference. Encouraging continuous learning helps reinforce the skills needed to combat mis/disinformation.

#### Box 4 Case study: Finland

The Finnish Institute for Health and Welfare (THL) implemented two projects that were involved in communicating the risks associated with COVID-19.

#### Project 1: A practical monitoring system to analyse the public's perceptions of COVID-19-related risks.

The objective of the project was to improve the communication of risk information from THL to the general public. The project team consisted of experts in behavioural insights, public health and risk communication. The team used a variety of data sources, including social media posts and emails from the public to THL, people who communicated with the public and THL staff who made communication plans and content for the public during the pandemic (leaders, communication experts and public health experts). All data were anonymized, including the names of individuals and their location, gender and workplace. All anonymized data could be only accessed by project staff and were stored in a secured server in THL. THL added a disclaimer onto the website saying that discussions could be used for research purposes, at the request of the ethics committee. The project helped public health experts to address issues that were being discussed by the public. Recommendations were provided on what topics to address and how to frame messages using behavioural insights frameworks and best practices for risk communication.

#### Project 2: A capacity-building project training risk communication experts working in cities and municipalities on how to use social media data to develop targeted risk communication for people from different ethnic backgrounds.

The team consisted of experts in behavioural insights, public health, cultural diversity and risk communication from different municipalities. The project worked with people living in Finland with various ethnic and language backgrounds. The risk communicators were asked to communicate with people from different ethnic backgrounds and whose primary language was a language other than Finnish, Swedish or Sami. The organizations that took part in the project were responsible for conducting the social listening, and they followed their institutions' ethical guidance. The data collected for analysis were anonymized, including the names of individuals and their location, gender and workplace. All anonymized data could be only accessed by project staff and were stored in a

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secured server in THL. The project helped risk communicators to address relevant issues in a culturally appropriate way by building their capacity to use the available social media data for that purpose. **This project required close collaboration between experts in ethics and data security.**

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### 3.4 Engagement

Engagement activities are a critical component of social listening in infodemic management and involve fostering connections and interactions at various levels to combat infodemics and promote accurate health information. These activities include individual and community-level engagement, psychological support to individuals and communities, engagement with health workers, digital engagement with social media users, and the design of user experiences within the information environment.

Engagement activities involve a wide array of stakeholders working collaboratively to provide support and promote accurate health information at the individual, community and societal levels. These activities are crucial in building trust, countering mis/disinformation and mitigating the impact of infodemics.

#### 3.4.1 Key stakeholders

- **Governments and public health authorities** are responsible for organizing and promoting engagement campaigns and initiatives at the national and local levels to ensure communities are informed and supported.
- **Health care professionals and organizations** play a key role in engaging with patients and communities, providing accurate information and offering psychological support during health crises.
- **Community-based organizations** work directly with communities to build trust, provide psychological support and facilitate engagement activities tailored to local needs.
- **Mental health professionals** provide psychological support and counselling to individuals and communities experiencing stress, anxiety or trauma related to health crises and mis/disinformation.
- **Social media platforms** collaborate with public health authorities to implement strategies that combat mis/disinformation, promote accurate health information and engage users through their platforms.
- **Community leaders and advocates** represent the interests of various communities and facilitate engagement efforts, including promoting accurate information and providing support.
- **NGOs** engage in awareness campaigns, mental health support and community-level initiatives to combat mis/disinformation and promote engagement.
- **Educational institutions** provide resources, training and support for community engagement and mental health awareness.
- **Research institutions, IRBs and researchers** conduct studies and research on effective engagement strategies and provide evidence-based recommendations.
- **Technology developers** create digital tools and applications that facilitate engagement, mental health support and access to accurate health information.
- **International and global health organizations** offer guidance and coordination for engagement efforts on a global scale, particularly during international health crises.

### 3.4.2 Privacy

- **Privacy-aware engagement strategies:** Develop engagement strategies that prioritize privacy protection, ensuring that interactions and connections respect individuals' privacy rights.
- **Data minimization:** Minimize the collection of personal data during engagement activities, only gathering information that is necessary for the intended purpose, thereby reducing privacy risks.
- **Secure communication channels:** Use secure communication channels and platforms for engagement activities to safeguard against unauthorized access or breaches of personal data.
- **Regular privacy audits:** Conduct regular privacy audits of engagement activities to assess compliance with privacy regulations and identify areas for improvement in data handling and protection.
- **Privacy training for stakeholders:** Provide privacy training for stakeholders involved in engagement activities to ensure they understand their responsibilities in protecting individuals' privacy rights and handling personal data appropriately.

### 3.4.3 Responsible large-scale automated data processing

- **Ethical data use in engagement activities:** Ensure that data collected in, and for, engagement activities are used ethically and in accordance with relevant privacy regulations. Respect individuals' privacy rights and work on anonymized data for preference; when this is not possible, obtain consent for data processing activities.
- **Transparent communication about data handling:** Communicate transparently with participants about how their data will be used in engagement initiatives. Provide clear explanations of data collection methods, purposes and safeguards to build trust and confidence among participants.
- **Empowerment through information literacy:** Empower participants with information literacy skills to understand and critically evaluate the information they encounter during engagement activities. Provide resources and training to help individuals assess the credibility and reliability of health information, including guidance on identifying mis/disinformation.
- **Personalization and tailoring of engagement strategies:** Use data insights to personalize engagement strategies and tailor interventions to the unique needs and preferences of participants. Analyse engagement metrics and feedback to optimize the design and delivery of engagement activities for maximum impact.
- **Collaboration and knowledge sharing:** Foster collaboration and knowledge sharing among stakeholders involved in engagement activities to promote responsible data processing practices. Share best practices, lessons learned and resources to support collective efforts in combating mis/disinformation and promoting meaningful engagement with communities.

### 3.4.4 Applying fair, equitable and inclusive processes of decision-making

- **Diverse representation and cultural sensitivity in engagement planning:** Ensure that planning for engagement activities includes input from diverse stakeholders, including marginalized communities and individuals with lived experiences relevant to the engagement goals. Incorporate diverse perspectives to ensure that engagement strategies are relevant and inclusive. Use language, imagery and communication styles that resonate with different cultural backgrounds to enhance engagement and trust.
- **Equitable access to engagement opportunities:** Provide equitable access to engagement opportunities for all individuals and communities, regardless of socioeconomic status, geographical



location or other factors. Implement measures to remove barriers to participation and ensure that engagement activities are accessible to everyone.

- **Transparent communication in engagement efforts:** Maintain transparency in communication about engagement activities, including the goals, methods and outcomes of the initiatives. Provide clear and accessible information to stakeholders to foster trust and accountability in engagement efforts.
- **Evaluation of equity outcomes in engagement:** Regularly evaluate the equity outcomes of engagement activities, including participation rates, representation of diverse groups and impact on marginalized communities. Use data to identify disparities and adjust engagement strategies to address inequities.
- **Learning and improvement through feedback:** Solicit feedback from participants and stakeholders to assess the effectiveness and inclusivity of engagement activities. Use feedback to iteratively improve engagement strategies, address gaps in representation and enhance the relevance of activities to diverse communities.

#### 3.4.5 Trust

- **Prioritize transparent communication:** Ensure that all engagement activities are characterized by openness and transparency. This means being clear about the sources of information, the evidence base for health recommendations and any uncertainties or evolving aspects of the information. Transparency helps build and maintain trust, especially during health crises when information can change rapidly.
- **Involve community leaders and advocates:** Leverage the trust that already exists within communities by involving local leaders and advocates in planning and implementing engagement activities. These individuals can serve as trusted messengers who amplify accurate health information and support efforts to combat mis/disinformation.
- **Foster two-way dialogue:** Engagement should not be a one-way flow of information. Instead, create platforms and opportunities for two-way dialogues in which individuals and communities can ask questions, express concerns and receive personalized responses. This approach values the voices of the community and builds trust through respect and acknowledgement of the community's concerns.
- **Use social media wisely:** Engage with audiences on social media platforms responsibly by promoting accurate information, promptly correcting mis/disinformation and using social media analytics to understand public sentiment and concerns. Collaborating with social media platforms to flag or remove false information can also help maintain the integrity of health messages.
- **Measure and share successes and lessons learned:** Regularly evaluate the impact of engagement activities and share successes and challenges with the public and other stakeholders. Demonstrating a commitment to learning and improvement can build trust over time.

#### 3.4.6 Feedback integration

- **Establish two-way communication channels:** Develop platforms or use existing social media channels to facilitate two-way communication between stakeholders and the public. This approach encourages feedback from community members about their concerns, questions and the types of information they find most useful or trustworthy.
- **Incorporate feedback loops into health campaigns:** Design public health campaigns with built-in feedback mechanisms, allowing for the collection and integration of audience feedback in real

time. After implementing engagement activities, carry out post-engagement evaluations to assess their impact, gather feedback from participants and stakeholders and identify lessons learned using both qualitative and quantitative approaches. This adaptive approach can make campaigns more responsive and effective over time.

- **Implement regular community surveys:** Conduct regular surveys in communities to gather feedback on the effectiveness of engagement strategies, the clarity of communicated health information and the psychological support provided. This feedback can help tailor future engagement efforts to better meet community needs.
- **Organize focus group discussions:** Host focus group discussions with representatives from target communities, including vulnerable populations, to gather in-depth feedback on engagement activities. These discussions can provide valuable insights into how engagement strategies are perceived and the areas where they can be improved.
- **Use analytics and metrics for digital engagement:** For digital engagement activities, leverage analytics tools to track user engagement, content reach and interaction patterns. Analysing these metrics can offer feedback on what types of content are most effective and how user experiences can be optimized.

#### 3.4.7 Community engagement

- **Prioritize inclusive engagement strategies:** Co-design engagement activities that are inclusive and accessible to all segments of the community, including vulnerable and marginalized groups. This ensures that everyone has the opportunity to participate, receive support and access accurate information.
- **Leverage community networks and structures:** Use existing community networks, organizations and structures to disseminate information and facilitate engagement. This approach leverages trust, enhancing the effectiveness of engagement efforts.
- **Provide psychological support and resources:** Recognize the psychological impact of infodemics, including mis/disinformation. Offer resources and support for mental health and well-being as part of engagement activities, partnering with mental health professionals and organizations to address these needs comprehensively.

#### 3.4.8 Pursuing understandability of communication

- **Personalize engagement efforts:** Use data and analytics to understand the demographics, interests and behaviour of the **publics**. Personalize messages and engagement strategies to match the **publics'** preferences, increasing the likelihood that the information will be understood and retained.
- **Use peer educators and influencers:** Engage community leaders, influencers and peer educators who are trusted by the target publics. They can relay information in a manner that is both relatable, digestible and understandable to the intended target public.
- **Simplify access to expert information:** Arrange for direct interactions with recognized experts in an accessible manner, such as Ask Me Anything sessions on social media or community webinars. Ensure these sessions are structured to break down complex information into understandable pieces of information, with a focus on addressing common misconceptions and questions.

Box 5 Case study: AURA

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This case study focuses on social listening and infodemic management in Kenya. The AIRA country infodemic management consultant for Kenya worked as the country support for the English-speaking countries in Africa for social listening and infodemic management. In Kenya, social listening was conducted through the Infodemic Management Working Group, which was hosted by the Ministry of Health. The Working Group was chaired by leaders from the Ministry of Health and co-chaired by WHO and UNICEF representatives. Representatives from CIHEB, the Red Cross, AMREF, the United States Agency for International Development (USAID) were active members of the Working Group. The primary objective of the Working Group was to monitor and respond to misinformation, disinformation arising during the COVID-19 pandemic and any information gaps in the public's understanding. The population of interest was Kenyans who were accessing and using social media and other digital publications, and the Working Group members were the primary users of the reports generated. The RCCE team in the WHO Country Office in Kenya and AIRA used the insights gained to support public health preparedness and the responses for COVID-19, mpox and Ebola virus disease.

#### Ethical considerations

An example of the application of ethics and privacy in infodemic management occurred during the First Draft+WHO+Stanford SMS Course that targeted Kenyans through their mobile phones and social media. By ensuring privacy commitments were signed, the project ensured that information responses, and subsequent training, were not released to the public or used for any other purposes.

The social listening conducted by AIRA to identify misinformation, disinformation and information gaps, provided an honest representation of facts, opinions, beliefs and research from online social listening. This was necessary for users of the social listening reports.

AIRA produced short videos using Viral Facts to debunk, prebunk or promote literacy. Video content played a large role in shaping how people viewed the world and their responses to public health misinformation and disinformation. The content producers shouldered a lot of responsibility, as errors could potentially affect the efforts to save lives. AIRA ensured that the privacy, dignity, respect and accountability of the subjects and subject experts were observed during the interviews and videos.

#### Box 6 Case study: Motivational interviewing

This case study used infodemiologists, who are peer health communication specialists, who were selected from the online communities in which they operate. The infodemiologists monitored, evaluated and responded to claims and narratives that were considered potential harmful to the health of individuals in the community. The infodemiologists received training to monitor their online communities and assess the claims and narratives that were being circulated. The training also taught various communication techniques, based on the principles of motivational interviewing, to allow the infodemiologists to respond effectively. This approach is known as community-oriented motivational interviewing (58).

The infodemiologists gathered infodemic insights from their communities and shared this information with public health professionals as one part of a suite of social listening approaches. They also shared insights with other infodemiologists to capture all the relevant information and rumours with health implications. This allowed them to be better prepared to address concerns or rumours, even before they started circulating in the community.

The community was the primary beneficiary of the social listening and the insights into the infodemic that were gleaned by the infodemiologists. The public health community, and other communities with participating infodemiologists, also benefited from the insights that were shared across the infodemic network.

#### Ethical considerations

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The community, in partnership with subject matter experts, had to set the thresholds at which circulating information was deemed risky enough to require intervention. Feedback from the community was incorporated into the risk analysis on the information circulating in the community.

As the workload grew, governance structures were established that comprised of two distinct committees the first of which was an expert committee that weighed in on the information and rumours that were circulating, noting the health risk of certain behaviours and practices and considering the strength of the evidence behind them. This information was passed along to a committee of community stakeholders, who worked with the infodemiologists to identify risk thresholds. This process was iterative as the scientific understanding of the risk of these behaviours and the consensus guidelines evolved over time.

During data collection and publication, individual's names were not recorded to ensure that people could not be retroactively identified through search engine text queries, the narratives were paraphrased, and only interventions in public social media settings were monitored. Everyone with access to the data was counselled on data and privacy protection policies.

#### Capacity-building

During the training, the infodemiologists were taught about the importance of respecting individuals' privacy. The infodemiologists' knowledge of the values of their communities, their own identities as members of these communities with shared values, was also emphasized as important. Motivational interviewing was originally developed for one-on-one counselling sessions, in which an individual has consented to the counselling process. As this work involved adapting motivational interviewing techniques to online community settings, everyone involved was aware of the ethical issues involved with using motivational interviewing techniques at the level of the community.

As stakeholders in their own communities, the infodemiologists were well positioned to carry out social listening activities and understand what information or rumours would undermine health behaviours and which were inconsistent with community values. This could mean not just recognizing falsehoods, but identifying the narratives that appeared to be undermining community values that were supporting public health. In the training sessions, it was emphasized that it is ethical for infodemiologists to intervene in these types of situations precisely because they are members of the community. The infodemiologists were also encouraged to invoke their shared community values when doing this. However, it would not be ethical for anyone outside of the community to leverage community values in these interventions. The training included discussions of when it is ethical to engage in social listening, risk analysis and response (i.e. infodemic management activities), acknowledging that this is context dependent. In some communities, it may be possible to adopt an identity and community values, given that even new members have the legitimacy to intervene in such a manner and speak about the interrelationship between community health and values. In other communities, identity is determined by birthright or other inherent characteristics and cannot be obtained simply by sharing language, race, ethnicity or values. This is why it is important that infodemiologists must be from the communities in which they are intervening, as they are best able to speak to and navigate these contextual issues with these communities.

Ingrained in this work is a process that has been designed to support the challenging work of the infodemiologists and to promote the ideals of deliberate practice to maintain an improvement mindset (Ericsson 2008). This process was achieved by asking the infodemiologists to self-reflect in writing after each intervention. Feedback is provided on the infodemiologists' interventions and these activities were supplemented with weekly meetings in which the challenges and opportunities presented by the process were collectively reflected on. Please see Scales et al. (58) for more details.

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### 3.5 Governance systems, laws, regulations and ethics

This section concerns the development, implementation and enforcement of ethical and legal frameworks designed to combat infodemics, safeguard digital platforms and protect the public's right to accurate health information. It includes cybersecurity laws or cyber-resiliency strategies, public advisory guidelines with legal mandates, legislative measures to address mis/disinformation spread, regulations for information platforms, content moderation policies and consumer protection laws.

The implementation of governance systems, laws, regulations and guidelines based on a solid and consistent ethical framework is an essential component of infodemic management. Collaboration among these stakeholders is key to effectively developing, implementing and enforcing these measures, ensuring a responsible, human rights-based and ethical information environment that protects the public's right to accurate health information.

#### 3.5.1 Key stakeholders

- **Government authorities** are responsible for crafting, implementing and enforcing laws and regulations related to cybersecurity, mis/disinformation and digital platforms. They also oversee the implementation of these policies.
- **Legal experts and institutions** provide legal expertise and guidance in drafting, implementing and enforcing legislation, ensuring that laws align with ethical principles and protect the public interest.
- **Public health agencies** collaborate with government authorities to develop and implement public advisory guidelines and support legislative measures aimed at combating mis/disinformation during health crises.
- **Technology companies and digital platforms** implement content moderation policies and adhere to international human rights law and ethical standards to curb the spread of mis/disinformation on their platforms, ensuring ethical conduct.
- **Civil society organizations** advocate for consumer protection, digital rights and ethical standards in information dissemination, often influencing legislation and regulatory decisions. They actively oversee the implementation of ethical frameworks.
- **Media and journalism associations** play a significant role in ensuring professional and ethical reporting, adhering to ethical journalism standards and supporting the implementation of ethical information practices.
- **Academic and research institutions, including IRBs**, conduct studies and provide insights into the impact of laws and regulations and digital ethics and mis/disinformation, contributing to effective implementation.
- **Legal and ethical committees** oversee compliance with laws and ethical standards, ensuring the responsible implementation of the ethical framework in information management.
- **International bodies and organizations** provide guidance and promote international cooperation in addressing digital ethics and mis/disinformation, facilitating the implementation of ethical frameworks, particularly during global health crises.
- **Ethics and compliance professionals** develop and implement ethical guidelines and compliance programmes to ensure the ethical implementation of infodemic management practices.
- **Cybersecurity experts** play a crucial role in developing, implementing and enforcing cybersecurity laws and strategies to protect information systems from cyber threats.

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### 3.5.2 Privacy

- **Privacy by design:** Incorporate privacy considerations from the present guidance document into the design and development of laws and regulations related to social listening in infodemic management.
- **Data protection legislation:** Enact robust data protection legislation that safeguards individuals' privacy rights, including provisions about informed consent, data minimization and secure data handling practices.
- **Transparency and accountability:** Promote transparency and accountability in the implementation and enforcement of laws, regulations and ethical frameworks, providing clear information on how privacy is protected and holding stakeholders accountable for compliance.
- **Regular review and updating:** Periodically review and update laws, regulations and ethical frameworks to keep pace with technological advancements and evolving privacy risks, ensuring that they remain effective in protecting individuals' privacy rights.

### 3.5.3 Responsible large-scale automated data processing

- **Alignment with ethical principles:** Ensure that laws, regulations and codes of conduct governing data processing align with the foundational ethical principles detailed in this document. Embed these principles into legal frameworks to guide responsible data processing practices.
- **Comprehensive data protection measures:** Enforce robust data protection measures within legal frameworks, specifically covering large-scale data processing processes, to safeguard individuals' privacy. Implement regulations that require organizations to adhere to data protection standards, such as encryption, anonymization and secure storage, to mitigate risks associated with large-scale data processing.
- **Oversight and compliance mechanisms:** Establish oversight mechanisms and compliance frameworks to monitor adherence to laws, regulations and ethical standards governing data processing. Empower regulatory agencies and oversight bodies to enforce compliance through audits and investigations.
- **Stakeholder collaboration and engagement:** Promote collaborations and engagement among stakeholders, including government authorities, legal experts, technology companies, civil society organizations and academia, to develop and implement effective laws, regulations and ethical frameworks. Solicit input from diverse perspectives to ensure comprehensive coverage and equitable implementation.
- **Continuous evaluation and adaptation:** Continuously evaluate the effectiveness of laws, regulations and ethical frameworks in addressing challenges related to data processing. Regularly review and update legal and ethical standards to reflect evolving technological advancements, societal norms and ethical considerations.

### 3.5.4 Applying fair, equitable and inclusive processes of decision-making

- **Diverse stakeholder consultation:** Engage a diverse range of stakeholders, including representatives and legal experts from marginalized communities and civil society organizations, in the development of laws, regulations and ethical frameworks related to digital ethics and mis/disinformation. Ensure that all voices are heard and considered in decision-making processes.
- **Cultural sensitivity in policy development:** Take into account cultural nuances and diverse perspectives when drafting laws and regulations related to digital ethics and mis/disinformation.



Ensure that policies are culturally sensitive and relevant to all communities, avoiding biases and promoting inclusivity.

- **Equitable access to legal protections:** Ensure equitable access to legal protections and resources for all individuals and communities, regardless of socioeconomic status, geographical location or other factors. Implement measures to address disparities in access to justice and ensure that legal frameworks protect the rights of marginalized groups.
- **Evaluation and adaptation of legal frameworks:** Regularly evaluate the impact of laws and regulations on infodemics through an equity lens. Collect data on enforcement outcomes and assess whether policies are achieving their intended goals while promoting fairness and inclusivity. Use findings to inform adjustments and improvements to the legal framework over time.
- **Education and awareness campaigns on legal rights:** Conduct education and awareness campaigns to inform individuals and communities about their legal rights and protections related to mis/disinformation and infodemics. Ensure that information is accessible and culturally relevant, empowering all members of society to advocate for their rights and hold stakeholders accountable.

#### 3.5.5 Trust

- **Develop clear and fair legislation:** Legislation should be fair and balanced, protecting public health and safety without infringing on individual rights and freedoms.
- **Ensure transparency in legal processes:** Maintain transparency in the development, implementation and enforcement of laws and regulations. This includes open consultation processes with stakeholders, public access to legislative debates and clear explanations of the rationale behind laws. Transparency in these processes can enhance public trust in the legal framework.
- **Promote ethical standards:** Embed ethical considerations into laws, regulations and policies related to social listening and infodemic management. This involves ensuring that measures are in place to protect privacy, prevent discrimination and uphold the highest standards of integrity in information dissemination.
- **Implement accountability mechanisms:** Establish accountability mechanisms for breaches of laws and ethical standards, especially for digital platforms and media outlets that disseminate mis/disinformation.
- **Engage in multistakeholder collaboration:** Promote collaborations among government agencies, legal experts, public health authorities, technology companies, civil society and other stakeholders in the development and enforcement of laws and regulations. Multistakeholder collaboration ensures that diverse perspectives are considered, enhancing the trustworthiness and effectiveness of the legal framework.

#### 3.5.6 Feedback integration

- **Incorporate adaptive sunset clauses:** Include sunset clauses in legislation and policies related to social listening and infodemic management, ensuring that they are time-bound and subject to reassessment and renewal. This approach ensures that measures are only in place for as long as necessary and can be adapted or discontinued based on feedback and evolving circumstances.
- **Facilitate multistakeholder feedback loops:** Establish formal channels for ongoing feedback from all key stakeholders, including government authorities, public health agencies, technology companies, civil society organizations and the public. This feedback should inform the continuous improvement of legal and ethical frameworks.

- **Implement transparent evaluation metrics:** Develop and publish clear metrics for evaluating the impact of laws and regulations on combating infodemics. Transparency in evaluation processes encourages accountability and public trust.
- **Promote public consultation and participation:** Engage the public and affected communities in the formulation and review of laws and policies. Public consultation processes should be designed to gather diverse perspectives and feedback, ensuring that legislative measures are socially inclusive and equitable.
- **Embed continuous learning and education:** Encourage continuous learning and education for all stakeholders involved in the development, implementation and enforcement of legal and ethical frameworks. This includes organizing workshops, seminars and training programmes focused on the latest developments in infodemic management and related legal issues. Ensuring that stakeholders are well-informed and up to date enhances the capacity for responsive and informed decision-making.

#### 3.5.7 Community engagement

- **Develop participatory policy-making processes:** Encourage the involvement of community representatives in the development, review and revision of laws, regulations and ethical guidelines related to social listening and infodemic management. This ensures that the legal frameworks reflect the diverse needs, values and perspectives of the communities they aim to serve.
- **Facilitate public education and awareness campaigns:** Use community engagement to educate the public about the legislation on topics, such as cybersecurity, data protection, infodemics and mis/disinformation. Tailor these campaigns to different community needs and literacy levels to maximize understanding and impact.
- **Ensure transparency in legal and regulatory processes:** Make the processes of developing, implementing and enforcing laws and regulations transparent to the community. This includes openly sharing the rationale behind specific legal measures, how they are enforced and the outcomes of these actions.
- **Implement continuous evaluation and adaptation:** Regularly assess the effectiveness of laws, regulations and ethical guidelines in managing infodemics, and incorporate community feedback into this evaluation. Be prepared to adapt policies in response to new challenges, technological advancements and evolving community needs.

#### 3.5.8 Pursuing understandability of communication

- **Develop clear communication guidelines for legal drafting:** Create a set of guidelines with a human rights-based approach for legislators and legal drafters, focused on clarity and simplicity when writing laws and regulations related to social listening and infodemic management.
- **User-centric legal design:** Apply principles of user-centric design to the production of legal and ethical documents, ensuring that they are not only available but most importantly understandable for different publics. This might involve the development of lay summaries written in plain language or the use of visual aids, such as charts or infographics, to break down and illustrate the key points of laws and regulations.
- **Ethics and law explainer videos:** Produce short, informative videos that explain new regulations and ethical considerations in simple terms. These videos can help simplify complex legal concepts and provide practical advice on compliance in a format that is easy to consume and understand.

- **Public consultation forums with legal experts:** Organize public forums, both online and in-person, where community members can engage directly with legal experts, ask questions and gain a clearer understanding of laws and regulations related to social listening and infodemic management. These forums can also serve as feedback mechanisms for improving the clarity and effectiveness of legal communications.

#### Box 7 Case study: Internews

Rooted in Trust was a global pandemic information response programme that responded to the unprecedented spread of rumours and misinformation about COVID-19, vaccines and other emerging health issues. Rooted in Trust worked alongside more than 41 local media, health, humanitarian and community service organizations to identify harmful misinformation and support these organizations' roles as trusted information providers in their communities in Afghanistan, Brazil, Colombia, Haiti, Iraq, Lebanon, Madagascar, Mali, South Sudan, the Central African Republic, the Democratic Republic of Congo, the Philippines, Sudan, Yemen and Zimbabwe. Rooted in Trust is a Internews Network project, which is funded by the USAID Bureau of Humanitarian Assistance. Since 2020, Rooted in Trust has tracked more than 36 000 rumours about the virus causing COVID-19 in more than 30 languages, and reached over 100 million people with accurate and relevant information. In response to the unique rumours sourced from each country context, the project produced a total of over 130 rumour analysis bulletins, 500 radio broadcasts and 480 other media stories to connect communities directly with timely, accurate and contextualized health-related information.

The project was designed with a bottom-up horizontal structure, with local partners taking the lead in localizing and implementing Internews' humanitarian misinformation management methodologies. Local partners were chosen based on their connections to the target community, their ability to identify and respond to information gaps in a contextualized manner and those who were existing trusted information providers. A variety of local partners contributed to this project, including small community media outlets, humanitarian community engagement organizations, health service providers and organizations representing the needs of specific groups, such as indigenous communities or LGBTQI+ migrants. These local partners received support from the Rooted in Trust team, both at the country level and by connecting them to technical guidance provided by a global technical team. Regional managers were responsible for coordinating activities across countries, promoting cross-country learning and overseeing the work of the national teams. The objective of the project was to strengthen information ecosystems for communities by ensuring these communities had access to accurate, timely and actionable health information delivered in their preferred languages and formats using two-way communication channels that acknowledged people's concerns and encouraged collaboration to avoid ill-timed communication and to foster trust in the affected population.

#### Ethical considerations

##### Setting up a Social Listening Team

- It was ensured that social listening efforts were led by individuals who belonged to and understood the communities or populations that were listened to.
- Communities were involved in establishing social listening systems to mitigate external biases.
- The selection of social listening teams prioritized sensitivity and understanding of the particular context/community, rather than focusing solely on technical aspects.

##### Data collection

- **Social listening efforts encompassed a combination of practices**, including manual collection of social media data (for access to community spaces), in-person rumour collection through regular listening groups, and complementary use of social listening software to cross-reference findings and trends. This helped to address some ethical concerns related to exclusive online or software-based data collection, such as misrepresentation of minority languages, digitally disconnected individuals and vulnerable groups. There are some contexts in which it was only possible to collect social media data

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for a number of logistic reasons, and in these contexts it became paramount to be extra transparent about the possible biases and limitations in the data.

- **Transparency and respect for privacy:** Engaging in social listening without clear disclosure or using deceptive practices to gather information can erode trust and ethical standards. When analysing data from private or closed online spaces, obtaining informed consent from participants was essential, ensuring that participants understood how their data would be used. Monitoring public discussions may inadvertently capture personal or sensitive information and balancing the need for insights with respecting individuals' privacy is crucial to avoid overstepping boundaries.
- **All social listening data is stored in a secure, encrypted and private cloud** accessible only through institutional accounts. These data were never shared or transferred to any third parties. Public-facing dashboards presented trends in a carefully anonymized manner. It should be clear who owns the data collected and how it will be used. Users may not be aware that their conversations are being monitored, raising questions about control over their own data.
- **Transparency and accountability:** Being transparent about the purpose of social listening, the methods used and the potential impact of the research is important for maintaining trust and accountability.
- **The community drove the agenda** for which concerns or data were collected, and the collection team adapted accordingly.

#### Data analysis

- **Responsibility to act:** Teams were trained in a detailed escalation method for handling instances of protection concerns; for example, high-risk threats towards community or humanitarian or health actors identified through the social listening methodology.
- **Data analysis was carried out in collaboration with the community.** Misinterpreting or misrepresenting online conversations may lead to inaccurate conclusions. Context is key, and efforts were made to avoid drawing conclusions without a thorough understanding of the broader context.
- **Understand what the results of social listening reveal:** Instead of solely focusing on identifying inaccuracies or the exact origin of collected rumours, social listening teams were trained in research techniques to understand what these rumours or trends reveal about community concerns, risks and needs. Fact-checking analysis centred on responding to those needs, concerns and risks with an approach that prioritized localized, contextualized and actionable responses over traditional fact-checking methods.

#### Data reporting and use

- Teams were encouraged to explicitly acknowledge the limitations of their methodology (such as the lack of representativeness of social listening data) and to communicate uncertainty. All social listening reporting was designed to facilitate dialogue and create space for two-way communication.
- Risk assessments were carried out before naming specific users or groups during reporting. In most cases no individuals (unless the individual was a public figure) or non-public social media groups were exposed or highlighted.
- Social listening reports and products encompass various recommendations and actionable information for different actors within the information ecosystem.

#### Capacity-building

- Specific training on data protection and security, and ethical governance and privacy topics were incorporated into the various training sessions that the teams received.
- Interns staff received free work-related counselling and technical support.

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## 4. Conclusion

This guidance document delineates an ethical framework for social listening in managing infodemics. It stresses the imperative of embedding ethical considerations within social listening and infodemic management processes to safeguard human rights, ensure societal welfare and uphold global health security amid the complexities caused by infodemics. The main points from this guidance document underscore the significance of respecting human rights and the necessity for an ethical framework when engaging in social listening activities for proactive engagement from a diverse array of stakeholders. This framework, grounded in international regulations and established ethical principles, seeks to harmonize effective social listening in infodemic management with ethics, highlighting how using ethical approaches to social listening should not be considered as an obstacle to the effective management of infodemics, but

rather as an opportunity to build trust among all involved stakeholders, thus increasing the effectiveness of social listening in infodemic management practices.

The domain of infodemiology and its implications for public health constitutes a relatively new area of research. Consequently, ethical guidance and legislation are still in their early stages of development. This document seeks to establish an initial foundation for ethically steering social listening and infodemic management practices. It acknowledges the existence of several uncertainties, emphasizing the need for ongoing investigation and development.

There is a noted absence of frameworks establishing accountability and professional liability for infodemic managers, including the formulation of a code of conduct to navigate their practices with ethical and responsible oversight. Therefore, this guidance document calls for the establishment of robust evaluation processes to scrutinize the effectiveness and ethical compliance of social listening in infodemic management practices, ensuring they fulfil their objectives without transgressing ethical boundaries.

This guidance document also acknowledges that the interaction between ethics and law in infodemic management is complex. Although this guidance defines ethical practices in social listening and infodemic management, it recognizes the existence of considerable legal challenges and gaps. The necessity to tailor global ethical guidance to local laws and regulations highlights the challenges of international applicability and enforcement, which are identified as critical areas necessitating future focus.

In conclusion, this document urges organizations to adopt and implement the presented recommendations to promote ethical practices that safeguard the interests of all stakeholders, including those in vulnerable positions. This guidance aims to bolster the effectiveness of public health responses in the face of infodemics, by promoting an environment of trust between all stakeholders and in the processes of social listening for infodemic management. It is essential for future research and policy development to tackle the uncertainties, and to be vigilant for emerging challenges. These efforts will ensure that social listening and infodemic management can be conducted with ethical integrity and effectiveness on a global scale.

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## US CDC case example

### **1. Can you briefly describe the social listening or infodemic monitoring function in your organization or project.**

The US CDC Insights Unit monitors ~24 different data sources that can be divided into social media, news media, external polls, and surveys, internal CDC surveys, CDC website metrics, questions to CDC's national call center (CDC-INFO), peer-reviewed literature, and third-party/partner reports. Initially, we published reports bi-weekly and have since gone to quarterly national-level reports with more frequent "special" reports that focus on a specific topic, demographic group, geographic location, or some combination of the three. Social listening originally focused on COVID-19 vaccine narratives and then expanded to all vaccines. We now focus on all priority health topics. The unit works to identify the public's questions, concerns, frustrations, information voids, and circulating inaccurate health information.

### **2. How is it organized? What kind of organizations or teams are involved?**

Since its inception, the Insights Unit has comprised of 3-10 people, with the majority being data analysts but has also included writers, editors, subject matter experts, and graphic designers. We regularly work with centers, divisions, and program staff to identify ways to address the themes in our reports. We also work with partners to disseminate the report and offer trainings, consultations, and technical assistance to address the narratives in the reports.

### **3. What is the public health objective of the project/activity?**

The objective of these efforts is to provide internal CDC and external partners with reports on current threats and opportunities in the information environment, solutions to address or leverage these opportunities, and resources to reduce barriers to action with the goal of increasing healthy behaviors.

### **4. Is there a public-facing web page, publication, or conference abstract about this project or team?**

We [publish the majority of our reports online](#), although some remain as internal products.

### **5. What community or population are your social listening or infodemic management efforts focused on?**

The Insights Units social listening efforts usually focus on a national audience, but at the request of leadership, we have looked into specific demographic populations or geographic regions while a few times we have looked at both (e.g., CIS heterosexual black women living in Atlanta, Georgia, USA).

### **6. Who is the intended user of the social listening and infodemic insights analysis that you produce?**

- a. Internal CDC leadership, communicators, and program staff
- b. External partners, including community-based organizations, advocacy groups, professional associations, international non-governmental organizations, and other governments.

### **7. What are some privacy, human rights, ethics and governance considerations that you take into account across data collection, analysis, reporting and use of the social listening and infodemic insights? How do these considerations apply to people working with you through different contracting or staffing mechanisms (staff, consultant, institutional contactor, service provider, etc)?**

The Insights Unit does not track or "follow" individual people or accounts. However, we do monitor responses to posts on US CDC social media posts. We do not join private groups, websites, or forums. We do not attempt to access any content that would require us to present ourselves as anything other



than the US CDC. We take an equity-based approach and increase the threat level of a narrative if it is spreading significantly in a group that would suffer a disproportionately negative impact from the existence of the narrative. The Insights Unit does not advocate for the removal of content published on social media.

**8. Are there overarching or institutional governance or ethics frameworks that guide your work?**

- a. All USG participation in infodemic surveillance is governed by US Constitution's First Amendment protections around the freedom of expression. As practiced, this means that USG does not suppress or restrict mis- and dis-information, nor can it coerce social media companies remove posts or set content-moderation policies. Actions undertaken by USG that affect speech is further subject to strict scrutiny by US courts.
- b. The US CDC Insights Unit identifies current trends in the information environment to empower its partners to participate in the "marketplace of ideas" to counter mis- and dis-information by promoting trusted sources of information, amplifying public health messages, and building trust.
- c. [Amended Executive Order 12731 5 C.F.R 2635.101\(b\)](#)
- d. Shortly after the Insights Unit was formed, we presented our process and activities at the CDC Monthly Ethics Committee Meeting to get feedback on our approach and gather additional suggestions of ethical considerations.

**9. What types of training or capacity building have you provided to staff involved in social listening and infodemic management activities that address ethics, governance, and privacy topics?**

- a. When staff are onboarded to the Insights Unit, the ethical considerations noted in Question 7 are clearly explained, including the rationale. Additionally, during weekly team meetings, we sometimes discuss new ethical dilemmas and considerations as they arise.

**10. Are there any types of support that you provide to staff to help them cope with the information overload, exposure to misinformation, and cognitive effects of working in this professional area?**

- a. CDC provides all employees access to the Employee Assistance and Referral Programs, which gives employees access to confidential, professional counseling and referral services to help them manage life events (e.g., legal matters, finances, education, family matters, etc.). Additionally, the unit's weekly check-in meetings have always been a time to discuss what they are seeing and allows the team a safe space to express their feelings about what they are seeing and how it is impacting them emotionally. Additionally, the items in this question impacted me personally so much when I joined the team that every time a new employee expressed interest in joining the team, these cognitive effects were discussed.

**11. Are there any best practices or lessons learned that you have derived from your project or activities in relation to social listening and infodemic management and ethics?**

- a. Best Practice: When the analysts are collecting data or writing up the findings of narratives that are especially troubling, give additional time for writing and editing as editorializing increases dramatically.
- b. Lesson Learned: Ensure the team knows that there is an impact on one's mental health, and advocate that they stop working when they are noticing a negative impact. It is also important for the leadership of the team to model this behavior.
- c. Best Practice: Ensure team members know and reemphasize the importance of them expressing their ethical concerns. Additionally, be clear with them that ethics are situation-specific, and they are not a list of do's and don'ts but rather discussions about perceptions of right and wrong that we need to come to a consensus on.

- 12. Looking ahead, are there new potential challenges or opportunities that you are considering related to ethics, human rights, privacy, and governance in context of social listening for infodemic management?**
- a. As we look to include more AI/ML tools, we must be extra vigilant to recognize and mitigate human and data biases that are inadvertently incorporated into AI/ML models.
  - b. Infodemic managers must continue to be stalwart advocates of continued advancement and incorporation of ethical principles. We must continue to recognize and build our capacity to accurately relay the public's perception to leadership regardless of how those perceptions reflect reality or how critical they are of our work.
- 13. What suggestions or recommendations would you have for other health authorities that are in the early stages of setting up social listening and infodemic insights functions as it relates to ethics, human rights, privacy, and governance considerations?**
- a. It is important to recognize that infodemic response must be rooted in human rights and should not infringe on the individuals' freedoms as established in the International Covenant of Civil and Political Rights that states "everyone shall have the right to freedom of expression; this right shall include freedom to seek, receive and impart information and ideas of all kinds, regardless of frontiers, either orally, in writing or in print, in the form of art, or through any other media of his choice"
  - b. We echo the sentiments as expressed in a recent Secretary General's report – "Approaches that seek simple solutions to this complex problem are likely to censor legitimate speech that is protected under international human rights law. Such overbroad restrictions are likely to exacerbate societal ills and increase public distrust and disconnections, rather than contribute to the resolution of underlying problems."
  - c. I would recommend that they ensure the infodemic insights functions have the autonomy to put forward the facts and that health authorities have a responsibility to everyone they serve rather than just those members of the public that express positive feelings toward them.