Health-Security Interface Technical Advisory Group

Report of the annual in-person meeting

9–10 July 2024 | Geneva, Switzerland

World Health Organization

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ISBN 978-92-4-010127-2 (electronic version)
ISBN 978-92-4-010128-9 (print version)

Suggested citation. Health-Security Interface Technical Advisory Group: annual meeting report, Geneva, Switzerland, 9-10 July 2024. Geneva: World Health Organization; 2024. Licence: CC BY-NC-SA 3.0 IGO.

Cataloguing-in-Publication (CIP) data. CIP data are available at https://iris.who.int/.

This publication contains the report of the fourth meeting of the Health-Security Interface Technical Advisory Group and does not necessarily represent the decisions or policies of WHO.

Contents

Acknowledgements

The Health-Security Interface Technical Advisory Group annual in-person meeting, held on 9-10 July 2024, was made possible through the dedication and expertise of the members of the advisory group. We would like to express our sincere appreciation to the Chairperson, Professor Tom Inglesby, and the Co-Chairperson, Dr Poh Lian Lim, for their exceptional leadership and guidance throughout the meeting. We also extend our deepest gratitude to all participants for their invaluable contributions and active engagement.

Our heartfelt thanks go to the technical experts and advisors who provided critical insights and recommendations, significantly enriching the deliberations. We are particularly grateful to UNODA, INTERPOL, WOAH, OPCW for their presentations and technical inputs.

We are especially thankful to our donor, Canada's Weapons Threat Reduction Program, whose generous support made this meeting possible.

Executive Summary: Key outcomes and actions

This annual meeting was convened to review the progress and advance the work of WHO and the Health-Security Interface Technical Advisory Group (HSI-TAG). During the two-day meeting, HSI-TAG members met with WHO Headquarters Secretariat, WHO Regional Office focal points, representatives from the relevant WHO advisory groups and other UN and international partners (The International Criminal Police Organization [INTERPOL], World Organisation for Animal Health [WOAH], Organisation for the Prohibition of Chemical Weapons [OPCW] and the United Nations Office for Disarmament Affairs [UNODA]) to discuss global and regional perspectives and priorities on deliberate event (DE) preparedness and Response strategies. The group also discussed the norm and standard setting work of WHO, country support and monitoring and evaluation of impacts at the country level.

Discussions after each presentation spanned a range of topics related to strengthening DE preparedness and response capacity across the three levels of WHO (Headquarters, Regional Offices, and Country Offices) and the need to continue to articulate the roles and responsibilities of WHO, the HSI-TAG and the partners. A scenario-based DE exercise with the UN and the other international partners confirmed the important role of WHO in providing early stage technical, operational and coordination support to the affected country while the source of the event remains unclear (e.g., natural, accidental or deliberate). Subsequent discussions touched upon the responsibilities of each partner organization once the source of an event is eventually confirmed, with the HSI-TAG having a particularly prominent role in the case of DEs.

A brainstorming session organized towards the end of the meeting concerned future directions in the field of DE prevention and response, including how the WHO Secretariat and HSI-TAG can address the rapidly emerging risks of Artificial Intelligence (AI) on synthetic biology. Discussions touched on critical safeguards such as collective efforts of developers to anticipate and mitigate risks, policy makers to adopt legal frameworks and governance mechanisms and researchers to pass education and training requirements.

Mid-biennium HSI-TAG recommendations

In consideration of both past accomplishments and outstanding goals, the HSI-TAG proposed mid-biennium priority actions to serve as a guide for three core work areas throughout the rest of this biennium (expanded upon in Section 6, “Future Considerations”, of this report):

WHO DEs response and surge capacity development

- WHO should further strengthen its ongoing efforts to engage essential functions for DE preparedness across the organization, including those of the regional offices, through the WHO Deliberate Events Task Force (DETF).
- WHO should continue to develop surge capacity by its roster mechanism and training as well as partnerships (e.g., Emergency Medical Teams [EMTs], standby partners, civil-military health collaboration) along with characterization and scope of work of each, and engage the HSI-TAG for technical and operational standardization across these partnerships.
- WHO’s role in a DE should be on training and preparedness/readiness as well as providing strategic, technical and operational assistance in crisis response, particularly ensuring impacted Member States are able to provide good clinical management of the affected.
- WHO BSP unit should continue to refine its Risk Assessment tools, clarify the explicit purpose of what is now termed the DE Specific Risk Assessment and describe how it is distinct from other WHO Risk Assessment tools.

Country capacity building

- To improve chemical, biological, radio-nuclear (CBRN) event preparedness, WHO should work with Regional Offices and Member States to improve DE awareness and promote the use of the National Self-Assessment Tool (NSAT).
- Following missions to support Member States for DE responses, WHO should perform After Action Reviews (AARs) across its three levels with the respective national authorities to continually improve preparedness and response of both parties.
- The *Public Health Response to the Deliberate Use of Biological and Chemical Agents*,[1] (known colloquially as "The Blue book") guidance last revised in 2004 should be updated to reflect the changing global and regional security landscapes and advances of technologies. It should focus on the needs of its target audience (primarily public health officers), serving as an easy-to-use reference and policy implementation guide with practical information.

DEs preparedness/readiness and inter-agency response coordination

- WHO (Headquarters and Regional Offices) and partners with DE experience should plan multi-sectoral DE simulation exercises with both UN (e.g., Food and Agriculture Organization of the United Nations [FAO], Biological Weapons Convention [BWC], United Nations Secretary-General's Mechanism for Investigation of Alleged Use of Chemical and Biological Weapons [UNSGM]) and non-UN (e.g., INTERPOL, WOAH, OPCW, International Committee of the Red Cross [ICRC]) entities to ensure streamlined event response capability and clear roles and responsibilities without gaps.
- WHO should consider both one-to-one Memorandum of Understanding (MoU) and one-to-many partnership agreements to resolve uncertainty regarding roles, responsibilities and resources.
- WHO should identify tangible near-term opportunities for the relevant TAGs (Technical Advisory Group on Biosafety (TAG-B), Technical Advisory Group on the Responsible Use of the Life Sciences and Dual-Use Research (TAG-RULS DUR), Scientific Advisory Group for the Origins of Novel Pathogens [SAGO] and HSI-TAG) to collaborate to better delineate preparedness/readiness and response roles.
- WHO should strengthen the application of the foresight approach to assessing CBRN risks, ensuring that risk database development and mathematical modelling efforts have tangible consequences for improving event detection, assessment, monitoring and response capability.
- WHO should support both Regional and Country efforts to compose regulations and guidance documents that can minimize the misuse of emerging technologies like AI.
- WHO should provide HSI-TAG with briefings on DEs to which it has responded in the form of case study reports.

1 https://www.who.int/publications/i/item/public-health-response-to-biological-and-chemical-weapons-who-guidance-(2004)

Introduction

The HSI-TAG was established by WHO to provide advice across the interface between the public health and security sectors, also known as the Health-Security Interface (HSI), including preparedness and response to DEs involving CBRN agents as well as emerging threats such as information and cyber threats. This meeting provided the opportunity for the HSI-TAG members to discuss the current landscape and future development of projects related to the HSI and to provide technical guidance and assistance to WHO. The 18 current HSI-TAG members[1] have a breadth of expertise including, public health intelligence, chemical and biological preparedness and readiness, biosafety and biosecurity, risk communications and civil military relations, amongst others. The Biosecurity and Health Security Protection (BSP) Unit in the (previously named) Epidemic and Pandemic Preparedness and Prevention (EPP) Department serves as WHO Secretariat to the HSI-TAG.

The annual two- day meeting, was convened to 1) advance the work of the HSI-TAG by meeting in-person to review the progress of its working groups and facilitate in-depth and extensive discussions on these initiatives; 2) meet with WHO Headquarters and Regional Office focal points to discuss global and regional perspectives and priorities and to identify unmet Member States' needs related to preparing for and responding to deliberate threats; 3) discuss and develop consensus on strategies for the second half of 2024 and priority actions for the HSI-TAG; and 4) review, discuss and endorse HSI strategies, priority projects and deliverables for the current biennium (2024–25).

Declaration of Interest

All the experts attending the meeting had completed and submitted their Declaration of Interest (DOI) and Confidentiality Undertaking agreement. It was assessed that all members could fully participate in the meeting. However, the Secretariat, the Chair, and the Vice-Chair noted several potential conflicts of interest and were reminded to request that the respective members abstain from voting or making recommendations if the subject of the vote concerns a relevant conflict of interest. A full report on DoI review is published on the WHO HSI TAG webpage.

1 https://www.who.int/groups/health-security-interface-technical-advisory-group-(HSI-TAG)

1. HSI-TAG now and future, WHO programme update briefing

The meeting opened with welcoming remarks from Dr Maria Van Kerkhove, acting Director of Epidemic and Pandemic Threat Management (EPM), housed within the WHO Health Emergencies Programme. Dr Van Kerkhove conveyed that, using the outcomes of a programme-wide functional review, the Department recently was renamed to better reflect its role in addressing global health challenges, caused by epidemic and pandemic threats including biosecurity and biosafety issues. The renaming additionally serves to uphold the organizational goal set out by the organization's new General Programme Work (GPW14),[2] to become an "evolving and fit-for-future WHO." The Department will also be focused on ensuring equitable access to medical countermeasures, a key element in ongoing discussions for a comprehensive Pandemic Accord.

The BSP Unit, supported by the HSI-TAG, is important to the newly rebranded Department's success as well as WHO's broader goals. The Department is aligning its work to build Member States' capacity in all facets of health emergency prevention, preparedness, response and resilience (HEPR). In support of this goal, Dr Van Kerkhove remarked on how the BSP Unit's 2024-2025 work plan has been developed and focuses on enhancing the HEPR "five Cs" (Collaborative surveillance, Community protection, safe and scalable Care, access to Countermeasures, emergency Coordination).[3] In line with the GPW14, the first goal is to ensure WHO is fully focused and aligned for impact at country level. At the same time, as the leading UN agency for health, the organization stands ready to coordinate across the UN and non-UN international agencies for major DE preparedness and response.

On behalf of the senior executives of the Organization, Dr Van Kerkhove renewed the expectation that the HSI-TAG will continue to support WHO's work in HEPR and emphasized the importance of its mission in the current context of a polarized and fragmented world undergoing a rapid technological revolution.[4]

Following the acting director's opening remarks, the WHO Secretariat began the meeting by providing an overview of the BSP Unit, its current roles and activities, highlighting its goal to bridge health and security, particularly in relation to CBRN agents and emerging threats such as cyber-attacks and weaponization of information (disinformation). The BSP unit has been focusing on enhancing WHO preparedness for DEs and strengthening regional and country capacity to prevent, prepare for and respond to DEs.

A structured set of updates on programme activities was provided alongside the respective 2024-25 biennium priority actions each programme activity falls under, so that HSI-TAG members could get briefed on the progress that the Secretariat has made. These priority actions were discussed and agreed at the 2023 HSI-TAG meeting and associated HSI-TAG recommendations were formulated (see below). These recommendations are described in further detail in the 2023 meeting report[5] and *Weekly Epidemiological Record* article.[6]

Progress on the 2023 recommendations:

1. **WHO should focus on higher-order DEs, especially those that could escalate internationally. A compilation of country case studies for DE responses could be used as a guide by other Member States.**

2 https://apps.who.int/gb/ebwha/pdf_files/WHA77/A77_16-en.pdf

3 https://apps.who.int/gb/ebwha/pdf_files/WHA77/A77_16-en.pdf

4 https://www.who.int/publications/m/item/strengthening-the-global-architecture-for-health-emergency-prevention--preparedness--response-and-resilience

5 https://www.who.int/publications/m/item/who-health-security-interface-technical-advisory-group-annual-meeting-report-2023

6 https://www.who.int/publications/m/item/health-security-interface-technical-advisory-group-hsi-tag-annual-meeting-summary-wer

a. WHO is strengthening its response and surge capacity with establishment of staff roster and their trainings conducted by specialized agencies/partners. Seventy-six staff from Headquarters, Regional Office, and Country Offices enrolled as the first cohort and completed basic & advanced security training and selected members completed the in person self/protection trainings and more staff will be trained for special skills such as clinical management and mass decontamination during the 2024-25 biennium. Staff roster members are convened by the BSP unit on a quarterly basis and are being updated about signals, events and response needs. Call for expression of interest for the external roster were published and experts have been selected. Briefing and training sessions are scheduled later in 2024.

b. WHO is developing an UN-wide response framework jointly with the UNODA within the framework of the United Nations Biorisk Working Group (UN-BRWG) to support cohesive systemwide response to a DE, improving communication and coordination among the different actors and stakeholders.

c. WHO is planning to develop country profiles based on the International Health Regulations (IHR), Joint External Evaluations (JEE) and country surveys for country prioritization for DE preparedness. Additionally, there is an upcoming WHO Regional Office for Africa (AFRO) and the Regional Office for the Eastern Mediterranean (EMRO) bi-regional workshop to be conducted later this year. See point 5.a.

2. **WHO should support Member States in both preventing and preparing for response to a DE by working with partners, including the UNODA, UNSGM, INTERPOL and the United Nations Interregional Crime and Justice Research Institute (UNICRI). In addition, WHO should promote its framework for responsible use of the life sciences[7] as means for prevention.**

a. WHO has been exchanging knowledge and experience through meetings, workshops and conferences with UNODA, UNICRI and INTERPOL. An interagency (WHO-INTERPOL-WOAH) DE simulation exercise was conducted in October 2023 and a post-exercise report has been shared within the three organizations for lessons learnt.

b. BSP Unit is collaborating closely with Science Division and the Technical Advisory Group on the Responsible Use of the Life Sciences and Dual-Use Research (TAG-RULS DUR)[8] for the promotion of the framework. The global guidance framework is currently being introduced to WHO Regions and selected Member States through stakeholders.

3. **WHO should continue to work to decrease the chances of laboratory accidents by promoting a culture of transparent sharing of laboratory incidents and developing standard criteria for reporting such incidents.**

a. WHO has published the Laboratory biosecurity guidance.[9]

b. The WHA Resolution on Strengthening laboratory biological risk management[10] has been adopted.

c. WHO is developing strategies and roadmaps for the implementation of the above-mentioned WHA Resolution for laboratory biological risk management.

4. **WHO should continue to build tools to assess and build Member States' capacity to prevent and respond to accidental releases and DEs, including strengthening the use of assessments, gap analyses and simulation exercises.**

a. WHO held a webinar for the introduction of the National Self-Assessment Tool (NSAT) for the WHO Country Offices and National IHR focal points of AFRO in spring of this year, with final evaluation of the tool planned for later this year.

7 https://www.who.int/publications/i/item/9789240056107

8 https://www.who.int/groups/technical-advisory-group-on-the-responsible-use-of-the-life-sciences-and-dual-use-research-(tag-ruls-dur)#:~:text=The%20Technical%20Advisory%20Group%20on,the%20governance%20of%20dual%2Duse

9 https://iris.who.int/handle/10665/377754

10 https://apps.who.int/gb/ebwha/pdf_files/WHA77/A77_R7-en.pdf

b. WHO is planning a series of simulation exercises, with partners and Regional Offices (ROs)/Country Offices (COs) and selected Member States in 2025.

5. **WHO Regional Offices should identify Member States that would benefit most from heightened preparedness and development of response capacity for DEs.**

   a. WHO has produced a matrix (See Annex 1) to identify priority countries and conducted a survey to fill the matrix by the Member States through WHO Country Offices in two priority regions as agreed during the 2023 HSI-TAG meeting, AFRO and EMRO. The results will be used for selecting countries to be invited for the bi-regional DE workshop organized in the 3rd-4th quarter of 2024.

6. **The HSI-TAG should work with the BSP Unit, TAG-B[11] and other WHO advisory groups and networks to organize regional workshops and other work on biosafety and biosecurity.**

   a. HSI-TAG contributed substantially to the recently published WHO Laboratory Biosecurity Guidance (see point 3.a. above) through interaction with the Secretariat and TAG-B. HSI-TAG also has a close link with TAG-RULS DUR by sharing a member (the Chair of the TAG-RULS DUR is also a member of HSI-TAG) for coherence and collaboration.

   b. HSI-TAG Members involved the WHO Secretariat for their regional workshops, including the Southeast Asia Strategic Multilateral Biosecurity Dialogue.[12]

7. **WHO should encourage implementation of high-level HSI framework and collaborate with regions to increase understanding and uptake of the frameworks by Member States.**

   a. WHO is currently engaging in awareness-raising activities with ROs and Member States.

   b. WHO is developing a bi-regional AFRO and EMRO strategy. A brainstorming meeting was held at EMRO in Cairo in April 2024 and a draft strategy and plan of work were developed by the staff from HQ, EMRO and AFRO.

8. **WHO should coordinate and map global work to study and address dis-/mis-information and cyber threats.**

   a. WHO has published disinformation and cyber security technical review articles in the WHO *Weekly Epidemiological Record,*[13] derived Questions and answers (Q&As)[14,15] and factsheets plus has updated the WHO website with relevant content.

   b. WHO plans to publish a policy brief on disinformation as well as an online training course, with the aim to be published later in 2024.

9. **WHO should continue to develop specific tools for detection, verification and assessment of potential signals of a DE.**

   a. WHO has completed corporate, technical and strategic risk categorization.

   b. Keywords and phrases have been revisited to ensure signal detection with acceptable sensitivity and specificity.

   c. The HSI-TAG has established a risk assessment working group and the progress is reported later in this meeting report.

10. **The BSP unit should continue to collaborate with internal WHO groups to provide other areas of expertise on the topic of DEs, map stakeholders' roles and extend use of foresight methods to improve preparedness and response.**

    a. WHO's DETF has met to share expertise and coordinate activities in June 2024.

11 https://www.who.int/groups/technical-advisory-group-on-biosafety-(tag-b)

12 https://centerforhealthsecurity.org/sites/default/files/2024-07/20240731-southeastasiastrategicmultibiosecuritydialogue.pdf

13 https://iris.who.int/bitstream/handle/10665/375831/WER9904-25-37.pdf?sequence=1&isAllowed=y

14 https://www.who.int/news-room/questions-and-answers/item/disinformation-and-public-health

15 https://www.who.int/news-room/questions-and-answers/item/cyber-attacks-on-critical-health-infrastructure

b. BSP has established collaboration with the WHO units in charge of EMTs, the JEE and the Staff Health and Wellbeing (SHW) and Operations Support and Logistics (OSL) unit.

c. WHO is applying foresight methodology in an upcoming bi-regional workshop with AFRO and EMRO.

11. **The BSP unit should continue to develop the scope of WHO work at the HSI, including establishing a clear definition and promoting awareness and understanding of the HSI at the three levels of the Organization and in the public.**

    a. BSP is engaging in ongoing work to refine the scope of HSI, including the promotion of documents and programmes across the three levels of the Organization and in the public.

Country Support / Capacity building efforts

Ukraine: Upon the request from the government of Ukraine, WHO supports the country's CBRN readiness with its three levels: Headquarters, Regional and Country Offices. The BSP Unit recently supported a "training of trainers" programme in Ukraine from April to June of 2024. The trainings consisted of two-day sessions focused primarily on practical aspects of CBRN preparedness and response with some complimentary theoretical lessons as well. The practical activities are focused on setting up and operating decontamination tents, with each session ending with a simulation exercise using mannequins that exhibit a range of different symptoms requiring treatment. To avoid duplication, the trainings are harmonized with similar trainings held by partner organizations and as such, observers from the Ukraine office of the International Committee of the Red Cross participated in the most recent session. So far, 2,460 healthcare personnel from 50 clinical centres have been trained by WHO. Looking ahead, 27 decontamination tents have been procured by WHO Office in Ukraine and are soon to be distributed to Ukrainian authorities and the BSP Unit is considering additional support projects that can enable proper installation of the tents at each respective location. Planned activities in the coming months are two chemical preparedness and response trainings in Odessa and a CBRN coordination meeting in Kyiv.

Turkey/North-West Syria: A one-week chemical threats workshop was held in February 2024, requested by the Regional Office for Europe (EURO) in Gaziantep, Turkey, where WHO Country Office in Türkiye hosts an emergency field office to respond to the crisis in north-western Syria. A specific pedagogic model tailored for the participants (healthcare professionals) was used in the workshop, using theoretical lessons and groupwork. Twenty healthcare professionals from hospitals and clinical centres have been trained. Pre- and post-workshop assessments indicated that the level of knowledge among the participants increased substantially after the workshop.

Sierra Leone: Another of the BSP Unit's major country support activities this past Spring took place in Sierra Leone, where the remaining Ebola samples from the 2013-16 West Africa outbreak stored in different locations were successfully transported to the country's central biobanking facility (including 5 freezers, approximately 1,800L worth contents). This required vast international technical collaboration and security sector coordination, as Ebola remains a trauma point in the community, thus running the operation smoothly was a core priority. WHO and partner organizations ensured that political and community engagement and sensitization took place, in addition to substantial logistic support. This was a heavy lift that the international community worked together to achieve. The following international partners contributed to the project: WHO (3 levels), Canada's Weapons Threat Reduction Program, the National Microbiology Laboratory of the Public Health Agency of Canada, the UK Health Security Agency, Africa Centres for Disease Control and Prevention, and the Global Fund.

Seychelles: A BSP Unit deployment was made to the Seychelles where a deliberate chemical event occurred in April 2024. From the confirmation of the request, BSP Unit staff were on the ground within 24 hours, highlighting the speed of WHO's response. The operational financial support was immediately released from WHO's Contingency Fund for Emergencies[16] in line with the Emergency Response Framework (ERF).[17] Twenty

16 https://www.who.int/emergencies/funding/contingency-fund-for-emergencies

17 https://www.who.int/publications/i/item/9789240058064

full CBRN response kits were delivered in 48 hours, allowing WHO to train first responders from all agencies involved, including nurses, EMTs and firefighters. During two full days of trainings and one simulation exercise 20 participants were successfully trained to enter and respond to a scene without compromising the police or military investigation and additional 4 meetings were held with 16 national managers from public health and security agencies to ensure that public health and security were linked at the decision-making level during a deliberate event.

Normative/technical guidance, products

Revisions to WHO guidance on public health response to biological and chemical weapons, "The Blue book"

HSI-TAG members then heard a presentation on planned updates to "The Blue book" initially published in the 1970s and last updated in 2004. The revision, delayed by COVID-19, is now being revisited considering the post-COVID landscape and recent developments like the IHR revision and development of the Health Emergency Prevention, Preparedness, Response and Resilience (HEPR) Five C's.[18] A user survey involving 60 individuals from 20 prioritized countries in the WHO African and the Eastern Mediterranean Regions will assess the most pressing uses for the document, though the revision aims to conveniently package foundation knowledge and response guidance and involve collaboration with various agencies and experts. An expert advisory panel[19] will be introduced for technical advice and WHO has identified regional experts for specific biological pathogens to guide the revision as well. The HSI-TAG Secretariat intends for the HSI-TAG members to actively participate in the revision with a possibility to form some topic-specific working groups. Publication of the document is planned for 2025 when the 50th anniversary of Biological Weapons Convention will be marked, with the development of lighter advocacy materials and an interactive online tool. The revision will address scientific and technological advances and to serve for public health officials as a user-friendly handbook when preparing and managing DEs.

Laboratory Biological risk management

At the end of May 2024, the WHA resolution on laboratory biological risk management was unanimously adopted by the Assembly, reflecting broad international support. This resolution, WHA77.7 *Strengthening laboratory biological risk management*[20] calls for countries to strengthen their own biological risk management frameworks, with WHO providing technical assistance, developing strategies and promoting collaboration. Following the resolution, an informal consultation meeting was held by supporting Member States in June 2024 focused on implementation planning, including resource, budgetary and staffing needs and developing a four-year implementation plan. A survey among co-sponsoring Member States will be conducted on Member States priorities, challenges and expectations for technical support and to map national biosafety/biosecurity development and organizational framework leading the way for the implementation of the resolution WHA77.7.

Additionally, WHO is translating theory into practice through various initiatives, such as the development of the Biosafety Risk Assessment Tool (RAST) smartphone app and virtual reality trainings, which helps users assess risks in diagnostics, research and fieldwork promotes best-practices in laboratory work and provides appropriate risk control measures. WHO has also published new Laboratory biosecurity guidance,[21] incorporating best practices and a risk-based approach, addressing emerging technology, cybersecurity, AI and legislation needs. The guidance suggests a two-tier system where institutions are responsible for their work under national oversight using a hybrid approach in a form of a list of regulated biological agents with a regular update (risk-based element). There have been more than 8,000 downloads of the document since its publication in June 2024.

18 https://www.who.int/publications/m/item/strengthening-the-global-architecture-for-health-emergency-prevention--preparedness--response-and-resilience

19 https://worldhealthorg.sharepoint.com/sites/OneWHO_HQ_105/SitePages/Home.aspx

20 https://apps.who.int/gb/ebwha/pdf_files/WHA77/A77_R7-en.pdf

21 https://www.who.int/publications/i/item/9789240095113

Disinformation/Cyber-attack

A disinformation training module will soon be added to the existing "Infodemic management" training package,[22] available on the OpenWHO platform,[23] while a cyber threats training package will be developed in 2025. Additionally, a disinformation policy brief has been drafted and is currently going through a refinement process before receiving internal clearance for publication on the WHO website. Several potential scenarios based on cyber threats and disinformation are being developed as well, to be utilized for training and simulation exercises.

Discussion

The group reaffirmed the HSI-TAG's two critical contribution elements to support WHO work: 1) setting norms and standards, and 2) preparedness and crisis response, to better address capability and resource allocation at WHO. The HSI-TAG also proposed independently evaluating whether the BSP Unit is adequately resourced for crisis response and whether WHO has provided sufficient resources for major international DEs.

The HSI-TAG emphasized the importance of evaluating WHO'S work from the perspectives of functionality and capability, each reflects on its internal and interface work within the HSI. This can be enhanced by the close working cooperation of the distinct programmes at WHO aimed at preventing, preparing for and responding to DEs, as well as the various TAGs that support those programmes. The HSI-TAG also noted the critical need to work closely with external partner agencies to conduct this work effectively. This includes investigations, responses and other activities happening simultaneously and in coordination. One suggested approach is to conduct scenario-based exercises involving all necessary actors to ensure streamlined and synergistic responses across different groups and agencies.

The HSI-TAG suggested that the "Blue book", currently over 300 pages, should be updated and condensed to effectively meet audience needs. The group emphasized the necessity for the "Blue book" to address DE-specific problems not covered by other guidance documents and how it must be practically useful in ways that other existing resources are not. One suggestion was to consider separating the "Blue book" into two components: one for systems strengthening and another for clinical response practices.

The Science Division Secretariat recently published global guidance framework, (currently being piloted in Uganda) which provides advice on dual-use research identification, documentation and regulation. However, it is up to individual countries to define their measures. The Science Division is also working on providing further implementation tools to aid in-country use of the Global Guidance Framework. The terminology of "gain of function" was also discussed, noting that it doesn't always imply something negative, as it can include beneficial products like biofuels. The group also noted the lack of a central database of research involving dual-use concerns. Overall, the Secretariat and HSI-TAG agreed that it would be productive to identify near-term opportunities for relevant TAGs to collaborate.

22 https://openwho.org/courses/im-health-misinformation

23 https://openwho.org/

2. WHO Regional perspectives

Regional Office for Africa (AFRO)

The 2022 Electronic IHR States Parties Self-Assessment Annual Reporting Tool (e-SPAR)[24] assessment highlighted the need for reinforcement in areas such as chemical event response, point of entry, food safety, zoonotic diseases and health and security linkages. These findings align with the low scores in HSI technical areas from the first JEE round. Little improvement had been seen in some areas by 2023 and AFRO welcomes forthcoming opportunities for engagement such as the WHO bi-regional CBRN workshop which will be co-organized with WHO Headquarters and EMRO later this year. The survey on preparedness capacity and domestic/external factors was answered by 19 Member States, revealing limited capacity overall and a greater need for improvement. Overall, there is a lack of national action plans and standard operating procedures (SOPs) for CBRN DE preparedness and response and a lack of awareness and prioritization by national governments. However, there is recently increased interest in developing actionable time-bound plans for response plan development and AFRO looks forward to supporting Member States in building awareness and capacity in the future, as well as to receiving more support from WHO Headquarters on programme implementation.

Regional Office for the Americas (AMRO)/Pan American Health Organization (PAHO)

Several issues within the Region of the Americas regarding CBRN preparedness and response were highlighted, including the IHR scores for chemical and radio-nuclear events, which vary by Member States but average around 50%. Despite greater regional harmonization of e-SPAR annual reporting and clear guidance for capacity improvement from the International Atomic Energy Agency (IAEA), scores for chemical and radiological preparedness have declined, likely due to better-quality assessments skewing the results. The Caribbean in particular needs support, with 54 chemical incidents recorded last year, mostly explosions. Key recent activities in the region include a technical document on hospital safety being produced,[25] trainings for 54 health staff in emergency management and the launch of a self-learning e-course on public health management for chemical events.[26] Future steps include identifying national experts for regional support rosters, holding a regional health preparedness workshop, developing SOPs for triage, decontamination and isolation and continuing successful PAHO-civil-military coordination in the Caribbean. The Region of the Americas also updated the *Joint Radiation Emergency Management Plan of the International Organizations*.[27]

Regional Office for the Eastern Mediterranean (EMRO)

EMRO has developed a health and security interface strategic plan with three goals: 1) advocate for and strengthen the health-security interface function, including for DEs, 2) strengthen capacities of EMRO countries for managing DEs and 3) promote partnerships. Under the advocacy goal, the region has had several briefing and awareness raising sessions and has developed communication materials. For DE risk profiling, the region is exploring using the NSAT programme to assess DE risk, as the tool is nearly ready for its rollout. Under the strengthening capacities goal, the region has been building Member State capacity through training workshops and simulation exercises and is working closely with other units to avoid duplication, for example on preparedness and response to mass casualty events, PHEOC and others. The region has also recently had the opportunity to be included in an EMT consultation on specialized CBRN teams. Under the partnership goal, the Regional Office is working

24 https://www.who.int/emergencies/operations/international-health-regulations-monitoring-evaluation-framework/states-parties-self-assessment-annual-reporting

25 https://iris.paho.org/handle/10665.2/57556

26 https://www.paho.org/en/topics/chemicals

27 https://www.who.int/publications/m/item/joint-radiation-emergency-management-plan-of-the-international-organizations

closely with a variety of WHO offices and TAGs, including TAG-B and The Strategic and Technical Advisory Group on Infectious Hazards with Pandemic and Epidemic Potential (STAG-IH), plus other academic institutions and Regional Offices like AFRO to coordinate programmes. Future activities include partner mapping, identification of key experts within partner networks, initiating country-based assessments for NSAT, assessing the availability of laboratory capacity, assessing the availability of mental health and psychosocial support for people affected by DEs and stockpiling antidote/antitoxins.

Regional Office for South-East Asia (SEARO)

The South-East Asian Region is geographically and demographically diverse, with various CBRN risks across the Member States. Regional CBRN work began in 2018 with country workshops, culminating in a regional virtual workshop in 2022. The focus is on both deliberate and accidental events, supported by four strategic roadmaps. The current priorities are implementation, emphasizing emergency workforce strengthening, surveillance and biosecurity activities. The 2024-2025 regional plan includes more in-country simulation exercises, integrating CBRN expertise into surge response capacity and rolling out NSAT upon finalization, the IHR monitoring and evaluation framework. Regional needs involve input on the health emergency workforce strategy, technical support for workshops and simulations, master training on NSAT and training for operation support and logistics teams.

Regional Office for the Western Pacific (WPRO)

The Western Pacific Region, comprising 37 Member States, faces complex hazards, including natural hazards, emerging/re-emerging pathogens, zoonoses, cyber-attack and potential conflict dynamics. The region includes highly developed countries, that are highly urbanized, as well as small island states, and several lower/middle income countries. Utilizing the new Asia Pacific Health Security Action Framework (APHSAF),[28] WPRO (along with WHO's SEARO works across six interconnected health security domains, emphasizing inter-sectoral collaboration. The 2023 e-SPAR revealed high variability in core health security capacities across the region, considering both economic differences and variable human resource capacities across countries. Regional CBRN risks were identified, some of which can be linked to natural hazards. Some countries are using the Strategic Toolkit for Assessing Risks (STAR)[29] to assess and mitigate hazards/risks. Geopolitical dynamics and potential conflicts pose additional risks in the region. WHO's Western Pacific Regional Office has run an annual virtual IHR (2005) exercise since 2008, with 2023's focus on a radiological-based scenario involving multi-sectoral engagement. Future priority actions include supporting Member States around DE preparedness and response, and establishing regional communities of practice (WHO's 'HIVE' platform[30]) related to multiple health security thematic areas.

Regional Office for Europe (EURO)

According to JEE, CBRN related capacities rank lowest among the European region members. Regional simulation exercises are conducted regularly, with a DE/accidental event planned for later this year. A comprehensive 36-month action plan focuses on preparedness and response capacities for CBRN hazards, targeting 10 prioritized countries (Bulgaria, Czech, Estonia, Hungary, Lithuania, Moldova, Poland, Romania, Slovakia and Ukraine) and aiming to build a community of practice across the region. In case of a major CBRN event in Europe, the action plan and funding will be repurposed for response, in line with ERF. The project management structure comprises an action coordinator, strategic action officers, ten priority country teams and a steering committee. Notable regional projects include Ukraine and Moldova which involve significant focuses on chemical and radio-nuclear risks, biosafety and biosecurity. In Ukraine, more than 2000 health care workers have been trained in chemical/radiological related courses along with acute radiological and chemical response guidelines, while Moldova's

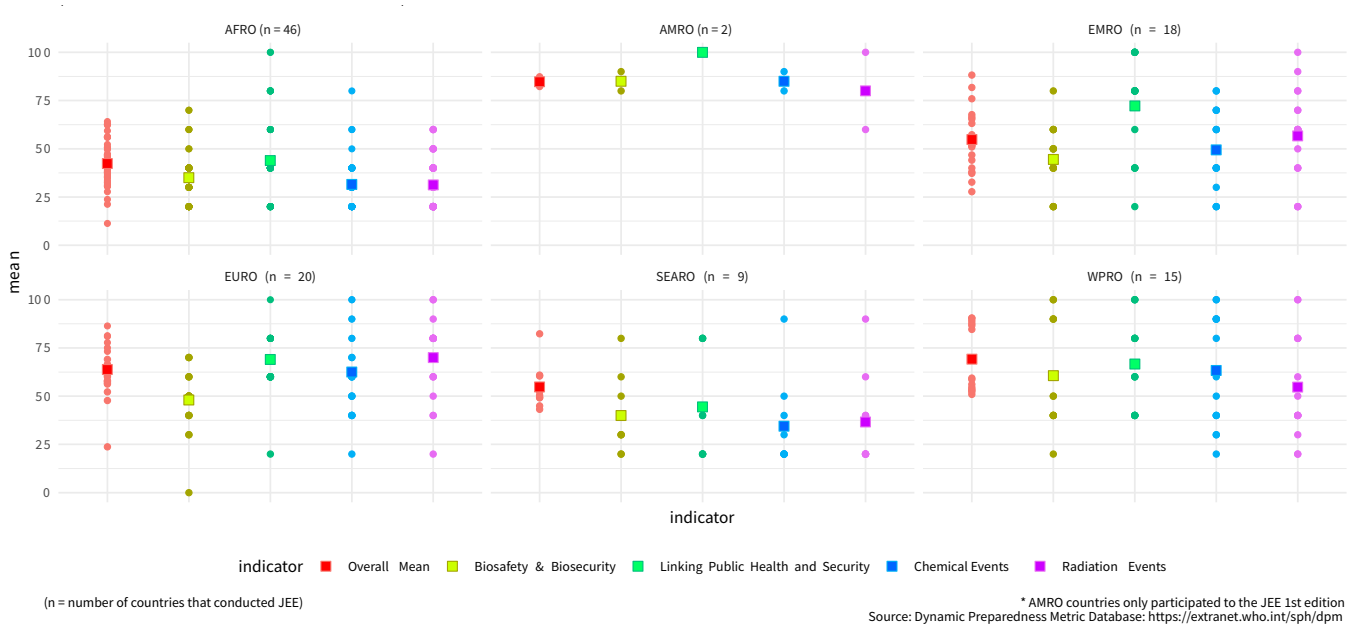
28 https://www.who.int/publications/i/item/9789290620396

29 https://www.who.int/publications/i/item/9789240036086

30 https://hivecenter.who.int/

strategy emphasizes sustainability for CBRN actions, with a focus on workforce capacity building, collaborative surveillance, community protection and clinical interventions (in line with the HEPR Five C's). The Regional Office looks forward to supporting CBRN preparedness and response efforts through assessments, planning, capacity development and material provisioning.

Selected JEE indicators values and mean values by WHO Region (2016-2023)



(n = number of countries that conducted JEE)

* AMRO countries only participated to the JEE 1st edition
Source: Dynamic Preparedness Metric Database: https://extranet.who.int/sph/dpm

Discussion

The discussion highlighted various requests and concerns from Regions and Member States. AFRO expressed interest in receiving more support from WHO Headquarters in the NSAT process, which was not uniformly implemented alongside the JEE because the NSAT is a relatively new development and still being finalized to supplement to JEE. AFRO also requested radiological and chemical expertise for these efforts. The group also discussed the decline in chemical assessment scores in some Regions and Member States, which was attributed in some circumstances to improved harmonization and more accurate assessments, which has established a new baseline.

Regional workforce development was discussed in detail as DE responses require different skills than natural/spillover threats. With regards to staffing needs at the regional level, HSI-TAG members discussed how the DE core response group can face challenges with staff burnout during a lengthy response, especially at the decision-making levels, as this needs to be included in the WHO staff roster of experts. The group praised progress across the different regions, though concerns were raised about the difficulty of cross-border preparedness support, as national priorities often taking precedence.

3. Updates from the HSI-TAG working groups

WHO DE Roster Capacity Building and Deployment Working Group

The four objectives of the roster capacity building and deployment working group are 1) Harmonization of the DE concept of operations (ConOps) with the ERF version 2.1,[31] 2) management strategy for deployed roster members, 3) inclusion of external roster members in WHO response capability and 4) inclusion of the selected partners such as the Danish Emergency Management Agency, from the standby partners[32] in the response plan. So far, the group has successfully harmonized the ConOps and aligned it with ERF2.1. Progress is ongoing for the revisions of Standard Operating Procedures (SOPs) for deployed roster members and four training courses have been identified (CBRN self-protection and self-decontamination, CBRN clinical management, CBRN mass decontamination and full scale CBRN response). The SOPs are currently under review by working group members and further training programmes and certificates are planned before the end of year. Lastly, the working group will review and update the *Initial clinical management of patients exposed to chemical weapons: interim guidance document*.[33]

After the presentation, the group discussed the difference between the Standby Partners and the WHO roster and additionally clarified whether the rosters are meant for actual responses or whether they are meant as trainers that will train first responders as part of event management. The Secretariat confirmed that the surge capacity roster members are trained for CBRN operational response capacity; however, it is likely that the roster members will be requested to strengthen event management, including training local responders, as in most cases the roster members will be requested to deploy only few days to weeks after the first event took place. The HSI-TAG also mentioned the importance of developing rosters at the Regional and Member State level, so that experts can be deployed quickly. The immediacy and utility of virtual contact with the roster and external experts is another area of exploration of this working group, as this can mitigate delays in information sharing during a response.

NSAT Deployment Working Group

The NSAT deployment working group has established four main objectives. First, the group will develop a guidance resource for NSAT users, which could be an online training module on the WHO website, an interactive video, or a document with infographics. Second, once the resource is complete, it will be tested by trainers from the CBRN Surge Capacity Roster of Experts (RoEs) to gather feedback for improvement. The resource will be updated based on the recommendations. Third, each group member will co-chair with the BSP Unit staff, regional workshops in collaboration with the regional focal points to facilitate the NSAT implementation alongside the JEE. Fourth, members will enrol in the JEE RoEs, complete the necessary training, participate in upcoming JEE missions and review the NSAT's cybersecurity and radio-nuclear terminology.

To date, the group has held one planning meeting and two working group meetings. All members are currently enrolled in the JEE RoEs, have completed the online training and are reviewing the electronic joint external evaluation platform (e-JEE) and associated SOPs. Consensus has also been reached on NSAT´s cybersecurity terminology. The next steps include holding more regular meetings, agreeing on radio-nuclear terminology,

31 https://www.who.int/publications/i/item/9789240058064

32 https://www.who.int/emergencies/partners/standby-partners/

33 https://www.who.int/publications/i/item/initial-clinical-management-of-patients-exposed-to-chemical-weapons-interim-guidance-document

working on the NSAT guidance resource for users, testing it, conducting regional meetings and expanding the JEE RoEs within the HSI-TAG.

After the presentation the group discussed a suggestion of revising the working group timeline for completing these objectives, to better align with regional needs, highlighting current requests for training that cannot be fulfilled due to the NSAT incomplete status. With many national JEEs already completed, there is an urgency to coordinate the NSAT with JEE efforts. To increase NSAT awareness, AFRO organized a regional webinar on NSAT to brief its Member States' IHR National Focal Points during the 2nd quarter of 2024, which successfully attracted several Member States interest in conducting NSAT. Engagement with the EMRO and AFRO has been prioritized, with efforts aligned to country needs. The Secretariat confirmed that the NSAT tool is 90% complete, pending radio-nuclear content. There was also a suggestion to use the NSAT when countries cycle back to the next JEE in a few years, ensuring recommendations are integrated into the national action plans. For the tools' deployment, the group agreed that the focus should be on WHO country offices, given their consistent presence across JEE rounds.

Risk Assessment and Signal/Event Detection Working Group

This group utilised WHO's existing Rapid Risk Assessment (RRA; as specified in ERF2.1)[34] to inform the development of a complementary technical risk assessment, specifically designed to address DEs, which is the central focus of this working group. This DE Specific Risk Assessment (SRA) provides a template for internal use by WHO staff to assess an event utilizing DE expertise, incorporating WHO risk concepts (as defined in the ERF 2.1) and additional CBRN-related questions. The template is intended to be filled out as soon as a potential DE signal is reported. The template is based on a context/hazard/exposure plus risk questions methodology, considering likelihood and consequence for identified risks. It is designed to complement the WHO Rapid Risk Assessments and inform incident management leads. The template provides guidance for completion and is version controlled. The finalized draft has been sent for HSI-TAG feedback and a user manual will be developed in parallel to ensure good practice and facilitate the use of this tool. The working group plans to develop a second output focussed on a strategic risk assessment, which intends to be a detailed, comprehensive and forward-looking DE risk assessment, applying foresight methodologies. The group is currently awaiting end-user feedback on the specific risk assessment and plans to start work on the strategic risk assessment.

The discussion following the presentation related to Risk Assessment began with questions of how foresight functions could be integrated into the strategic risk assessment. The working group explained that the specific risk assessment is context/event-based, informed by Event Based Surveillance and Indicator Based Surveillance data whereas foresight provides data on anticipated future events and risks.

The HSI-TAG noted that threat assessment could be politically sensitive and needs careful incorporation. Some HSI-TAG members asked whether countries could use these risk assessments templates, to which the working group responded that while the template has been developed for use for WHO at all three levels, they will defer to the BSP Unit for extending assessments to Member States. The HSI-TAG lastly emphasized the distinction between threats (contexts or situations increasing the risk) and risks (consequences and likelihood that a threat or hazard will result in an event) and suggested scenario exercises to test arrangements and clarify roles and responsibilities.

Foresight for deliberate events working group

This working group's responsibility is to provide experts' advice and guidance on foresight activities related to response to DEs. In the immediate future, the BSP Unit is planning a bi-regional foresight workshop this year (2024) to define stakeholders' roles and strengthen preparedness in the WHO African and the Eastern Mediterranean Regions. To support this type of exercise, they are building a database of indicators to inform future DE risk and how this might affect the ability of countries to respond to a DE, based on indicator trends at country, regional and international levels. Future steps include the aggregation of indicators into key factors affecting response

34 https://iris.who.int/bitstream/handle/10665/375964/9789240058064-eng.pdf?sequence=1

efforts, enhancing visualization and interactivity, to display trends and calculated projections for the key factors in a future time horizon (currently limited to a ten-year window). The working group will meet in July to review the database and provide advice on foresight methodologies to be used for the workshop.

The discussion after the presentation began with a conversation about the database's visualizations, emphasizing the need for clarity and validation of projections. The Secretariat agreed to make figures more visually appealing and understandable, with explanatory text for policy makers. The working group further explained that foresight combines qualitative and quantitative data, and while the model can be validated, its relationship to reality cannot be quantified. Indicators in the database can help characterize countries' risk profiles, yet they are not necessarily predictive. The working group will review country action plans as developed during the bi-regional workshop and may test scenarios with other agencies next year. Clarifications were also sought around the indicator selection process and how they can be manipulated. The working group explained how the 100+ indicators can be merged for stronger trend indications and the workshop aims to create concrete action plans for countries. The group agreed that foresight predictions are unreliable beyond 2-3 years, so focusing on desirable futures is more useful. It was concluded that the aim of using foresight methodologies was never to predict the future but to be better prepared for different plausible scenarios, in light of trends and driving factors.

4. Updates from the deliberate event partners

The group then heard presentations from internal WHO teams, several WHO advisory groups and international agencies that partner on deliberate events and other HSI initiatives.

Internal WHO teams and advisory groups

Emergency Medical Teams Initiative at WHO

The purpose of the WHO Emergency Medical Teams (EMT)[35] initiative is to improve the timeliness and quality of health services provided by national and international EMTs and enhance the capacity of national health systems in leading the activation and coordination of rapid response capacities in the immediate aftermath of a disaster, outbreak and/or other emergency. Leveraging recent interest from various countries and organizations, the EMT Secretariat at WHO launched a process to develop a technical note outlining minimum standards for specialized care teams, including that for CBRN. Initiated by 26 organizations globally, the technical note defines the scope of services provided by specialized care teams, identifies necessary staff, skillsets and support, and focuses on surge capacity and expertise for potential mass casualty events. The guidance categorizes CBRN care teams into three sub-types: on-scene pre-hospital care, facility-based care and medevac & transport services, considering requirements in terms of staff composition, skillsets and required ratios and operational support. The EMT Secretariat has worked with the University of Brussels to create a CBRN response simulator, which may be used

35 https://www.who.int/emergencies/partners/emergency-medical-teams

for upcoming trainings once the tool is completed. The EMT Secretariat looks forward to continued collaboration with the BSP Unit and the HSI-TAG as additional guidance materials and capacity building opportunities with Regional Offices and Member States.

Scientific Advisory Group for the Origins of Novel Pathogens (SAGO)

The group then heard a presentation from SAGO[36], which was created in 2021 to advise WHO on technical and scientific considerations regarding the origins of novel and known pathogens. SAGO advises WHO on prioritizing studies and field investigations into the origins of emerging and re-emerging pathogens of epidemic and pandemic potential. Its current Terms of Reference include developing a Global Framework. The six technical elements provide guidance to Member States and relevant international parties for investigations and studies, each element complements the others. Implementation of the framework requires a multi-disciplinary team using a One Health approach with full transparency. It is thus dependent on IHR core capacities at country level. SAGO focuses on natural spillover or situations where the source is unclear, requiring prompt evidence gathering. As well as the Global Framework, SAGO will publish an *Independent assessment of the origins of SARS-CoV-2*. Following this, a call for new members will be launched.

The Technical Advisory Group on Biosafety (TAG-B)

For over 20 years, the TAG-B[37] has provided independent expertise and advice to WHO on biosafety and biosecurity. The group's renewal in 2022 allowed WHO to nominate global experts for current and future projects. TAG-B members have diverse expertise, including biosafety officers, regulators, researchers, trainers and members of international initiatives. Currently, TAG-B has contributed to update the WHO Laboratory biosecurity guidance[38], originally published in 2006, to address technological advancements and evolving biosecurity challenges, including AI and misinformation. This revision process, started in June 2022, involved two rounds of stakeholder reviews in 2023, leading to suggestions to expand the document's scope. WHO is also leveraging TAG-B's expertise to advocate for a consensus-based global standard and associated recognition scheme for biosafety and biosecurity, particularly in high-containment facilities. TAG-B contributed to the recent World Health Assembly resolution on biosafety and laboratory biosecurity, reflecting the need to address new challenges since the 2005 resolution.[39]

The Technical Advisory Group on the Responsible Use of the Life Sciences and Dual-Use Research (TAG-RULS DUR)

The TAG-RULS DUR[40] was established to provide independent advice to WHO on the monitoring and mitigation of biorisks, the advances in the life sciences and related technologies, the governance of dual-use research and the responsible use of the life sciences.

The TAG-RULS DUR held their first hybrid meeting in April 2024, with briefs on recent activities from WHO programmes and making recommendations on the scientific, technical and strategic aspects relevant to the monitoring and mitigation of biorisks and advances in the life sciences and related technologies, the governance of dual-use research and the responsible use of the life sciences. Members have been identifying gaps, challenges, strengths and opportunities and recommend priorities to WHO on the scientific, technical and strategic aspects relevant to the anticipation, prevention and mitigation of biorisks, the governance of dual-use research and the responsible use of the life sciences.

The TAG-RULS DUR created four working groups to support its activities.

36 https://www.who.int/groups/scientific-advisory-group-on-the-origins-of-novel-pathogens-(sago)

37 https://www.who.int/groups/technical-advisory-group-on-biosafety-(tag-b)

38 https://www.who.int/publications/i/item/9789240095113

39 https://apps.who.int/gb/ebwha/pdf_files/WHA77/A77_R7-en.pdf

40 https://www.who.int/groups/technical-advisory-group-on-the-responsible-use-of-the-life-sciences-and-dual-use-research-(tag-ruls-dur)

- First is the science and technology advances working group, which identifies, monitor and anticipate advances in the life sciences and related technologies and provide advice on the implications of these advances for mitigating biorisks and governing dual-use research. This could involve the use of foresight approaches, such as horizon scanning, or other relevant and applicable approaches.
- Second is the operationalizing biorisk mitigation working group, which provides advice on how different approaches and tools for mitigating biorisks and governing dual-use research could be used in different contexts. This could involve approaches and tools identified in the Global Guidance Framework; the JEE and monitoring and evaluation tools; and the use of pilot models.
- Third is the capacity building, training and education working group, which provides advice on ways to support capacity-building, education and training on biorisks mitigation and governance of dual-use research across global, regional and national levels. This could include providing expert advice on various approaches and tools, including, but not limited to, online trainings, Massive Open Online Course (MOOC), mentoring and twinning and other relevant approaches.
- Then lastly is the oversight support working group, which provides advice on oversight support in case of a dual-use research event at local, national and international levels.

The Strategic and Technical Advisory Group on Infectious Hazards with Pandemic and Epidemic Potential (STAG-IH)

STAG-IH,[41] a WHO advisory group for epidemic and pandemic risks, focused last year on new and emerging vulnerabilities, including climate and biodiversity change, increasing human-animal interface, cyber and information threats, biosecurity risk and humanitarian crises. These themes were aligned with STAG-IH's recommendations and mandate, while the annual report is being finalized for publication later this year recognizing climate change as a priority of the organization as set out in its GPW14, hence the forthcoming report, as the UN aims to incorporate climate components into all projects. A literature review on climate change and its impact on epidemics and pandemics is under review and will result in a peer-reviewed article. Current activities of the STAG-IH are on hold during the ongoing re-organization of the WHO Health emergencies programme and policy updates including the inter-governmental negotiation process and IHR amendments.[42]

The UN Agencies

United Nations Biorisk Working Group (UN-BRWG)

The UN-BRWG initiative,[43] now with 30 members, has completed its first phase, which focused on establishing a collaboration framework and mapping the biorisk environment of partners. They developed a response framework, knowledge exchange program and multistakeholder engagement strategy. Phase two has three workstreams: the biorisk community of practice, biorisk emergency management and external engagement. The aim of biorisk emergency management is to harmonize agency procedures for emergency response to ensure efficient collaboration and clear understanding of mandates and boundaries during biological events. The initiative seeks to develop recommended operation procedures to facilitate coordinated responses across UN entities and relevant international organizations (FAO, INTERPOL, OPCW, WOAH). A core agency workshop is planned by the end of the year to discuss drafts.

41 https://www.who.int/groups/strategic-and-technical-advisory-group-for-infectious-hazards-(stag-ih)

42 https://apps.who.int/gb/ebwha/pdf_files/WHA77/A77_ACONF14-en.pdf

43 https://documents.un.org/doc/undoc/gen/g23/156/10/pdf/g2315610.pdf?token=jL5XDv3vmbfgYNq8HY&fe=true

Biological Weapons Convention (BWC)

The BWC Implementation Support Unit (ISU) provided an overview of the BWC,[44] which prohibits the development, production, stockpiling, acquisition, retention or transfer of biological weapons. Next year will mark the 50th anniversary of the treaty's entry into force. The BWC is brief and lacks a verification system with inspectors, but it establishes a strong norm against the use of biological agents as weapons for its 187 States Parties. Key provisions include disarmament and non-proliferation, international cooperation for peaceful purposes, international assistance in case of biological weapons use and peace and security.

The Ninth BWC Review Conference in 2022, despite COVID-19 challenges, was successful and led to the establishment of a new Working Group on the Strengthening of the BWC focusing on seven main topics. In 2024, the fourth session of the Working Group will meet in August and the fifth session will take place in December. The Implementation Support Unit also conducts activities around the world to improve BWC implementation[45] through awareness and training, events and outreach opportunities with various agencies and sectors.

United Nations Secretary-General's Mechanism for Investigation of Alleged Use of Chemical and Biological Weapons (UNSGM)

The UNSGM[46] provides the UN Secretary-General with the authority to investigate alleged use of chemical biological and toxin weapons and is the only international mechanism to independently investigate alleged biological weapons use. The UNSGM has two main components: Guidelines and Procedures for the Timely and Efficient Investigation of Reports of the Possible Use of Chemical and Bacteriological (Biological) or Toxin Weapons[47] and a roster of experts and laboratories nominated by UN Member States. The Guidelines and Procedures cover the roles of the Secretary-General, UN Member States, State(s) receiving the investigation, international organizations, rostered experts and laboratories, standing preparatory measures and conduct of investigations. The flexible nature of the guidelines and procedures, including the technical appendices, allows adaptation to all conceivable investigation scenarios. Currently the roster includes 634 qualified experts, 121 expert consultants and 92 analytical laboratories, though there is a geographical imbalance with fewer resources in Latin America and the Caribbean. The UNSGM is not a standing investigative body, capacity-building mechanism, early response, or prevention mechanism. It is an impartial, science-based international investigative tool for alleged use of chemical, biological and toxin weapons. UNODA maintains operational readiness of the Mechanism and the roster, coordinates training, conducts outreach and manages the UN Internal Task Force.

Non-UN partner collaboration

The International Criminal Police Organization (INTERPOL)

The Bioterrorism Prevention Unit (BTPU)[48] operates within the counter-terrorism directorate of INTERPOL, within the CBRNE and vulnerable targets division, under a mandate to support global law enforcement through an interagency approach to prevent, prepare for and respond to events involving biological agents. They inform policy development, enhance global security and protect public health. The BTPU capacity-building strategy involves country prioritization, needs assessment, action plan development, implementation of activities and appraisal. Collaborations with WHO include supporting regional programme objectives and holding training workshops and simulation exercises, with WHO providing subject matter expertise. The biological agents and

44 https://disarmament.unoda.org/biological-weapons/

45 https://www.gpwmd.com/

46 https://disarmament.unoda.org/wmd/secretary-general-mechanism/

47 https://undocs.org/a/44/561

48 https://www.interpol.int/en/Crimes/Terrorism/Bioterrorism

toxins of concern chart, updated with input from over 40 experts, will soon be available to help prioritize and understand materials likely to be misused in the field. The soon-to-be-completed Biotracker[49] project will be a global data repository of bioterrorism incidents and threats, mapping threats and trends for member countries.

World Organisation for Animal Health (WOAH)

WOAH[50] has a biological threat reduction strategy that will be updated next year during their global conference. The preparedness and resilience team supports veterinary services in global health by helping them prepare for, adapt to and recover from critical events. WOAH has developed guidance on multisectoral investigation of DE events and has conducted DE simulation exercises with WHO and INTERPOL. WHO and INTERPOL have contributed to WOAH guidance and participated in various WOAH events. They are developing international standards on emergency management for animal health, with WHO's expertise contributing to an all-hazards approach, including zoonoses. Collaboration with WHO also includes interview techniques, dual-use research of concern, case investigation standards and laboratory safety/security. WOAH is a member of multiple global health networks and emphasizes the need for systematic and institutional relationship-building to avoid reliance on individuals. Future plans include further incident management collaboration with WHO, joint trainings, simulation exercises and other collaborative efforts.

Organisation for the Prohibition of Chemical Weapons (OPCW)

The OPCW[51] is the implementing body for the Chemical Weapons Convention. In fulfilling its mandate, and of relevance to HSI-TAG, the organisation has ongoing efforts in developing biotoxin detection and analysis capabilities as well as in training and lab harmonization efforts within the UNSGM network. Current activities include a three-year project focused on analysis of biotoxins and an upcoming trial proficiency test for ricin and saxitoxin. Future plans include a potential Memorandum of Understanding (MoU) with WHO, with initial terms of reference being developed. The OPCW's Office of Strategy and Policy serves as the focal point for WHO efforts, with contributions from various other offices and branches within the organisation.

Scenario-based Simulation exercise

Two case scenarios were provided by the Secretariat to understand roles and responsibilities for the DE partners attending the meeting:

Scenario 1: WHO was notified by Country A of a cluster of severe neurological syndrome cases in border guards servicing at the border with Country B. WHO and OPCW were requested to identify the causative agent, support clinical management of the patients and public health response. The country also requested UN Secretary-General to activate an investigation through UNSGM. The law enforcement of Country A also requested INTERPOL support, suspecting the involvement of a non-state armed group active along the border. What would be the action of your agency? (Question to INTERPOL, UNSGM, HSI-TAG and WHO)

> **INTERPOL:** In response to the request from Country A's law enforcement, INTERPOL would activate its global police communications network, I-24/7, to share information and coordinate efforts with other member countries, particularly those in the region. INTERPOL would provide operational support to Country A's law enforcement agencies, including sharing intelligence and expertise to help identify and track the suspected non-state armed group. Through its global databases, such as its criminal databases and Red Notices, INTERPOL would facilitate international cooperation and coordination among law enforcement agencies to investigate the incident and prevent further incidents. Additionally, INTERPOL would offer training and capacity-building support to Country A's law enforcement agencies to enhance their capabilities in investigating and responding to similar incidents. The INTERPOL National Central Bureau (NCB) in Country

49 https://www.interpol.int/en/Crimes/Terrorism/Bioterrorism/Police-Data-Management-and-Analysis-Bioterrorism

50 https://www.woah.org/en/home/

51 https://www.opcw.org/

A would play a key role in coordinating the response, working closely with the law enforcement agencies, and liaising with other NCBs and the General Secretariat to ensure a swift and effective response.

In extreme situations where boots on the ground are needed or requested, INTERPOL may deploy its Incident Response Team (IRT) to provide on-site support to the affected country. The IRT, a team of experienced law enforcement experts, can be rapidly deployed to assist with investigations, crisis management, and capacity-building. Working closely with local authorities, the IRT would assess the situation, support the investigation, and evidence collection, enhance security and public safety, provide training and capacity-building to local law enforcement agencies, and facilitate international cooperation and coordination. The IRT deployment would be coordinated through the INTERPOL General Secretariat, in consultation with the affected country and other relevant stakeholders, and would be composed of experts with specialized skills, such as forensic experts, crisis managers, and tactical operators. The IRT would work under the authority of the host country and in accordance with its laws and regulations, providing a comprehensive response to the situation while supporting and assisting local authorities.

UNSGM: After having received a report of alleged use of biological or chemical weapons, the Secretary-General would decide whether to launch an investigation, based on this report and, if needed, request additional information from other Member States or international organizations. It is expected that only in extraordinary circumstances would the Secretary-General not carry out an investigation at the site of the alleged incident if evaluation of the information provided to him indicated that an investigation was warranted. Even the allegation of alleged use of a biological weapon carries significant political implications. A UNSGM investigation would focus on whether the alleged incident was caused deliberately or not; it would not support other response activities.

HSI-TAG: The primary focus is on determining intent. Without credible evidence of intent, it is unclear if the act was deliberate. HSI-TAG recommends that WHO conduct a situation analysis, technical risk assessment and review public health and epidemiological data. They also advise running concurrent investigations to avoid losing evidence and finding a lab to manage samples, supported by WHO's bilateral agreements with many Lower-middle-income countries (LMICs).

WHO: WHO would perform risk assessment and situation analysis, provide support to epidemiological investigation, public health response and clinical management, including identification of the causative agent from the clinical specimens upon agreement with the country and where appropriate, the BSP Unit will exercise its own intelligence and with the law enforcement and security partners gather information on the intent behind the incident.

Scenario 2: WHO was notified of a cluster of severe pneumonia cases in countries X, Y, Z, these countries are sharing borders with country W. The samples from the patients were sent to WHO Collaborating Centres who identified untypable influenza A using a PCR panel, indicating the virus is not a seasonal influenza virus. The three countries requested UNSGM to be activated, suspecting that country W intentionally released the pathogen. The WHO Director General also decided to activate SAGO. What will your organization do? (Question directed to SAGO, UNSGM, HSI-TAG and WHO)

SAGO: They would first determine if the release was deliberate or natural. If it leans towards natural or accidental, SAGO would collaborate with COVINET to investigate regional labs' capacities to create the virus and guide necessary studies to determine the virus's origin.

UNSGM: Similar to the first case, the Secretary-General (SG) can request more information and consult experts. Based on this, an investigation might be launched where a team of UNSGM-rostered experts would collect and send samples to three laboratories. Of these, two laboratories should be requested to carry out immediately the analyses required for the investigation. The third laboratory should be requested to carry out the analyses required for the investigation only if the results obtained by the two laboratories are inconclusive or contradictory, or if other circumstances exist or arise which would warrant the analysis. If there are no three laboratories on the roster that have the necessary capabilities, the Secretary-General may ask Member States or international organizations (e.g. WHO, WOAH) for recommendations and these labs can be ad hoc nominated to the roster.

HSI-TAG: In ambiguous events, SAGO and HSI-TAG could collaborate. It's important for UNSGM's investigation to remain separate, objective and scientific. HSI-TAG recommends using UNSGM laboratories rather than COVINET laboratories, which are primarily research labs, in order to protect them.

WHO: The CBRN roster would manage the incident management system to protect the population, providing technical advice on public health and clinical interventions as well as operational support. While identifying whether the event was deliberate is important, the primary focus is on the human population's health and public health response. WHO will inquire its quadripartite partners, including WOAH and FAO about the circulation of animal influenza viruses in the concerned countries.

Discussion

The group first emphasized the need for clearer role definitions in outbreak investigations, including whether multiple investigations would take place simultaneously or whether organizations would work together on a single investigation. The HSI-TAG members acknowledged the importance of determining the origin of outbreaks and the necessary investigational framework, which is often challenging, and suggested that Regional Office capacity for investigation be expanded as well. SAGO agreed that this is needed and responded that their soon-to-be-published framework is designed to be adapted to regional and local contexts and includes discussion on establishing regional experts that can form the investigative team if ever there is a need. SAGO also clarified that DEs are outside their framework's scope, though they should remain involved as an expert resource until a DE determination is definitive and can also provide expertise on further spread via onward natural transmission pathways beyond initial deliberate transmission. If a deliberate nature is suspected, the investigation would be handled by another WHO body or advisory group, such as the HSI-TAG and the BSP Unit, with the potential activation of the BWC. The group also discussed the emergency response framework, noting that response teams would receive advice and direction from various advisory groups rather than a single one.

The group then discussed several topics related to WHO interagency coordination. First, the group asked whether other toxins will be included on priority lists, to which OPCW stated that it is up to Member States to consider and add toxins to the schedules in the Annex on Chemicals to the Chemical Weapons Convention. The OPCW also mentioned that they are working with UNSGM to harmonize reporting formats for biotoxin analyses. The Secretariat noted that these toxins are not typically covered by WHO reference laboratories, so coordination with OPCW was necessary to identify facilities sharing information on these toxins. The group then inquired about OPCW's mechanisms for State Parties to seek assistance during chemical events. OPCW mentioned several mechanisms, including technical assistance visits under Article X of the convention.

Lastly, WOAH was asked about their process for prioritizing concerns (accidental or deliberate), to which they responded that while they do not have a systematic process, they rely on a standing expert group to determine emerging diseases for priority activities. The expert group considers economic and social ramifications as well as health risks when making their determinations.

5. Emerging risks and technologies

Artificial Intelligence (AI)

The group then heard three presentations on AI in the HSI ecosystem. The first presentation, given by WHO's Department of Digital Health and Innovation (DHI), covered AI's role in health, which spans from bench science to population science and has increased rapidly in complexity and capability, particularly in diagnostics and point-of-care applications. AI's use in fields like radiology, digital pathology and drug discovery already offers lower costs and higher accuracy; however, rapid private sector advancements pose public health risks and ethical concerns, necessitating government regulations and WHO support for Member States in drafting AI legislation. The AI for Health initiative (GI-AI4H)[52] aims to build governance for AI in health ecosystems enabling policies, standards and regulations, for systemic inclusion of AI in health facilitating collaboration, capacity, communities and aid countries in implementing AI ecosystems to enhance health systems while ensuring equity. Key priorities and ethical challenges with AI were discussed at WHA77, with published guidelines addressing various aspects of AI use, including data collection and autonomous decision-making.

The second presentation, by the Johns Hopkins Center for Health Security, highlighted AI's immense potential benefits in life sciences, including advancements in vaccine development and other medical innovations, yet also covered the significant risks associated with AI, particularly in the context of dual-use applications where AI tools could be misused for harmful purposes. Large Language Models (LLMs) and frontier models, which process vast amounts of data, are evolving rapidly and becoming more powerful and costly. These models, along with biological design tools used to aid molecular interactions, pose potential threats if used to create dangerous biological agents, such as facilitating the recreation of extinct viruses.

The third presentation was given by the TAG-RULS DUR on AI in the life sciences. There exists a considerable need for effective governance and safety measures to mitigate these risks, as emphasized by the TAG-RULS DUR working group on the convergence of AI and Life Sciences (AIxBIO). Current efforts include safety evaluations of AI models, the establishment of AI safety institutes and "red teaming" within the development community to identify and address potential threats. There is also particular focus on restricting access to training datasets that could enable dangerous applications, implementing model access controls to prevent misuse and governing the digital-to-physical transition, which involves regulating the creation of physical constructs from digital models in laboratories. This aspect of governance is crucial to ensure that even if a digital version of a dangerous agent is developed, its physical creation is strictly controlled. The TAG-RULS DUR working group on AIxBIO is focused on identifying, monitoring, anticipating and minimizing risks associated with highly capable AI systems in potential dual-use research. They are particularly concerned with pandemic-level risks that could be created through the deliberate, accidental, or inadvertent use of AI systems. The working group looks forward to providing policy briefs and recommendations for action that WHO can use in their awareness raising efforts.

Overall, the need for education and awareness training was highlighted as essential for ensuring that developers and users of AI tools understand the potential risks and adhere to safety protocols. Voluntary industry commitments to safety, although beneficial, are not enforceable, underscoring the need for formal regulatory frameworks. Ultimately, the establishment of best practices for AI governance is still in progress. Human oversight remains critical in evaluating and managing AI models, but as technology advances, there is a potential for automating safety evaluations. Ensuring that governance measures keep pace with technological developments is imperative to prevent the misuse of AI in life sciences.

52 https://www.who.int/initiatives/global-initiative-on-ai-for-health

Discussion

The group inquired about plans to educate young scientists globally on these emerging risks. While implementing educational changes is challenging, WHO is developing courses on OpenWHO[53] and focusing on health workforce development for Member States, particularly in AI and health. WHO headquarters collaborates with regional offices to manage the high demand for training and the TAG-RULS DUR has a separate working group on education as well. The group then discussed whether WHO is conducting any research on AI use, and while the Secretariat acknowledged that WHO doesn't conduct research, they do spend considerable effort in convening top researchers to share insights. The rapid pace of innovation often outstrips policy development, but efforts are underway to accelerate regulation timelines for novel pathogens. Effective policy development requires practical solutions and community consensus.

Some suggested that The Tianjin Biosecurity Guidelines for Developing Codes of Conduct for life science researchers[54], though not focused on AI-enabled research, offer a model for similar AI guidelines. Emphasis could be on high-consequence harms from AI. The representative from WOAH also suggested health-security, DURC, and artificial intelligence could be topics to be addressed at their 2025 Biological Health Conference in Geneva as well.

Overall, the group agreed that AI poses significant risks, including ethical concerns, bias and the potential for misuse in creating biological weapons, though also agreed in the potentially transformative benefits to biomedical research and more. The discussion closed with the group agreeing that governance efforts need to include safety evaluations, potential restrictions on model training datasets and model access controls. Education, awareness training and enforceable industry safety commitments are crucial components as well.

6. Future considerations

The Secretariat is grateful for the HSI-TAG's support as efforts to improve DE preparedness and response capacity across the three levels of the organization continue. Moving forward, the HSI-TAG will continue to provide crucial advice and expertise to the BSP Unit and other relevant WHO groups. As the current biennium will be half-way complete at the end of 2024, it is important to both recognize the progress that the Secretariat has achieved towards the HSI-TAG's recommended goals published in 2023,[55] while also acknowledging that much work remains to be done. In consideration of both past accomplishments and outstanding goals, the HSI-TAG proposed mid-biennium priority actions can serve as a guide for three core work areas throughout the rest of this biennium (condensed in the executive summary section of this report):

Mid-biennium HSI-TAG recommendations:

WHO DE response and surge capacity development

- WHO should further strengthen its ongoing efforts to engage essential functions for deliberate event preparedness across the organization through the WHO DETF.

53 https://openwho.org/

54 https://www.interacademies.org/sites/default/files/2021-07/Tianjin-Guidelines_210707.pdf

55 https://www.who.int/publications/m/item/health-security-interface-technical-advisory-group-hsi-tag-annual-meeting-summary-wer

    - Regional Offices should also be encouraged to further develop their plans and capabilities for preventing, detecting, preparing for and responding to DEs and to help facilitate this work in Member States.
    - WHO should provide HSI-TAG with definitions and scopes of work for the internal surge capacity roster, external expert roster and other mechanisms such as Standby Partners, EMTs, Global Outbreak Alert and Response Network (GOARN) so that the HSI-TAG advice can be made regarding appropriate training needs and improvements to response capabilities.
- WHO should continue to develop surge capacity partnerships (e.g., EMTs, standby partners, civil-military health collaboration) and engage the HSI-TAG for technical and operational standardization across these partnerships.
    - WHO Secretariat in charge of the internal surge capacity roster should ensure that coordination/ leadership functions are included in rosters (e.g., Incident Manager for DE), along with other core functions.
- WHO's role in a DE should be on training and preparedness/readiness as well as providing strategic, technical and operational assistance in crisis response, particularly ensuring impacted Member States are able to provide good clinical management of the affected.
    - WHO clinical expertise around deliberate chemical and radio-nuclear exposure is currently not well established and needs future work by coordinating and drawing from relevant groups with that expertise.
- WHO BSP unit should continue to refine its Risk Assessment tools and clarify the explicit purpose and intended use of what is now termed the DE SRA and how it is distinct from other WHO Risk Assessment tools.
    - WHO BSP unit should consider adapting the DE SRA template/methodology, currently intended for use for internal WHO purposes only, for Member States use as well.

Country capacity building

- Reports from the Regional Offices identified that CBRN event preparedness is the least developed among all the IHR (2005) core capacities. To improve this capacity, WHO should work to improve DE awareness and promote the use of the NSAT which has been piloted for finalization.
    - WHO Regional Offices should work closely with Member States to implement the NSAT evaluation process. To the extent possible WHO Headquarters and the HSI-TAG should assist in that process.
- Following missions to support Member States for DE response, WHO should perform AARs at its three levels with the respective national authorities to continually improve preparedness and response of both parties.
- The WHO DE guidance ("Blue Book") last revised in 2004 should be updated to reflect the changing global and regional security landscapes and advances of technologies. It should focus on the needs of its target audience (primarily public health officers), serving as an easy-to-use reference and policy implementation guide with practical information. HSI-TAG seeks to understand what specific problems the revised "Blue Book" is intended to solve (as compared to other existing or in development technical resources) prior to initiating the revision process.
    - The HSI-TAG should be engaged in the process, including the characterization, structure and the technical aspect of the content.

DEs preparedness/readiness and inter-agency response coordination

- WHO and partners with DE experience should additionally plan multi-sectoral DE simulation exercises with both UN (e.g., FAO, BWC, UNSGM,) and non-UN (e.g., INTERPOL, WOAH, OPCW, ICRC) entities to ensure streamlined event response capability and clear roles and responsibilities without gaps.

- WHO should include Regional Office and Member State levels in designing and conducting simulation exercises to assess and build capacity.
- WHO should consider both one-to-one MoUs and one-to-many partnership agreements to resolve uncertainty regarding roles, responsibilities and resources.
- WHO should identify tangible near-term opportunities for the relevant TAGs (TAG-B, TAG-RULS DUR, SAGO and HSI-TAG) to collaborate to better delineate preparedness /readiness and response roles.
- WHO should strengthen the application of foresight approach to CBRN risks, ensuring that database development and mathematical programming efforts have tangible consequences for improving event detection, assessment, monitoring and response capability across the three levels of WHO.
- WHO should support both Regional and Country efforts to compose regulations and guidance documents that can minimize the misuse of emerging technologies.
    - WHO should continue to assess the risks and benefits of AI, particularly considering the potential for AI in the context of DE threats.
- WHO should provide HSI-TAG with briefings on DEs to which it has responded in the form of case study reports.
- For biological events with ambiguous origins, the BSP Unit and the HSI-TAG should work side by side with SAGO to consider the potential deliberate source.

Annex 1. Decision aid for country selection for AFRO-EMRO bi-regional foresight workshop

DECISION AID FOR COUNTRY SELECTION FOR AFRO-EMRO BI-REGIONAL FORESIGHT WORKSHOP

Name of Country: .....

Date of Assessment (DD/MM/YYYY): .....

PART I

Category	Indicators[1]	Questions for assessment	Highly likely (1)	Likely (2)	Neutral (3)	Unlikely (4)	Highly unlikely (5)	Score in total[2]
Level	Readiness	Does a country have a national plan or SOPs for CBRN DE preparedness and response?						
		Does a country have a system for CBRN DE preparedness and response in place?						
		Does a country have a recent JEE scoring?						
	Capabilities	Does a country have capabilities to respond? (e.g.,detect, investigate, test, and deploy response)						
	Knowledge	Does a country have training programme(s) for CBRN DE preparedness and response for officials or professionals?						

1 Please refer to scores in the latest Joint External Evaluation (JEE) mission reports and/or Dynamic Preparedness Metric (DPM) dashboard, where relevant and applicable.

2 Please aggregate the score of each assessment question by referring to the score in bracket (). Countries with 10 highest sum of the scores are to be selected.

PART II

Category	Indicators[1]	Questions for assessment	Highly likely (5)	Likely (4)	Neutral (3)	Unlikely (2)	Highly unlikely (1)	Score in total[2]
Domestic and External Factors	Current or emerging issues	Does a country face any current or emerging issues of DEs?						
	Underlying risk factors	Does a country have any underlying risk factors[3] that can possibly cause DEs?						
	Environment	Is a country in a stable condition in terms of security without involvement of domestic or international conflicts?						
	Prioritisation	Does a country consider DE preparedness and response as their health and security priority?						
	Interest	Is a country interested in developing actionable and time-bound plans for DE preparedness and response through foresight methodology?						

3 The risk factors include any of following factors: 1) presence and/or use of hazardous substances such as chemicals, biological agents, toxins, or radio-nuclear materials (CBRN) 2) emerging threats, including disinformation, misuse of digital, cyber means and other new technologies, as well as dual use research of concern (DURC).

Annex 2. List of participants

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Admin Assistants in Charge

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Annex 3. Agenda

Day 1: Tuesday, 9 July–(Plenary, open to observers)		
WHO Headquarters Geneva, Salle V, B building		
08:30–09:00	Registration of participants (obtain visitors badge from front desk)– Coffee & Viennoiseries	
09:00–09:15	**Welcome** Opening remarks Objectives of the meeting and expected outputs Tour de table and presentation of all participants Procedures and rules of the meeting Summary of DoI review Housekeeping announcements and agenda	Chair, Co-Chair Maria Van Kerkhove, EPP– Video recording Chair Nahoko Shindo, BSP Sophie Allain Ioos, BSP
09:15–10:10 ***Session 1***	**HSI programme update briefing**	Chair Nahoko Shindo, BSP BSP team members
10:10–11:15 ***Session 2***	**Regional activities update–** **Region's HSI / Deliberate Event focused work** **Discussion**	Chair Regional Office Representatives Mory Keita, AFRO Andrea Vicari, PAHO/AMRO Sabri Gmach, EMRO Sugandhika Perera, SEARO Sean Casey, WPRO Catherine Smallwood, EURO
11:15–11:20	***Group photo***	
11:20–11:40	***Refreshment break***	
11:40-12:30 ***Session 3***	**Biological risk management work at WHO** • Overview • Laboratory biosafety and biosecurity update **Update on The Technical Advisory Group on the Responsible Use of the – Life Sciences and Dual-Use Research (TAG- RULS DUR)** **Discussion**	Chair Nahoko Shindo, BSP Kaz Kojima and Rica Zinsky, BSP Stuart Blacksell, TAG-B Vice Chair (and SAGO) Donald Ibe Ofili, TAG-RULS DUR Vice Chair
12:30–13:30	***Lunch Cafeteria (Self-service)***	
13:30–14:00 ***Session 4***	• **Emergency Medical Teams (EMT)** • **Strategic and Technical Advisory Group for Infectious Hazards with Pandemic and Epidemic Potential (STAG-IH)** • **Bluebook revision** **Discussion**	Chair Kai-Hsun Hsiao, HCR Nahoko Shindo, BSP Veronica Rovegno, HEO Nahoko Shindo, BSP

14:00–15:00 ***Session 5***	**Non-UN partnership** • INTERPOL • WOAH • OPCW **Discussion**	Chair Sophie Allain Ioos, BSP Shikar Khan, INTERPOL Keith Hamilton, WOAH Keegan McGrath, OPCW
15:00–15:20	***Refreshment break***	
15:20–16:50 ***Session 6***	**UN and partner coordination** Framework and SOP for UN-wide response to major Deliberate Event Work of the UNSGM/UNODA on DE • Discussion How UNSGM and the Scientific Advisory Group for the Origins of Novel Pathogens (SAGO) play out in case of a potential DE event caused by biological agent?	Chair Veronica Rovegno, HEO Daniel Feakes, ISU, BWC Christine Uhlenhaut, UNSGM/UNODA Alice Simniceanu, EZD Jeffrey Gilbert, EZD Jean-Claude Manuguerra, SAGO Co Chair Stuart Blacksell, SAGO (and TAG-B)
16:50–17:00	**Wrap up and end of the day** **HSI-TAG members appointment letter signing**	Chair and Co-Chair HSI-TAG Secretariat
17:00	***WHO cafeteria – Reception /Cocktail – All participants***	
Dinner (Optional)	**From 19:30. Location Tie Break Restaurant.** Chem. de l'Impératrice 27, 1292 Pregny-Chambésy (close to WHO HQ)	
Day 2: Wednesday, 10 July – (Closed sessions are closed for observers)		
WHO Headquarters Geneva, Salle V, B building		
09:00–09:20	**Summary of Day 1**	Co-Chair Rapporteur
09:20–10:20 ***Session 7 (Closed session)***	**Working groups part 1** • Roster capacity building and deployment • NSAT Deployment **Discussion**	Chair Nahoko Shindo, BSP Working Group team leads: Peter Blain Mayra Ameneiros Philip Bacchus, BSP
10:20–10:40	***Refreshment break***	
10:40–12:00 ***Session 8 (Closed session)***	**Working groups part 2** • Risk Assessment & Signal /Event Detection • Foresight and deliberate events **Discussion**	Chair Nahoko Shindo, BSP Working Group team leads: Paul Arbon Kathleen Vogel Sophie Allain Ioos, BSP Margaux Mathis, BSP Harris Heritier, BSP Philip Bacchus, BSP
12:00–13:00	***Lunch break – Cafeteria (self-service)***	

13.00-14:30 ***Session 9***	**Artificial Intelligence (AI) and Deliberate Event**	Co-Chair Sophie Allain Ioos, BSP
	• Existing projects of AI at WHO and potential collaboration with other TAGs	Sameer Pujari, BHM
	• Overview of opportunities and threats of AI in a context of Health -Security Interface and Global security	Thomas Inglesby, JHU
	• Advanced progress from TAG-RULS DUR or plan on AI and DUR	Anita Cicero, TAG-RULS DUR David Ulaeto, TAG-RULS DUR
	Discussion	
14:30–15:00 ***Session 10 (Closed session)***	**Opportunities for innovation and ideas for the future** **Discussion**	Chair Co-Chair Rapporteur
15:00–16.30 ***Session 11 (Closed session)***	**HSI-TAG now and forward**	Chair Co-Chair
16:30–17.00	**Wrap-up and Adjourn**	Chair Co-Chair

Notes

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