



WHO Health-Security Interface Technical Advisory Group (HSI-TAG)

Report of the annual in-person meeting
6–7 July 2023 | Geneva, Switzerland



World Health
Organization

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Executive summary:

Key outcomes and actions

This 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 more in-depth and extensive discussions on these initiatives; 2) Meet with WHO Headquarters (HQ) and Regional Offices focal points to discuss global and regional perspectives and priorities, and identify unmet Member States' needs related to preparing for and responding to deliberate threats; 3) Discuss and reach consensus on the strategy for the second half of 2023 and priority actions for the HSI-TAG; and 4) Review, discuss and provide advice on HSI strategies, priority projects and deliverables for the next biennium (2024–25). These strategies, priority projects and deliverables include:

1. Enhancing global understanding of the interface between public health and security sectors (Health-Security Interface: HSI) and improving the operationalization of relevant methodologies
 - The HSI-TAG will continue to advise WHO in refining its scope of work on HSI and promoting awareness of the importance of working to strengthen Deliberate Event (DE) preparedness.
 - a. Provide expert input regarding priorities for WHO and Member States' HSI preparedness regarding deliberate events and ambiguous events.
 - b. Contribute to the development of communication materials regarding risks, preparedness and response priorities for DEs.
 - c. Contribute to stakeholder mapping to better organize and understand relevant roles and functions of the international collaborator network.
 - d. Support mapping of global efforts to study and address misinformation, disinformation and cyberthreats.
 - WHO and its global partners should prioritize operational planning efforts that help Member States prevent and prepare for high consequence events in the DE space, especially those that would have national or international implications; WHO should continue to support the development of effective tools that improve the detection, verification and assessment of potential signals related to the risk of deliberate release.
2. HSI capacity building across three levels – global, regional and national
 - The HSI-TAG and relevant WHO programmes, through the coordination provided by the Biosecurity and Health Security Protection (BSP) Unit, will work closely with regional focal points to improve preparedness and response system capacities at the country level. This is well aligned with the Organization's General Programme of Work (GPW-13) set by the Director General to produce more impact in countries. Country workplans should be agreed at the three levels of the Organization (HQ, Regions, and Member States) for the next biennium (2024–25) including identification of priority countries.
 - The BSP Unit and regional focal points are advised to identify priority Member States that would benefit most from heightened response capacity, including expanded use of risk assessments, gap analyses and training or simulation exercises (SimEx).
 - The HSI-TAG and the BSP Unit will collaborate to compile a set of case studies from a selection of representative Member States that may be useful for informing others, as effective existing preparedness and response systems can be used as blueprints for developing new ones elsewhere.
3. Strengthening collaboration across the HSI partner network
 - The HSI-TAG will collaborate closely with the BSP unit to identify, develop and grow cross-sectoral partnerships and opportunities to share expertise.

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- a. This includes strengthening internal relationships, for example between various advisory groups and departments within WHO, and external relationships, such as between WHO and other international agencies.
 - b. The HSI-TAG will rearrange its existing working groups along with deliverables to reflect the new biennium plan.
 - WHO and the HSI-TAG will continue to work to lower the chances of laboratory accidents by collaborating with the Technical Advisory Group on Biosafety (TAG-B) to promote a culture of transparent sharing of laboratory incidents and emphasize the prevention of high-consequence accidents that may have national, regional or international implications.
 - The BSP Unit will continue to collaborate with internal WHO groups to apply other areas of expertise on the topic of DEs, map stakeholder roles and expand the use of foresight methodology to improve preparedness and response.

Introduction

The Health-Security Interface Technical Advisory Group (HSI-TAG)¹ was established by WHO to provide advice across the interface between public health and security sectors, also known as the Health-Security Interface (HSI), including preparedness and response to deliberate events (DEs) and chemical biological, radiological and nuclear threats (CBRN). 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 group, first convened in 2019 and now acting under terms of reference updated in 2022, provides independent advice to WHO on topics, strategic priorities and plans of action relating to HSI. As part of the 2022 updated terms of reference and formalization of the TAG, new members were appointed by an open selection process. The eighteen current HSI-TAG members 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 Epidemic and Pandemic Preparedness and Prevention (EPP) Department serves the WHO Secretariat role to the HSI-TAG.

This two-day in-person 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 more in-depth and extensive discussions on these initiatives; 2) Meet with WHO HQ 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 strategy for the second half of 2023 and priority actions for the HSI-TAG; and 4) review, discuss and provide advice on HSI strategies, priority projects and deliverables for the next biennium (2024–25).

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

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 chemical and biological risks. The unit has been focusing on enhancing WHO preparedness for DEs and strengthening regional and Member State capacity to prevent, prepare for and respond to chemical, biological, radiological and nuclear (CBRN) threats. Noted recent activities include the development of resources for preparedness and response to DEs as well as the development of the Deliberate Events Task Force (DETF) within WHO, which serves as a specialized body for preparing, training and equipping WHO personnel for potential DE scenarios. The WHO Secretariat has also led and participated in several recent Simulation Exercises (SimEx)², aimed at enhancing the role of WHO in DE-specific public health preparedness, response and operational readiness.

The WHO Secretariat then briefed the meeting participants on several recent conferences related to preparing for DEs that provided opportunities for collaboration and knowledge sharing. First was the consultation meeting organized by WHO as the implementation of WHO resolution WHA74.7 (2021) on engaging civil and military collaboration for strengthening preparedness for health emergencies.³ During this consultation, the BSP Unit presented its efforts in helping Member States to bridge public health and security sectors, mainly through

1 Health-Security Interface Technical Advisory Group ([https://www.who.int/groups/health-security-interface-technical-advisory-group-\(HSI-TAG\)\)](https://www.who.int/groups/health-security-interface-technical-advisory-group-(HSI-TAG)))

2 October 2021: Deliberate event SimEx/TTX organized by BSP with HQ/AFRO/EMRO; Sept 2022: Capstone exercise organized by UNODA and RKI-UNSGM exercise, Berlin (WHO observer); March 2023: Bioterrorism event SimEx organized by WOA/FAO/Interpol (WHO observer)

3 Consultation on the Secretary-General's Mechanism for Investigation of Alleged Use of Chemical and Biological Weapons (<https://disarmament.unoda.org/wmd/secretary-general-mechanism/>)

the Unit's contribution to Joint External Evaluation (JEE) missions.⁴ This meeting was followed by a BSP Unit-led brainstorming session on how to practically implement linking efforts between public health and security agencies. The World Organisation for Animal Health (WOAH) Global Conference was also attended by BSP Unit representatives, who focused on fostering collaboration between security and public health (animal and human health) sectors, with an emphasis on DEs and cybersecurity threats. Most recently, BSP Unit representatives attended the United Nations Office for Disarmament Affairs (UNODA) workshop organized in June 2023 to strengthen cooperation among international organizations for the United Nations Secretary-General's Mechanism for the Investigation of Alleged Use of Chemical, Biological or Toxin Weapons (UNSGM). Of note, the UNSGM is activated only by request from Member States of alleged allegation of a biological event, hence it is likely that WHO and other health partners are already in action, however it is not the mandate of WHO to conduct investigations into perpetrators. The agencies present (UNODA, WHO, WOAH, Interpol and the Organisation for the Prohibition of Chemical Weapons) provided an update on their ongoing work and planned activities, while the BSP Unit emphasized the need for a strong interagency coordination mechanism stemming from a clear mutual understanding of each agency's role in preparedness, prevention, response and recovery.

Following the presentation of recent events, an overview of the UN Biorisk Working Group (UN-BRWG) was provided by the Technical Officer responsible for the WHO Secretariat of the Working Group. The UN-BRWG was established in 2020 to improve system-wide preparedness and response to biological risks. The Working Group is co-chaired by the Under-Secretary-General and High Representative for Disarmament Affairs and the Executive Director of the WHO Health Emergencies Programme. Within WHO, the coordination of the Working Group is managed by the Office of the Executive Director of the Health Emergencies Programme and the BSP Unit contributes to the Working Group as a technical unit in charge of accidental and DE biological events. The UN-BRWG has engaged with 30 UN entities and developed guidance for system-wide coordination in case of a high-impact biological event, which was tested in a high-level table-top exercise in July 2022. The UN-BRWG also piloted a successful staff exchange between WHO and the Convention on Biodiversity, developed an accessible catalogue of existing biorisk trainings and produced a biorisk professional profile in addition to drafting an external engagement strategy in consultation with 60 global biorisk experts identified through a survey targeting relevant institutions and organisations. Lastly, presentations were given by the WHO Secretariat on the recent HSI-relevant situations and support areas in Iran, Sudan and Ukraine.

Group discussion

Several follow up topics were raised by TAG members regarding future HSI focus areas. The group (referring hereafter to the meeting participants listed in Annex 1) acknowledged the importance of information sharing and strategic communication (termed as 'Infodemic management'), particularly in managing misinformation and disinformation including de-escalating exaggerating or detrimental media narratives during crisis situations. During the discussion of SimEx, the group considered the need for scenarios that encompass animal health and cyber threats, as these represent growing concerns. The group also touched upon the concept of so-called unthinkable events, suggesting a need for simulations that test resilience to unexpected or cascading consequences, such as disruptions to logistics and communication systems.

The discussion further highlighted the need for training on biological and chemical hazards and a review of the ways in which risk assessments are conducted in the face of technological hazards. The group acknowledged the challenges in sourcing information, particularly in conflict zones, and the importance of leveraging multiple sources to inform assessments, including UN agencies and ground staff. The interface between health and security was recognized as extending beyond human health (One Health approach), with a need to consider both deliberate and naturally occurring events. Military collaboration was discussed as well, given the substantial resources available in this sector. Finally, the group identified challenges in interagency collaboration and duplication of roles, using COVID-19 as an example when multiple organizations seemed to cover similar work areas.

4 Joint external evaluation tool: International Health Regulations (2005) - third edition (<https://www.who.int/publications/i/item/9789240051980>)

2. Regional session

The meeting continued with presentations from each WHO Regional Office on current and future HSI activities. Representatives from each WHO Regional Office shared their perspectives and described the vast geographic and demographic diversities across the regions, as well as the range of capacities that each region has at hand to prepare for and respond to DE threats.

Regional Office for South-East Asia

The Southeast Asia Region, home to a quarter of the global population across 11 countries, faces multiple intersecting hazards and varying capacities to respond. Work of the WHO Regional Office for South-East Asia on HSI challenges began in 2018 through country workshops on CBRN and in 2022 a regional workshop on emergency preparedness and response to natural, accidental and deliberate CBRN events took place. The Regional Office's priority activities include conducting country workshops, SimEx on emergency response coordination, pilot assessments once the CBRN assessment toolkit is finalized and continuous assessment of CBRN preparedness capacities through the International Health Regulations (IHR) monitoring evaluation framework.

Regional Office for the Western Pacific

The Western Pacific Region, one of the most geographically extensive, is particularly vulnerable to climate change, natural disasters and infectious diseases. The Regional Office's priority activities include the development of the Asia Pacific Health Security Action Framework,⁵ onboarding of new staff for disaster risk reduction, continuing to develop National Emergency Medical Teams, managing the WHO Asia Pacific Centre for the Environment and Health⁶ and supporting Member States to improve chemical and nuclear IHR indicators on preparedness and mitigation. The Office also aims to conduct CBRN and DE SimEx and intends to develop emergency deployment rosters to increase the number of available responders in the region.

Regional Office for Africa

The African Region, with the world's highest burden of infectious diseases, faces low IHR capacities against DEs and CBRN threats according to JEE reports. The Regional Office for Africa aims to enhance Member State capacity by conducting SimEx about CBRN and DEs, as well as through technical skill and knowledge trainings. The Office also aims to offer tools that enable Member States to roll out their own activities while still providing regional support to strengthen national preparedness and response plans.

Regional Office for the Eastern Mediterranean

The Eastern Mediterranean Region has experienced several DE situations in recent years. HSI activities of the Eastern Mediterranean Regional Office include discussing and clarifying the role of the HSI under the WHO mandate and strengthening the bond between health and non-health sectors. Proposed activities include developing new and reviewing existing standard operating procedures (SOPs) for communication, updating risk assessments, mapping CBRN hazards at national and subnational levels, reviewing and updating emergency preparedness and response plans and expanding capacity building exercises for Member States.

5 Asia Pacific Health Security Action Framework (<https://apps.who.int/iris/handle/10665/366311>)

6 WHO Asia Pacific Centre for the Environment and Health (<https://www.who.int/westernpacific/centreforenviroment>)

Regional Office for Europe

The European Region, with 53 Member States, has experienced several emergencies including poliomyelitis outbreaks, the war in Ukraine, earthquakes in Türkiye and COVID-19 across the region. The Regional Office for Europe aims to increase capacity and finalize response plans for Member States, which include improving provision of care, establishing international medical evacuation, strengthening poison control centres and developing regional response stockpiles. Future activities also aim to improve risk communication, including social listening and infodemic management.

Regional Office for the Americas

The Regional Office of the Americas HSI focus includes strong civil-military coordination in emergency response, preparedness for potential biological threats, assuring essential services for potential epidemic risks and communication and community engagement. The Office maintains a network of advanced laboratories and capacities, which are the basis for surveillance and early detection. There is also an emphasis on quality management and risk management, as well as offering online learning courses for different infectious hazards. In the future, this Regional Office aims to strengthen Member State HSI capacity.

Group discussion

The group discussed the diversity and unique challenges of different WHO regions, emphasizing that there is no one-size-fits-all approach to dealing with DE risks. It was proposed that each region could present countries with case studies for responses to DE threats, with the aim of providing a blueprint or framework for countries with similar challenges. Regions were encouraged to work together to use consistent assessment processes to identify potential priority countries that may require more engagement than others. The Regional Office for Africa additionally highlighted the need to strengthen capacity and assess biosafety/biosecurity situations at national and regional laboratory facilities. The lack of biosafety and biosecurity systems in many countries was noted, as well as the challenge of underreporting due to fear of backlash. The conversation then moved to surveillance, highlighting the differences between DE-focused surveillance systems and natural event-focused surveillance systems. There was a call for either clarifying the differential systems or creating combined systems that can detect both DEs and natural events.

The final point of discussion revolved around the development of SOPs to manage DEs. The group mentioned the National Self-Assessment Tool (NSAT) tool, which allows states to assess their own level of preparedness to tackle a DE and is harmonized with JEE tools⁷ under the IHR (2005). Lastly, the group highlighted the importance of sustaining the infrastructure for genetic sequencing beyond the scope of COVID-19 and expanding the use of these platforms for other pathogens.⁸

3. Overview of working groups

Opening presentations by the BSP Unit provided the background for the existing HSI-TAG working groups. Key needs at the inauguration of the HSI-TAG in October 2022 included strengthening of WHO health intelligence for DEs, a clearer scoping of HSI work, exploration of emerging threats such as cyberattacks and disinformation risk and communicating about WHO activities related to HSI and DE (for example, through a dedicated web page). Other needs included exploring foresight activities related to DE, reviewing existing and developing new training materials and raising the profile of CBRN preparedness/readiness as part of JEE activities.

⁷ Joint external evaluation tool: International Health Regulations (2005) - third edition (<https://www.who.int/publications/i/item/9789240051980>)

⁸ Global genomic surveillance strategy for pathogens with pandemic and epidemic potential 2022–2032 (<https://www.who.int/initiatives/genomic-surveillance-strategy>)

The list of the current working groups includes:

- Roster of Experts (RoE) and Training Materials Working Group
- Improve IHR Implementation Working Group
- Health Intelligence Working Group
- Information Risk/Digital Security Working Group
- Deliberate Event Working Group
- The Concept of HSI Working Group

Each working group gave a short presentation on their recent activities and plans for the future, preceded by an update from the BSP Unit on the development of the RoE. The RoE is currently a WHO internal mechanism engaging staff with relevant technical and operational backgrounds. Two training programmes have been planned, focusing on self-protection, chemical/biological event management and coordination training and clinical management of CBRN affected victims. An interactive online training exploring toxic industrial hazards and chemical weapon hazards is also being developed. Future challenges include defining the operational limits of the WHO experts' response and ensuring strict adherence to the WHO mandate, focusing on health effects mitigation and not on attribution. A concept of operations will be created based on the WHE Emergency Response Framework. Updates and future priorities from the working groups were then provided by respective representatives:

- The RoE and Training Materials Working Group aims to build capacity in CBDE awareness and response through the development of effective training tools and documents. They have evaluated the accuracy of the existing WHO CBDE online courses to the RoE competency requirements and identified additional training opportunities for consideration. Future challenges include defining the operational limits of the WHO experts' response and ensuring strict adherence to the WHO mandate.
- The Improve IHR Implementation Working Group works to facilitate the participation of experts in JEE missions, contribute to the development of country readiness checklists, provide feedback to improve NSAT and JEE tools and support dissemination of the NSAT tool. Challenges include coordinating remote meeting participation across different time zones and ensuring clear understanding of the group's objectives. Future plans include developing SOPs for experts joining JEE missions and creating a user guide for the NSAT by 2024.
- The Health Intelligence Working Group is focused on developing a concept note on specific health intelligence for DEs. They also intend to adapt the WHO Rapid Risk Assessment (RRA) template to specifically assess DE preparedness and response capacity. An additional focus for this group is defining BSP Unit's role in the context of the proactive provision of expert opinion on health intelligence.
- The Information Risk/Digital Security Working Group is focused on defining the role of WHO and the BSP Unit in enhancing cybersecurity and counteracting disinformation. They have already provided inputs to a draft Questions & Answers (Q&A) document, landscape analysis of information risk and a cyber incident preparation and response checklist. Future plans include developing new information risk documents and fact sheets, as well as considering proactive health intelligence support.
- The Deliberate Event Working Group looks at different analytical procedures for DEs and the potential for incorporating foresight methodologies. They have also produced a DE fact sheet and Q&A document. Future areas of exploration include statements on the intersection of artificial intelligence (AI) and health security, preparation of laboratories in conflict zones and the impacts of climate change on emerging threats.
- The Concept of HSI Working Group aims to describe the scope of WHO work in the realm of HSI, viewing health and security as interconnected subjects. They have created a two-page concept note providing a scoping of the role of WHO in HSI. The group recognizes that the WHO mandate for protection of populations from health emergencies is central to their work.

Group discussion

The group discussed the evaluation of the existing online trainings for the RoE competencies requirements, the deployment of the NSAT tool and refining online training videos. They highlighted the importance of understanding the link between health and security and discussed the role of the surge capacity roster in supporting Member States during health emergencies.

The group further contemplated the importance of defining the role of the BSP Unit and the HSI-TAG in response to DEs. Group members underscored the importance of developing a DE risk assessment framework and prioritizing and defining high-risk countries for DEs prior to integrating this list into the risk assessment process. Others also suggested the need for a criteria or list of red flags for DEs, which could be used to trigger further investigation. In addition, the group emphasized the need to build on the innovations brought about by the COVID-19 pandemic to accelerate the group's work, for instance utilizing data sharing networks or surveillance improvements that have developed in the last two years.

Lastly, the group discussed the development of the concept note on the scope of WHO work on HSI and the importance of exchange between the HSI-TAG and the Secretariat in refining this note. The group suggested that the concept note could benefit from a clearer delineation of HSI from other types of health collaboration and they stressed the need to increase the visibility of the work carried out by the HSI-TAG, improve the relevant WHO website and update evidence review documents.

4. Related WHO groups and activities

Technical Advisory Group on Biosafety (TAG-B)

The Technical Advisory Group on Biosafety (TAG-B) was renewed in 2022 with revised TORs and succeeds the former advisory group on biosafety "BAG" in advising WHO on its laboratory biosafety and biosecurity programme. Based on an open call for experts in February 2022, 16 individuals were selected as advisory group members and are contributing to several WHO projects in biosafety and biosecurity. In its capacity as an advisory body to WHO, the TAG-B shall have the following functions:

- To provide, review and make recommendations to WHO of the scientific, technical and strategic aspects of WHO biosafety programme.
- To recommend priorities to WHO including revision of documents and most important areas of biosafety and biosecurity on which to focus.
- To advise WHO on specific topics relating to biosafety and biosecurity.
- To advise WHO on opportunities, international initiatives and partnerships appropriate to the WHO Biosafety programme.
- To review and make recommendations to WHO on biosafety and biosecurity guidance.

Dr. Kathrin Summermatter, Chair of the TAG-B, presented the TAG's remit to support WHO with laboratory biosafety and biosecurity guidance. Canada's annual laboratory exposure analysis was highlighted as best practice, with data showing most laboratory accidents result from human error. Dr. Summermatter stressed the need for a global biosafety manual to standardize guidance, especially given the vital importance of personal protective equipment (PPE). She also noted the necessity of country-level regulations considering national circumstances based on local risk assessments. Despite the construction of many containment facilities over the past 20 years, laboratory-acquired infections persist. A risk- and evidence-based approach considering not just the microorganism, but also the interacting activities will ensure that the precautionary measures at these facilities (including the equipment and the work practices) are effective and sustainable.

WHO BioHub

The WHO Secretariat in charge then updated the group on the activities of the WHO BioHub,⁹ a system providing timely sharing of biological materials with epidemic and pandemic potential and related data. The BioHub operates on ten guiding principles and is a voluntary system aimed at improving pandemic preparedness. It functions through two workstreams: Stream 1 enacts practical arrangements for sharing biological materials, while Stream 2 involves a consultative process to design the System. To engage in sharing of biological materials, countries sign a standard material transfer agreement (SMTA). Sharing is facilitated through BioHub Facilities, laboratories responsible for receiving, storing, growing, sequencing and preparing biological materials with epidemic or pandemic potential (BMEPP) for distribution to Qualified Entities (QE) or other Facilities. The BioHub approach is currently being developed through pilot testing, with one active BioHub Facility in Switzerland currently for SARS-CoV-2 virus storage and sharing alone. The upcoming release of an online operational management platform will further support the management and tracking of operations.

WHO Science Division

WHO Science Division¹⁰ then provided an overview of their work to address dual-use research, that is knowledge, information, methods, products or technologies generated by peaceful and legitimate research that may be appropriated for non-peaceful or harmful purposes. The Science Division updated the group on the ongoing creation of a new technical advisory group to advise WHO on the prevention of unwanted or malicious misuse of engineered biological agents to cause harm. The need for further sensitization and management measures are precipitated by rapid developments in life sciences and emerging technologies, which have become increasingly affordable and accessible, the diversity of actors and sectors involved in the life sciences, the lack of awareness and gaps in the governance of dual-use research. The Science Division's work encompasses three main pillars: awareness raising, responsible use of life science, as well as horizon scanning and foresight activity. A global guidance framework for the responsible use of the life sciences was launched in 2022 and is expected to mitigate biorisks and govern dual-use research, including in a One Health context. The Division's future activities include raising awareness, fostering collaboration, developing and implementing training materials, adapting the framework to various pilots and developing and implementing an evaluation and monitoring tool with regional perspectives.

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

Lastly, the WHO Secretariat in charge provided an overview and updates on the work of the SAGO.¹¹ Established in November 2021, the group aims to study the origins and potential scenarios of pandemics, with a significant objective being the creation of a WHO framework for investigating viral origins. This framework, which is presently under internal review, is anticipated to be released in the third quarter of 2023 and encompasses a "One Health" approach covering six main areas: early investigations, epidemiology, human and animal interactions, ecological studies, genetics and biosafety/biosecurity. The group has been proactive in publishing several reports, including one on the origins of Mpox in December 2022,¹² an assessment on COVID-19 origins in March 2023¹³ and a commentary published in *Nature* in May.¹⁴ The SAGO will continue to convene in the future in the event of novel pathogen emergence to provide recommendations for understanding the pathogen's origin, risk potential and response options.

9 WHO BioHub (<https://www.who.int/initiatives/who-biohub>)

10 WHO Science Division (<https://www.who.int/our-work/science-division>)

11 WHO Scientific Advisory Group for the Origins of Novel Pathogens ([https://www.who.int/groups/scientific-advisory-group-on-the-origins-of-novel-pathogens-\(sago\)](https://www.who.int/groups/scientific-advisory-group-on-the-origins-of-novel-pathogens-(sago)))

12 Recommendations to better understand the origins of and factors for the emergence and re-emergence of mpox (<https://www.who.int/publications/m/item/recommendations-to-better-understand-the-origins-of-and-factors-for-the-emergence-and-reemergence-of-mpox>)

13 Preliminary Report of the SAGO (<https://cdn.who.int/media/docs/default-source/scientific-advisory-group-on-the-origins-of-novel-pathogens/sago-report-09062022.pdf>)

14 Marietjie Venter on behalf of the WHO Scientific Advisory Group for the Origins of Novel Pathogens, Why the world needs more transparency on the origins of novel pathogens, A Comment published in *Nature* 618, 27–29 (2023) <https://doi.org/10.1038/d41586-023-01722-6> (<https://media.nature.com/original/magazine-assets/d41586-023-01722-6/25422494>)

Group discussion

The group discussed the need for improved communication on global standards and nomenclature in biosafety levels (BSL versus risk- and evidence-based approach¹⁵) and emphasized that laboratory safety requirements should be tailored to the specific local needs and functions of each laboratory. Challenges, such as the ongoing costs of maintaining maximum containment laboratories, were highlighted along with the fact that laboratory-associated infections still occur despite safer facilities. The group acknowledged that while biosafety is a foundation for good biosecurity, the two are not the same, and agreed on the need for better communication with politicians, scientists and the public about these differences.

The group also explored the overlapping and complementary functions of various WHO divisions and TAGs, acknowledging that this area requires further discussion. For example, coordination and collaboration must be managed in the future between the HSI-TAG and TAG-B on issues related to prevention and preparedness for high consequence accidents and DEs. HSI-TAG members were asked to review and provide input on a draft biosecurity guidance document that WHO has been developing with inputs from TAG-B. Understanding and managing shared or common interests and priorities between HSI and Biosafety programmes of the BSP Unit, as well as the work of their Technical Groups will be important as well. It will also be critical for WHO HSI and Biosafety programmes to work closely with WHO Science Division on issues related to responsible use of the life sciences, dual-use research and biorisks associated with emerging technologies given the Science Division mandate on those issues. Another discussion point focused on the question of the role of WHO and different advisory groups in the case of an emergence of a new pathogen, with the HSI-TAG members suggesting the need to better understand responsibilities if such a scenario were to occur. The group also highlighted that the COVID-19 pandemic served as a catalyst for the development of national public health laboratory networks, and the Global Laboratory Leadership Programme was cited as an effort to instil a culture of safety and transparency in future laboratory leaders.¹⁶

The group had several questions and comments related to the SAGO. First, the group inquired about the public accessibility of certain information from SAGO, emphasizing that while the summary provides details on conducted studies, it does not adequately address the data gaps, especially from laboratories. The focus of SAGO's investigations was also highlighted, noting that its remit is not just COVID-19, but all potential events. The WHO Secretariat agreed that composition of SAGO might need to vary depending on the nature of future events, including adding expertise on synthetic pathogens if necessary. The group showed particular interest in the early COVID-19 cases and their relevance to the disease's origins, stressing the importance of accessing data from these initial cases. The group also questioned the fixed nature of SAGO's six-step investigation process and suggested that security investigations fit more evidently into this structure. Lastly, the group expressed concerns about the availability and identification of laboratories equipped to provide specific information, such as phylogenetics, during investigations.

The discussion concluded with the group emphasizing the unique focus of the HSI-TAG on deliberate events. Unlike natural disasters, deliberate events can involve multiple releases and expand in different ways, presenting additional complexities such as mental health and psychosocial issues, political implications and public distrust. The group agreed on the importance of considering both existing and future threats in their foresight work.

15 Laboratory biosafety manual, 4th edition (<https://apps.who.int/iris/handle/10665/337956>)

16 Global Laboratory Leadership Programme (GLLP) (<https://www.who.int/initiatives/global-laboratory-leadership-programme>)

5. Scenario-based discussion

The group then participated in a scenario-based discussion. The scenario involved the spread of an influenza virus that began among animals and transitioned to humans. The narrative was divided into three ‘injects’, which first explored early detection, followed by increased human spread and finally suspicion of deliberate release. Meeting participants were divided into three groups (human public health, animal health and security and law enforcement) to discuss plans of action and share their reactions at the end of each inject.

The human public health group emphasized the need for early horizon and environmental scanning to take proactive public health action. Risk communication, community engagement and collaboration with other sectors were identified as priorities. The group also highlighted the importance of coordination and understanding across sectors. Because of the increased concern about the potential deliberate nature of the outbreak, sharing medical data between countries and institutions was identified as crucial.

The animal health group prioritized risk communication and noted the need for a multi-ministry effort convened by high-ranking national government officials. They also considered the possible imposition of travel and transport restrictions on livestock and animal products. The group highlighted the importance of information sharing between animal health, human health and law enforcement investigations.

Lastly, the security and law enforcement group discussed their authority to enforce quarantines and distribute PPE, as well as their role in containing potential protests. They also considered investigations into laboratories working with the relevant biological agents or specimens. The group stressed the need for information from the biosecurity sector and national emergency coordination plans along with collaboration between the ministries of health and security. The group underscored the importance of analysing information on early cases, managing resources, developing a communication plan and getting early information from intelligence authorities.

Group discussion

The group discussed the interplay between public health and law enforcement in managing potential DEs. It was noted that the Ministry of Health typically leads public health-related events, with involvement from security and defence representatives if needed. However, it was unclear how and when to effectively engage with law enforcement, a topic which more work is needed to develop. The group also considered how intelligence may precede an event and how a suspected laboratory would be treated as a crime scene. Evidence collection, sample identification and perpetrator identification were discussed as key steps under the authority of the Ministry of Justice. The group noted that responses to events like COVID-19 involve a chain of command led by the Ministry of Health and national task force involvement. Further, the group highlighted the challenge of managing misinformation and disinformation on social media, the importance of consistent communication across sectors and the necessity for clear evidence to precipitate a police investigation in a public health situation. The potential benefits of crowdsourcing data and engaging the global influenza laboratory network (because this scenario involved a novel influenza virus) for information were considered as well.

6. Priority projects, stakeholder mapping and future opportunities

The BSP Unit presented the priority projects for the unit which encompass three main categories defined by the Organization's Programme of Work: technical products (typically described as norms and standards), leadership (or convening authority) and Member States support. The overall mission of the Unit is to address biological threats of accidental and deliberate nature, so-called man-made threats. Prioritized technical products will be designed to strengthen the biosafety and biosecurity of facilities handling biological materials as well as address dual-use research through relevant actions defined by the published framework.¹⁷ Additional technical products are to be developed to address misinformation and disinformation, including cybersecurity, with the aid of AI tools that collect and analyse online conversations containing misinformation or disinformation. Under the leadership responsibilities of the BSP Unit, the first priority is directing prevention and preparedness efforts for a DE response, which includes developing a workforce and SOPs. Particular effort must be put into communicating and promoting these materials to Regions and Member States. Leadership through the Unit's convening authority capacity will also be required to engage in global coordination with the human-animal interface and law enforcement communities. Lastly, Member State support is a crucial category of future work and will include designating priority countries for DE capacity building and providing varied support efficiently through the WHO emergency management authority.

The next session covered current internal and external stakeholder mapping efforts. The goal of this work is to identify and categorize the roles of partners involved in the HSI and to establish transparency and accountability, avoiding duplication of roles. Stakeholders, including Interpol, the UN system and various internal WHO departments, have been divided into the areas of either prevention, preparedness or response, though some organisations span multiple areas.

In a final session, the concept of foresight was introduced. Foresight is a UN-wide approach of working together to imagine different possible futures, with the aim of shifting from reactive to proactive measures. Foresight has been used by WHO, both for epidemic and pandemic preparedness as well as by the Science Division for future technology and innovations. Foresight is a particularly useful strategy for conceptualizing and planning preparations and responses to DEs.

Lastly, the Health Emergency and Preparedness and Response (HEPR) framework was presented and contextualized for HSI. The session emphasized the overlaps between HSI work and the HEPR, the importance of resilience and the need to advance the Five C's: collaborative surveillance, community protection, safe and scalable care, access to countermeasures and emergency coordination.

Group discussion

The group discussed a range of topics related to the HSI following the presentations on the BSP unit's priority work. The group first raised the issue of the recovery phase in disaster response and the need to involve the Global Health Cluster,¹⁸ a WHO-led global network of country-level partners which exist to relieve suffering and save lives in humanitarian emergencies. HSI-TAG members further elaborated on the need for effective communication and operationalization of high-level documents and frameworks at the regional and country levels, as well as the importance of understanding and addressing field-specific contexts. Members remarked on how WHO-led global engagement is strong at the top but does not always reach the community level. Regional and Country Offices are not necessarily aware of the documents and frameworks created at the global level, which affects trust and limits the implementation of effective high-level frameworks.

17 Global guidance framework for the responsible use of the life sciences: mitigating biorisks and governing dual-use research (<https://www.who.int/publications/i/item/9789240056107>)

18 Global Health Cluster (<https://healthcluster.who.int/>)

The conversation then touched on the need for a comprehensive stakeholder map that includes areas like mental health, risk communication and cybersecurity. Group members emphasized the importance of investing in general health security and nurturing conversations around biosafety and biosecurity in higher education to create an engaged and informed next generation of scientists. Lastly, the group discussed the challenge of addressing misinformation and disinformation, particularly in the context of DEs and the role of WHO in coordinating various initiatives in this area.

The group reached a consensus on recommending to the WHO that cyberthreats, misinformation and disinformation should be considered part of IHR (2005) responsibilities. The members clarified that this would complement traditional health threats such as CBRN, rather than replacing them. The group discussed the indirect effects of cyberthreats and misinformation on health and well-being, indicating that these threats may not directly cause disease but can provoke conditions that lead to health issues. Similarly, minor health events can develop into major disasters as a result of disinformation. Group members then highlighted the increasingly frequent and intense cyberattacks on health infrastructure, stressing the need for WHO to take a leadership role in this area. The discussion also touched on the potential benefits of developing a national framework for dealing with cyberthreats, including the creation of new linkages between the health and information technology (IT) sectors. The group then expressed concerns about the need to jointly discuss shared interests between their work and that of others in WHO, such as TAG-B. Group members spoke on the need to clarify the roles of different units within WHO to streamline workflow and maximize collective efforts to manage the increasingly diverse array of threats.

The group then reflected on their proposed plan of work, debating the value of broad versus focused goals. Members then discussed the potential to strengthen laboratory capacities for surveillance of pathogens of pandemic potential and the use of mobile apps for launching teams in response to DEs. Furthermore, the group discussed the importance of developing operational guidelines that clarify roles and responsibilities of key actors (State Parties, UN and other international organizations and institutions) during health emergencies, as well as identifying high-risk countries for proactive health intelligence. The group concluded their discussion by addressing the upcoming IHR review¹⁹ and the potential to influence its direction, especially under the forthcoming Pandemic Accord.²⁰

7. Closing remarks and next steps

The presentations and structured group discussions that followed each presentation throughout the two-day meeting allowed HSI-TAG members to review and discuss WHO activities before endorsing eleven key HSI strategies and priority projects for the next biennium:

1. WHO should be focused on higher order events in the DE space, especially those that can cascade internationally. Compilation of country case studies for DE responses can be used as guides for other Member States.
2. WHO HSI work should support Member States efforts to both prevent and prepare for a DE response. Both WHO and partners including but not limited to UNODA, INTERPOL and UNICRI should promote strong norms and WHO frameworks in bioscience.
3. WHO should continue to work to lower the chances of laboratory accidents by promoting a culture of transparent sharing of laboratory incidents, developing a standardized criteria for such reporting, and placing a special emphasis on preventing high consequence accidents that may have national, regional or international implications.

19 IHR Review Committees (<https://www.who.int/teams/ihr/ihr-review-committees>)

20 Pandemic prevention, preparedness and response accord (<https://www.who.int/news-room/questions-and-answers/item/pandemic-prevention--preparedness-and-response-accord>)

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4. WHO should continue to build tools that help assess and build Member State capacity for preventing and responding to accidental release and DE, including strengthening the use of assessments, gap analyses and SimEx.
 5. WHO Regions should identify priority Member States that would benefit most from heightened preparedness and development of response capacity for DE.
 6. HSI-TAG should work closely with the BSP Unit, TAG-B and other WHO advisory groups and networks to rollout regional workshops and efforts on biosafety and biosecurity.
 7. WHO should increase the implementation of high-level frameworks and collaborate with regions to increase their understanding and uptake by Member States.
 8. WHO should coordinate and map global efforts to study and address disinformation and cyberthreats.
 9. WHO should continue to develop specific tools for detection, verification and assessment of potential signals related to risk of deliberate release.
 10. The BSP Unit should continue to collaborate with internal WHO groups to apply other areas of expertise on the topic of DEs, map stakeholder roles and expand the use of foresight methodology to improve preparedness and response.
 11. The BSP unit should continue to develop the scope of HSI, including establishing a concrete definition and promoting the awareness and understanding of HSI at the three levels of the Organization and among the public.

At the conclusion of the meeting, the important role of the HSI-TAG was emphasized and specifically its capacity to identify gaps, vulnerabilities, challenges and opportunities within the HSI, while providing WHO with the technical and scientific advice relevant to the HSI and the work of BSP Unit.

Annex 1. List of participants

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Annex 2. Agenda

Day 1: Thursday 6 July		
WHO Headquarters Geneva, Salle U1, B building		
08:30 – 09:00	Participant registration	
09:00 – 09:30	Welcome Opening remarks Objectives of the meeting and expected outputs, procedures and rules of the meeting Tour de table and presentation of all participants Summary of DoI review Housekeeping announcements	HSI-TAG Chair Sylvie Briand, Director, EPP Nikki Shindo, Unit Head, BSP Sophie Allain loos, BSP
09:30 – 09:50 <i>Session 1</i>	HSI-TAG now and future <ul style="list-style-type: none"> Purpose of the HSI-TAG and current activities What could be next 	Chair, Vice Chair
09:50 – 11:00 <i>Session 2</i>	HSI programme update briefing: <ul style="list-style-type: none"> Deliberate Events Task Force (DETF) SimEx Meetings - conferences <ul style="list-style-type: none"> Civil Military Collaboration meeting WOAH Global conference UNSGM conference in June HEO (UN Bio Risk Working Group (UNBRWG), etc.) WHO Emergencies: <ul style="list-style-type: none"> Ukraine (HQ and EURO) Iran (HQ and EMRO) Sudan Lab (HQ and EMRO) Discussion Group photo	Sophie Allain loos Johnny Nehme, BSP Veronica Rovegno, HEO Regional Office Representatives (EMRO, EURO)
11:00 – 11:20	Refreshment break	

11:20-12:45 <i>Session 3</i>	Regional session <ul style="list-style-type: none"> • Ongoing Challenges • 2024–2025 perspectives • Asks to HQ and HSI-TAG 	Regional Offices Representatives (SEARO, WPRO, AFRO, EMRO, EURO)
	Discussion	
12:45 – 13:45	Lunch	
13:45 -15:00 <i>Session 4</i>	Regional session (Cont.) Working groups overview Operations working groups <ul style="list-style-type: none"> • Roster of Experts / Surge capacity and training materials • Improve IHR implementation (E.g. NSAT training strategy) 	Regional Offices Representative (AMRO/PAHO) Chair Johnny Nehme Sophie Allain loos
	Discussion	
15:00-15:30 <i>Session 5</i>	Biosecurity & biosafety Technical Advisory Group on Biosafety (TAG-B) Discussion	Kaz Kojima, BSP Katharina Summermatter, TAG-B Chair
15:30 – 16:00	Refreshment break	
16.00 – 17:00 <i>Session 6</i>	Biohub activities WHO Science Division activities Discussion	Ioana Ghiga, Yutaka Endo, IEP Emmanuelle Tuerlings, WHO Science Division
17:00-17:15	Wrap-up (Plenary session)	Chair, Vice Chair
17:15-18:00	Health-Security Interface (HSI) (Closed session)	Chair, Vice Chair
18:00	Reception	All participants

Day 2: Friday 7 July		
WHO Headquarters Geneva, Salle U1, B building		
09:00 – 09:20	Summary of Day 1	Vice Chair
09:20 – 10:30 <i>Session 7</i>	Scientific Advisory Group for the Origins of Novel Pathogens (SAGO) functions and activities	Kaz Kojima on behalf of SAGO
	Scenario-based discussion An ambiguous event – a case study	Joshua Mott, EPP Technical Advisor
10:30 – 10:50	<i>Refreshment break</i>	
10:50 – 12:00 <i>Session 8</i>	Working Groups (cont.) Emerging threats <ul style="list-style-type: none"> • Health Intelligence • Information Risk / Digital security • Deliberate event Concept note defining “health – security interface” in a context of deliberate event Presentation of the finalized draft	Chair Sophie Allain loos Working Group team Chairs Julio Carvalho, Kathleen Vogel, Paul Arbon, HSI-TAG member
12:00 – 13:00	<i>Lunch break</i>	
13.00-15:00 <i>Session 9</i>	BSP priority projects for 2024-2025 (Plenary session) Stakeholder mapping Introduction to Foresight WHO’s work on Health Emergency Preparedness, Response & Resilience (HEPR) Opportunities for innovation and ideas for the future <ul style="list-style-type: none"> • Summary of discussions and ideas for the future, additional activities or topics to be addressed Discussion Closure remarks	Chair, Vice Chair Nikki Shindo, BSP Unit
15:00 – 15:20	<i>Refreshment break</i>	
15:20 – 17:15 <i>Session 10</i>	HSI - TAG (Closed session) Governance and operations, secretariat functions, Priorities (key deliverables for 24-25) Recommendations Wrap-up and Adjourn	Chair, Vice Chair Nikki Shindo, BSP Unit

