

WHO Health Emergencies Programme

The WHO Hub for Pandemic and Epidemic Intelligence accelerates implementation

Better data

Better analytics

Better decisions

Year in review

1 January 2023 – 31 December 2023



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Introduction

The WHO Hub for Pandemic and Epidemic Intelligence (WHO Hub) was established in Berlin in 2021 with the foundational support of the Government of the Federal Republic of Germany. Our mission is to improve data, analytics and decision-making to minimize the impacts of pandemic and epidemic threats. In 2023, our second year of existence as part of the WHO Health Emergencies Programme, we made significant strides towards our goal of supporting countries around the world to strengthen their capacity to detect, monitor and manage current and future public health threats.

As we reflect on the two-year journey, we at the WHO Hub are proud to have quantified our strategic targets, consolidated an effective portfolio of work, and built a workforce to support this. We are committed to collaborative surveillance – one of WHO’s key strategies to strengthen the global architecture for health emergency prevention, preparedness and response.

Transforming disease surveillance requires reimagining partnerships; in 2023, partnerships continued to be the cornerstone of our work. Although convening partners is a core WHO function, the depth and breadth of our current collaborations, and the inclusion of non-traditional actors, is amassing new knowledge and expertise. We have expanded our network of collaborators and established new relationships with diverse communities, which is essential to delivering on our mission, establishing equitable partnerships and building trust.

This report summarizes the impact of the WHO Hub’s work in building a resilient future for all. It describes our efforts to support regions and countries to detect, monitor and manage public health threats better. The report describes the innovative tools created, networks fostered and solutions developed to safeguard health security worldwide.

Defining collaborative surveillance

A core concept for strengthening the global architecture for health emergency preparedness, response, and resilience (HEPR)

HEPR
Health Emergency Preparedness, Response, and Resilience

World Health Organization

Collaborative surveillance

At the seventy-sixth World Health Assembly in May 2023, the WHO Hub launched the concept of collaborative surveillance, defined as “the systematic strengthening of capacity and collaboration among diverse stakeholders, both within and beyond the health sector, with the ultimate goal of enhancing public health intelligence and improving evidence for decision-making”.¹



¹ Defining collaborative surveillance: a core concept for strengthening the global architecture for health emergency preparedness, response, and resilience (HEPR). Geneva: World Health Organization; 2023 (<https://iris.who.int/handle/10665/367927>, accessed 16 January 2024).



The world needs to be able to detect new events with pandemic potential and to monitor disease-control measures on a real-time basis to create effective pandemic and epidemic risk management. The WHO Hub for Pandemic and Epidemic Intelligence will be key to that effort, leveraging innovations in data science for public health surveillance and response, and creating systems whereby we can share and expand expertise in this area globally.

Dr Tedros Adhanom Ghebreyesus
WHO Director-General



Despite decades of investment, COVID-19 has revealed the great gaps that exist in the world's ability to forecast, detect, assess and respond to outbreaks that threaten people worldwide. The WHO Hub for Pandemic and Epidemic Intelligence is designed to develop the data access, analytic tools and communities of practice to fill these very gaps, promote collaboration and sharing, and protect the world from such crises in the future.

Dr Mike Ryan
Executive Director,
WHO Health Emergencies Programme



Here at the WHO Hub, we are grateful for the forward thinking and support of the German Government. This belief in multilateralism and the fact that we can come together, working collaboratively on some of the hardest problems in the world – on how to prevent the next pandemic – takes a lot of wisdom. It takes knowledge. But most of all, it is the spirit of joint vulnerability around the future that has really brought us together.

Dr Chikwe Ihekweazu
WHO Assistant Director-General and leader of the
WHO Hub for Pandemic and Epidemic Intelligence

Key 2023 achievements at a glance

The WHO Hub portfolio expanded significantly in 2023 and currently includes more than 20 projects and initiatives. Some of the key highlights are listed below.

Collaborative Surveillance Implementation

Implementing collaborative surveillance plans at the national and regional levels is a top priority, and work is already under way in South-east Asia and Africa. In October, the WHO Hub held a technical workshop to support tool development with the WHO Regional Office for South-East Asia. In November, the team co-facilitated the Zambia Integrated and Collaborative Disease Surveillance Workshop and Leadership Forum to help shape a three-year project for strengthening surveillance capacities. Similar partner-supported efforts to pilot collaborative surveillance implementation are under way in Ethiopia, Mozambique and Nigeria. [Read more.](#)

International Pathogen Surveillance Network (IPSN)

Launched in May during the week of the seventy-sixth World Health Assembly, IPSN brings together experts from governments, philanthropic foundations, multilateral organizations, civil society and academia working to build capacity for genomics and analytics in national surveillance systems. The Network currently includes 94 partner organizations across 43 countries. In 2023, it secured US\$ 4 million in financing for a catalytic grants fund. [Read more.](#)

Health Security Partnership to Strengthen Surveillance in Africa (HSPA)

Launched in July in partnership with the Africa Centres for Disease Control and Prevention (Africa CDC), the Robert Koch Institute, the WHO Regional Office for Africa and WHO Regional Office for the Eastern Mediterranean, the HSPA project strengthens capabilities in biosecurity, integrated disease surveillance, event-based surveillance, genomic surveillance and epidemic intelligence in six pilot countries (Gambia, Mali, Morocco, Namibia, South Africa and Tunisia). [Read more.](#)

Epidemic Intelligence from Open Sources (EIOS)

EIOS expanded its user communities globally, with 34 Member States and 3 organizations joining in 2023, bringing the total number of users to 85 Member States and more than 20 organizations and networks. The team provided a total of 68 training workshops in 45 countries and organizations, and trained more than 1100 users in 2023, strengthening early detection of public health threats. [Read more.](#)

The Collaboratory

The Collaboratory is a digital hub where experts from across the globe unite to tackle health challenges. This platform is an interactive knowledge-sharing space where members can work together to produce timely, effective and actionable insights for use by the wider public health community. In 2023, the project established a Technical Advisory Group, formalized a key partnership with the data.org platform, and convened its communities of practice. [Read more.](#)

Partnering for effective implementation

The WHO Hub supports countries, regions and global actors to prevent and address public health crises, drawing on critical lessons learned during the coronavirus disease (COVID-19) pandemic.

Our aim is to make the WHO Hub a catalyst for change, transforming how the epidemic intelligence community gathers, connects and acts upon data to respond to health threats. The WHO Hub is embedded in the Division of Health Emergency Intelligence and Surveillance Systems (WSE), alongside the Surveillance Systems Department based at WHO headquarters in Geneva, Switzerland. We act as a “sandbox” for testing ideas and taking risks to drive innovation that will accelerate the development of public health intelligence technology and capacity.

As part of WHO’s Health Emergencies Programme, the WHO Hub works closely with Member States, WHO regional and country offices, innovators, scientists and experts from diverse disciplines (Fig. 1). This allows us to use and disseminate cutting-edge technology while grounding our work in the priorities of communities around the world. In 2023, we engaged with over 196 institutions and 44 Member States across all six WHO regions. The institutional partnerships established underscore our commitment to fostering collaborative efforts and information-sharing within the broader global health landscape.

Seat Agreement between the Federal Republic of Germany and the WHO Hub for Pandemic and Epidemic Intelligence signed on 28 September 2023. © WHO



Fig. 1. Key metrics of the WHO Hub in 2023

32 events
hosted at the WHO Hub with external participants

>1250 participants
convened in 32 events hosted at the WHO Hub

19 staff from partner organizations
working at the WHO Hub

24 WHO Hub projects
including several in planning and ideation stages with various project-level engagements

WHO partners with Memoranda of Understanding

- Charité – Universitätsmedizin Berlin
- data.org
- The European Health Emergency Preparedness and Response Authority (HERA) of the European Commission
- Fundação Oswaldo Cruz (Fiocruz)
- Robert Koch Institute
- The Rockefeller Foundation
- The University of Oxford

Management and operations facilitate growth

The WSE has grown significantly since its launch, and in 2023 the team nearly doubled in size to exceed 100 personnel. Innovative contract models were implemented to bolster effective collaborations with partners. This expansion underscores the WSE's commitment to building a skilled and diverse team to address global health emergencies effectively.

The WHO Hub building became fully functional in March 2023. Spanning 3585 square metres, the facility is designed for collaborative work, with 120 workstations, meeting rooms and a conference centre equipped with a state-of-the-art audiovisual system to support online, hybrid and in-person events. The building shares services with WHO headquarters in Geneva, Switzerland, in the areas of information management technology, conferencing, security and operations.

WHO Hub for Pandemic and Epidemic Intelligence. © WHO



The WHO Hub for Pandemic and Epidemic Intelligence hosted a panel discussion, Protecting the World: Moving Rapidly and Together, during the World Health Summit 2023. © Marcio Schimming



I expect to hear a lot from this important institution. The WHO Hub for Pandemic and Epidemic Intelligence is an example where WHO is capable of technological advancement and technological reinvention of itself. It will be a very important institution. For example, when we talk about systems like pathogen access and benefit-sharing, we need a hub where the benefits are assessed, and we need a hub where the information is shared.

Professor Dr Karl Lauterbach
Federal Minister of Health, Germany

German Federal Minister of Health Professor Dr Karl Lauterbach visited the WHO Hub for Pandemic and Epidemic Intelligence on 3 August 2023.
© Marcio Schimming

Collaborations and outreach

In 2023, the WHO Hub maintained regular engagement and collaboration across government and academic sectors in many countries. Along with partners, we are implementing an ambitious programme of work spanning antimicrobial resistance, genomic surveillance, public health intelligence and strengthening capacities of Global Outbreak Alert and Response Network (GOARN) through a Berlin Fellowship Programme. We continued to partner with Charité – Universitätsmedizin Berlin (one of the largest university hospitals in Europe) to co-host a Speaker Series on critical issues related to our mission. These collaborations aim to increase our capacity to employ robust data analytics for public health decision-making.

During the World Health Summit in October 2023 the WHO Hub led a discussion on harnessing data and technology to equip decision-makers with real-time intelligence during health emergencies, entitled Protecting the World: Moving Rapidly and Together.² We hosted a site visit for public health leaders from Argentina, Brazil, Canada, Côte d'Ivoire, Namibia and South Africa to explore how the WHO Hub can collaborate with Member States and surveillance actors to build strong, resilient and inclusive national public health systems. The International Pathogen Surveillance Network, coordinated by the WHO Hub, hosted its Global Partners Forum, bringing together 200 national, regional and global partners committed to supporting advances in pathogen genomics sequencing. We also co-hosted the launch of the Global Field Epidemiology Partnership during this pivotal week, together with Training Programs in Epidemiology and Public Health Interventions Network (TEPHINET) and the United States Centers for Disease Control and Prevention.

² PD 01 – Protecting the World: Moving Rapidly and Together [video]. Berlin: World Health Summit; 2023 (<https://www.youtube.com/watch?v=11WKGRmfcu0&t=275s>, accessed 23 January 2024).



Top: High-level visit from the European Commission Directorate-General for Health and Food Safety, European Centre for Disease Prevention and Control, and Federal Ministry of Health of Germany at the WHO Hub for Pandemic and Epidemic Intelligence on 28 February 2023. © Christian Kruppa

Bottom: Dr Mike Ryan, Executive Director, WHO Health Emergencies Programme, Dr Jeremy Farrar, WHO Chief Scientist, and Dr Chikwe Ihekweazu, WHO Assistant Director-General and leader of the WHO Hub for Pandemic and Epidemic Intelligence, attended a high-level forum titled “Pandemics – no time for neglect”, organized by the German Federal Ministry for Economic Cooperation and Development and the German Federal Ministry of Health on 28 September 2023. © WHO/Heraa Hajelsafi

Delivering on our strategy

Delivering on our strategy

Vision

A world where **collaborative surveillance empowers countries and communities to minimize the impacts of pandemic and epidemic threats**

Mission

We catalyse **transformation** in collaborative surveillance **across all levels, and serve countries by connecting, innovating and strengthening** capabilities to produce **better data, analytics and decisions**



*Health emergency preparedness, response and resilience

The WSE Strategic Plan 2023–2025

The WSE three-year strategy outlines our vision and mission, working towards a world where collaborative surveillance prepares countries and communities to minimize the impacts of pandemic and epidemic threats.³

We are committed to aligning stakeholders around key priorities, introducing and scaling up surveillance solutions tailored to country needs. The WHO Hub brings stakeholders together for more effective public health intelligence and, in turn, strengthened pandemic preparedness.

The WHO Hub’s Project Management Office supports strategic implementation through best practices in portfolio and project management. Transparent portfolio management facilitates sharing of information and best practices across departments and teams. In 2023, the Project Management Office supported the implementation of a results framework, which operationalizes the WSE strategy.

Better data Better analytics Better decisions



Access the WHO Division of Health Emergency Intelligence and Surveillance Systems strategy plan 2023–2025.

³ Division of Health Emergency Intelligence and Surveillance Systems incorporating the WHO Hub for Pandemic and Epidemic Intelligence: strategy plan 2023–2025. Geneva: World Health Organization; 2023 (<https://pandemichub.who.int/publications/m/who-division-of-health-emergency-intelligence-and-surveillance-systems-strategy-plan-2023-2025>, accessed 16 January 2024).



In May 2023, the WHO Hub for Pandemic and Epidemic Intelligence, in collaboration with Imperial College London, organized a technical workshop in Berlin on advanced analytics to inform decision-making during public health emergencies. © WHO/John Fass

To better understand and respond to public health threats, we need to go beyond traditional surveillance approaches. We need to include data from outside the health space and build on innovations in analytics to provide insights that enable timely and effective decision-making for health emergencies.

Dr Oliver Morgan
Director, Pandemic and Epidemic Intelligence Systems Department, World Health Organization

Project highlights

This year, the WHO Hub made notable advances towards our vision of collaborative surveillance and a world where people are safer from health crises (Fig. 2).

Fig. 2. Snapshot of portfolio by strategic objectives



Note: RKI = Robert Koch Institute | GOARN = Global Outbreak Alert and Response Network.

We convene partners to prioritize and transform collaborative surveillance efforts

The WHO Hub connects stakeholders from diverse sectors to establish a shared vision for collaborative surveillance that countries can implement with adequate technical and financial support. During the COVID-19 pandemic, interest in strengthening disease surveillance systems increased. Continued global commitment is needed to address challenges such as waning political focus and increasingly limited resources, in view of the ongoing need to prepare for and respond to outbreaks. The WHO Hub is driving progress by developing a framework for collaborative surveillance, establishing information-sharing platforms, and identifying research and funding opportunities.

Collaborative Surveillance Implementation

The WHO Hub has transitioned from leading the conceptual development of collaborative surveillance as defined in the *Defining collaborative surveillance* report (Fig. 3) to promoting its global implementation. We will accelerate implementation of the operational model (Fig. 4) in early 2024.

Fig. 3. Convergence of objectives across four key dimensions of collaboration to strengthen decision-making from the *Defining collaborative surveillance* report



4 Defining collaborative surveillance: a core concept for strengthening the global architecture for health emergency preparedness, response, and resilience (HEPR). Geneva: World Health Organization; 2023 (<https://iris.who.int/handle/10665/367927>, accessed 16 January 2024).

Fig. 4. The WHO Hub’s operational model of collaborative surveillance workstreams

Collaborative surveillance workstreams

Engage
Facilitating roadmaps towards national action planning for surveillance and public health intelligence strengthening, garnering support from aligned global actors

Assess
Providing tools to support national authorities to map and assess surveillance capacities, and strategically select priority areas for strengthening

Mobilize
Developing investment cases for surveillance, harmonizing external funding sources, and mobilizing resources

Support
Providing technical support to strengthen surveillance capacity and collaboration through country and regional strategies

Share
Establishing mechanisms to exchange key resources and best practices for mutual benefit

The Pandemic and Epidemic Intelligence Innovation Forum and Speaker Series

In 2023, the WHO Hub hosted three sessions of the Pandemic and Epidemic Intelligence Innovation Forum. These events engaged experts from 78 entities across all WHO regions and focused on data journalism, the potential of artificial intelligence (AI) and data standards for infectious disease surveillance. An “Innovation in Pandemic and Epidemic Intelligence” research topic was introduced in the *Frontiers in Public Health* journal. This topic provides a forum in the journal that aims to extend the reach of pandemic and epidemic intelligence knowledge globally.

The WHO Hub also continued its quarterly Speaker Series event in Berlin in partnership with Charité – Universitätsmedizin Berlin, in a hybrid format for maximum participation. Three discussions took place in 2023 on diverse topics of global interest, including data preparedness, open source solutions for health emergencies and climate-sensitive infectious diseases. To maximize accessibility and impact, each session is live-streamed and made available on YouTube.⁵

5 Complexity of Pandemics: Speaker Series [video series]. Geneva: World Health Organization; 2024 (<https://www.youtube.com/playlist?list=PL9S6xGsoqIBU1rjZstYht6Oy3f17F-fwu>, accessed 26 January 2024).



The WHO Hub for Pandemic and Epidemic Intelligence organized the Complexity of Pandemics No. 6 – Confronting climate-sensitive infectious diseases on 6 December 2023 to explore the intricate interplay of climate change and infectious disease threats. © Marcio Schimming

Strengthening National Public Health Agencies (NPHAs)

The COVID-19 pandemic highlighted the need for stronger coordination for health emergency preparedness and response. In 2023, the WHO Health Emergencies Programme set out to strengthen countries' ability to prevent, rapidly detect, respond to and recover from any health emergency crisis. The Programme held a consultation with NPHA representatives from WHO Member States and experts from regional health agencies and partner organizations to identify priority areas to take forward. The WHO Hub is supporting the Health Emergencies Programme in delivering on a number of these areas, including the following.

- **Defining the core emergency preparedness and response functions** – While a great deal of guidance has been developed for NPHAs on implementation for essential public health functions, less focus has been given to those functions specific to emergency preparedness and response. WHO is leading a process, in partnership with the International Association of National Public Health Institutes and the Robert Koch Institute (RKI), to define NPHAs' core functions related to the components of health emergency preparedness and response.
- **Documenting NPHA governance models** – The structures and forms of NPHAs vary considerably, shaped by national historical, institutional, political and economic contexts. There is limited documentation on these regulatory, financial and accountability structures and the impact they have on NPHAs' performance in preparing for and responding to health emergencies at the national level. To address this, the Health Emergencies Programme is working with WHO's Alliance for Health Policy and Systems Research to support countries to identify key enablers and challenges of their NPHAs' governance models for delivering on their core public health emergency functions.
- **Facilitating peer-to-peer learning opportunities** – NPHAs identified the need for engagement opportunities to improve their peer-to-peer learning processes. To address this, we initiated a regular virtual webinar series focusing on priority thematic issues and will be expanding peer-to-peer learning platforms in 2024.



In March 2023, the WHO Hub for Pandemic and Epidemic Intelligence convened, on behalf of the WHO Health Emergencies Programme, a workshop of NPHAs in Geneva, Switzerland, focusing on building essential capacities in health emergency preparedness and response. © Andrey ART

The Health Security Partnership to Strengthen Surveillance in Africa (HSPA)

Effective disease surveillance is a foundational requirement for health security. While substantial progress has been made in disease surveillance across Africa, the capacity for rapid detection of infectious disease threats has not improved by the same proportion and remains largely uncoordinated across different stakeholders. There is a need for an accelerated and coordinated strengthening of surveillance and epidemic intelligence in and for Africa. In response, WHO, in collaboration with the Africa CDC and the RKI, launched the HSPA in July 2023 as part of an initiative to strengthen the continent's disease surveillance capacities. The HSPA is funded by the Government of Canada and aligned with the health security objectives of the Group of Seven (G7)-led Global Partnership Against the Spread of Weapons and Materials of Mass Destruction. It focuses on strengthening integrated, event-based and genomic surveillance; epidemic intelligence; biosecurity; and mobilization of political will for health security. It is currently being implemented in six countries, including Gambia, Mali, Morocco, Namibia, South Africa and Tunisia.



The Africa CDC, WHO and RKI launched HSPA in Addis Ababa, Ethiopia © Africa CDC

Our collective ability to prevent, prepare for and respond to health security emergencies remains critical to keeping our communities safe. Through this partnership, WHO remains dedicated to working with Member States to systematically strengthen our capabilities and collaboration across stakeholders, sectors and borders for more effective and collaborative disease surveillance in Africa.

Ms Sara Hersey
Director of Collaborative Intelligence at the WHO Hub for Pandemic and Epidemic Intelligence

We innovate effective solutions to solve key surveillance challenges

The WHO Hub works with countries to leverage cutting-edge surveillance tools that transform public health decision-making. Data analysis and interpretation are crucial for effective public health decision-making. We are exploring new approaches to connect and translate information from diverse sources, leading to improved understanding of complex health threats. We work with various actors and organizations to ensure comprehensive data analysis and interpretation, with the aim of supporting better public health decisions before, during and after emergencies.

The International Pathogen Surveillance Network (IPSN)

Genomic sequencing is a proven method of detecting new pathogens quickly, but many regions lack the tools necessary for effective genomic surveillance. The IPSN addresses these disparities by connecting countries, regions and disease-specific networks to solve common challenges in pathogen genomics collaboratively. The WHO Hub launched the IPSN in May 2023 in Geneva, Switzerland, during the week of the seventy-sixth World Health Assembly. We host the IPSN Secretariat and its operational bodies, including a funders forum, two communities of practice in genomics data and environmental and vector surveillance, and a country scale-up accelerator. The Network’s Leadership Committee consists of 18 members with expertise in pathogen genomic surveillance from across technical, financial and political sectors.

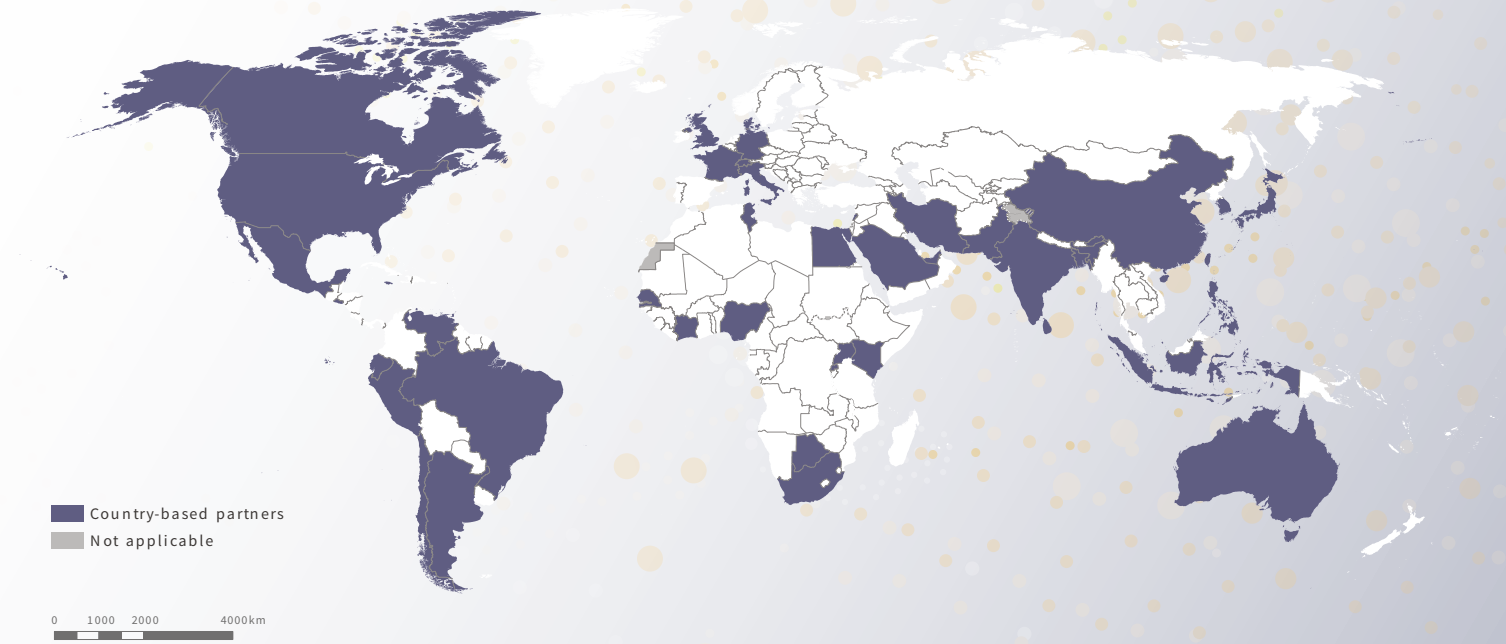


The IPSN convened its first Global Partners Forum on 13 October 2023 at the WHO Hub to foster collaboration, introduce innovations and galvanize support. © Marcio Schimming

The IPSN has made significant strides in promoting collaboration by expanding partnerships to 94 organizations across 43 countries (Fig. 5), and by hosting its first Global Partners Forum. The Network will accelerate global public goods for pathogen genomic surveillance, including a global investment case, country capacity framework and use cases. A catalytic grants fund will become operational in early 2024, thanks to a US\$ 4 million grant from the Wellcome Trust, the Rockefeller Foundation and the Bill & Melinda Gates Foundation. The IPSN catalytic grant fund, hosted by the United Nations Foundation, will support member organizations to pilot innovative work and create an evidence base for the rapid scale-up of pathogen genomic surveillance.

Fig. 5. IPSN partners span all regions of the globe

94 partner organizations across 43 countries



The designations employed and the presentation of the material in this publication do not imply the expression of any opinion whatsoever on the part of WHO concerning the legal status of any country, territory, city or area or of its authorities, or concerning the delimitation of its frontiers or boundaries. Dotted and dashed lines on maps represent approximate border lines for which there may not yet be full agreement.



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IPSN members are national, regional and international organizations

Laboratory networks and disease programmes

Public health, animal health and environmental agencies

Academic groups

Philanthropic and civil society organizations

Private sector business associations

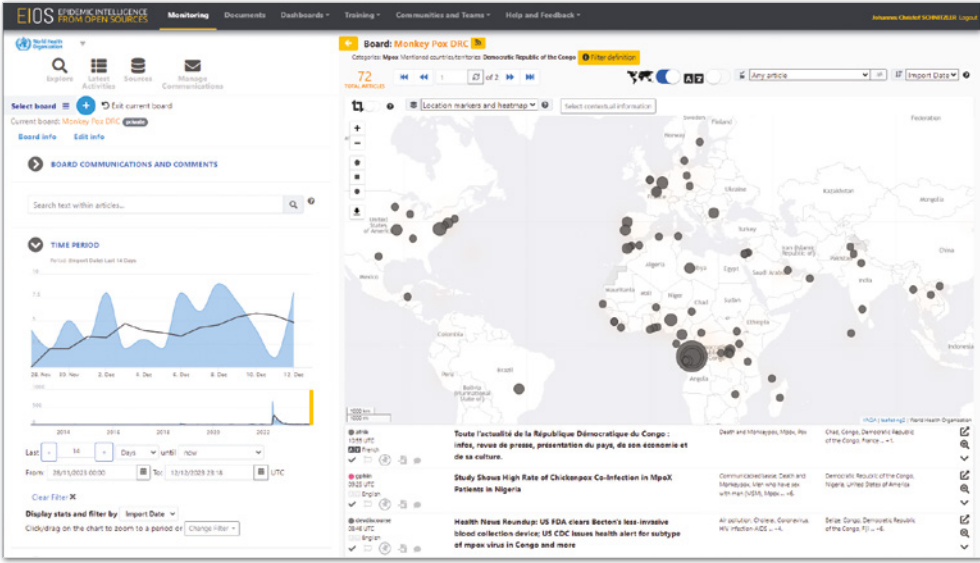
IPSN members have access to:

Partnership and networking

- Engage with the communities of practice, country scale-up accelerator and/or the funders forum
- Connect with experts at the annual Global Partners Forum

Funding opportunities

- Catalytic grant fund to be launched in Q1 2024



Top: Screenshot of EIOS interface. © WHO
Bottom: In May 2023, a delegation from the WHO Hub conducted a three-day EIOS System Training Workshop in Beijing for experts from the Chinese Center for Disease Control and Prevention. © WHO/Raquel Carrera Medialdea

The Epidemic Intelligence from Open Sources (EIOS) initiative

The EIOS initiative provides Member States and partner organizations with a suite of integrated services for early detection, assessment and rapid response to public health threats. Demand to join the initiative is growing among WHO Member States, and in 2023, the community expanded significantly. EIOS welcomed 34 new Member States and three organizations in 2023, and now includes more than 100 user groups. EIOS continues to apply best practices in technological innovation, capacity-building and strategic planning. Improvements were made to the EIOS platform in 2023, and a new version will be released in 2024 (EIOS 2.0). More than 1100 members were trained as part of EIOS’s global community of practice in 2023. Collaboration between WHO, the European Commission’s Joint Research Centre and HERA was strengthened through an administrative agreement to enhance intelligence and surveillance capacities. The team conducted in-depth stakeholder consultations in 2023 to produce a new three-year strategy that will be finalized in early 2024.



The Collaboratory

The Collaboratory provides a digital environment for experts to exchange ideas and learn from each other to prepare for and respond to health threats. The Collaboratory is more than a platform: it is an interactive knowledge-sharing space where members can work together to produce timely, effective and actionable insights that can be used by the wider public health community. In 2023, three communities of practice were set up on GitHub, a web-based collaborative interface (Fig. 6) used by the Collaboratory.

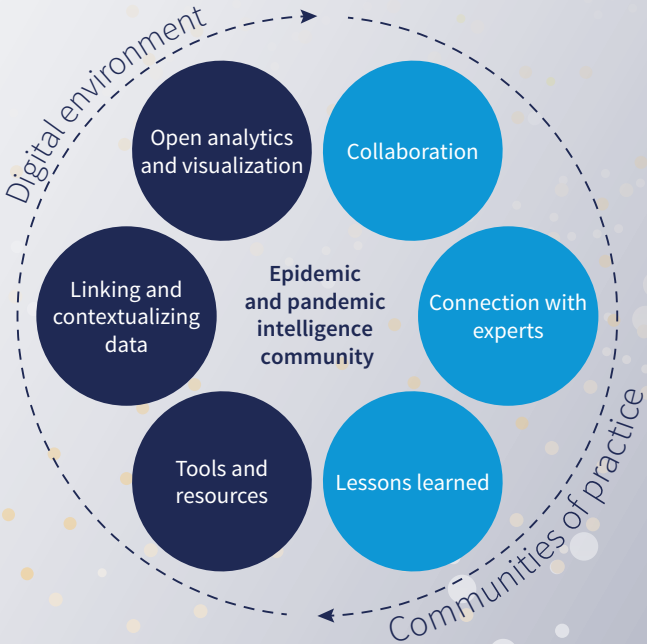
Through workshops and hackathons, the Collaboratory convened data modellers, public health officials, academics and others to address global challenges. In May 2023, the WHO Hub collaborated with Imperial College London, United Kingdom, to organize a technical workshop in Berlin on advanced analytics to inform decision-making during public health emergencies. In September 2023, the WHO Hub partnered with the London School of Hygiene and Tropical Medicine to organize an “Early-Stage Outbreak Analytics Hackathon” in Berlin. The Collaboratory achieved important operational milestones in 2023 by establishing a Technical Advisory Group and formalizing a key partnership with the data.org platform.

Fig. 6. Collaboratory community and digital environment

Digital environment

Building a digital environment facilitating exchange of data, analysis, and insights

- Enable collaboration on tools and analysis
- Linking and finding data and insights
- Provide library for tools and resources
- Access to analytic platform



Community

Leveraging the convening power of WHO to connect, build and strengthen communities

- Enhance and strength collaboration
- Enable connection and exchange between experts
- Share information and lessons learned
- Co-create analysis and tools

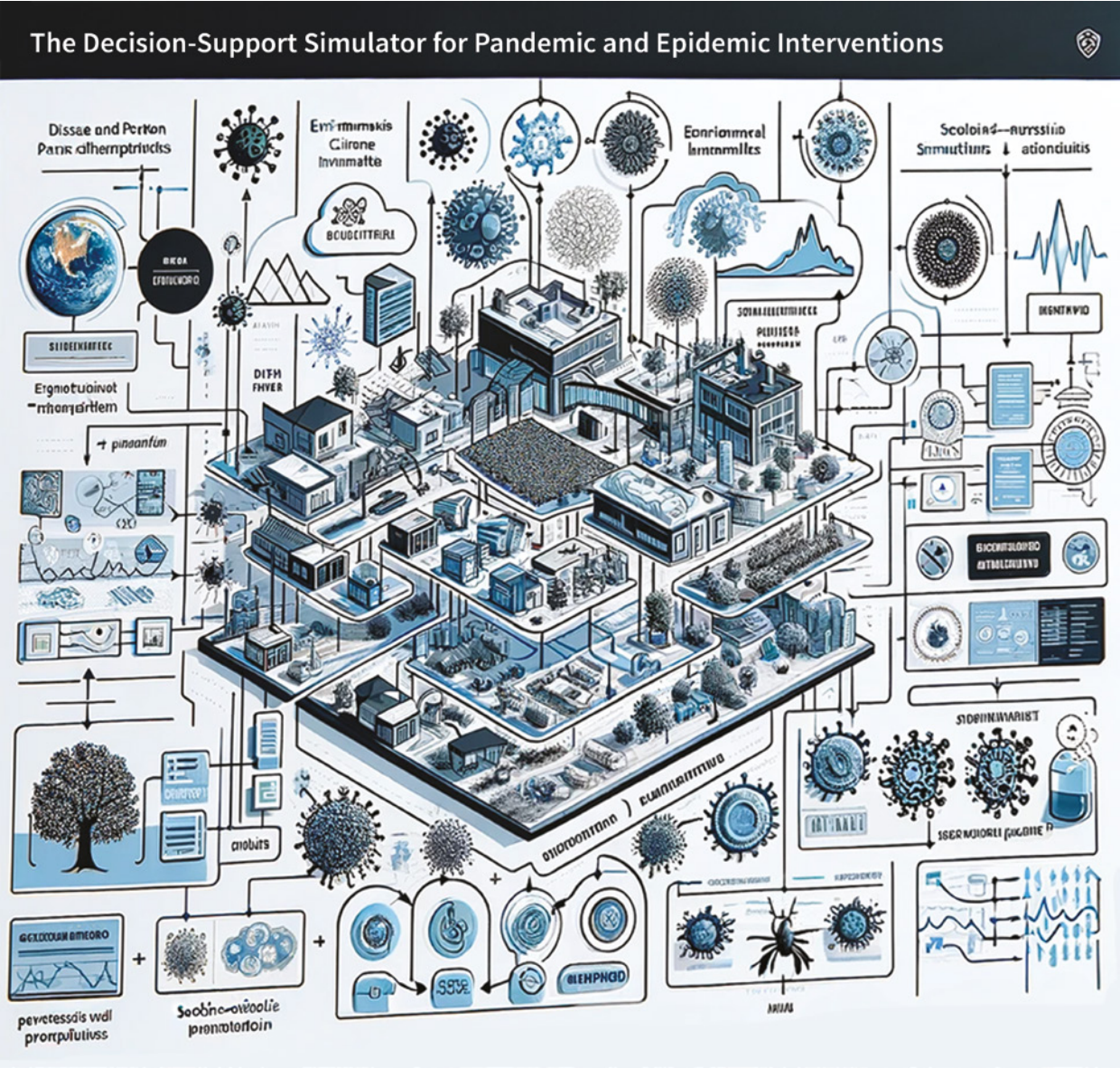


In September 2023, the WHO Hub for Pandemic and Epidemic Intelligence partnered with the London School of Hygiene and Tropical Medicine to organize an “Early-Stage Outbreak Analytics Hackathon” in Berlin. © Alfonso Moral

The Decision-Support Simulator for Pandemic and Epidemic Interventions

Many global policy-makers lack accessible tools to evaluate the collective effect of various public health measures during emergencies. The WHO Hub is working on a tool that will conduct real-world simulations to help discern the optimal set of interventions to prevent and mitigate disease outbreaks, which will inform better health responses. In 2023, we produced a blueprint, a partner outreach strategy and an investment case for the simulator (Fig. 7). In 2024, the WHO Hub will identify funding and technology partners and start developing the first version of the simulator.

Fig. 7. AI-generated mock-up of the simulator



The Open Source Programme Office (OSPO)

The OSPO tackles digital health fragmentation through collaboration, with a mission to provide decision-makers, health professionals and civil society actors with high-quality, co-developed and openly accessible essential tools and knowledge for informed public health decisions. The WHO Hub launched the OSPO in June 2023 as part of our Speaker Series session on the theme of open source solutions for health emergency preparedness and response. This year, the OSPO began hosting webinars on open source concepts and platforms to encourage collaboration among global experts in software, data science and AI. We also hosted an exchange event with open source contributor communities, helped Member States adopt and scale Go.Data, and improved cooperation with EIOS, with a focus on developing open source models for more effective and sustainable inter-institutional collaboration and open innovation. In November, the OSPO participated in the Digital Public Goods Alliance Annual Members Meeting in Addis Ababa, Ethiopia, which provided a platform for us to engage with countries and international agencies on open source initiatives, including those on digital public infrastructure. The OSPO played a vital role in advising CERN, the European Organization for Nuclear Research, on opening their own open source programme office, which launched in November 2023. The WHO Hub's OSPO will continue to serve as a leader for other organizations by sharing the benefits of the open source model of collaboration.

Launch of the OSPO at the WHO Hub Speaker Series No. 5 on 13 June 2023. © Stefan Kugler



6 Complexity of pandemics: embracing open source solutions for health emergencies. In: World Health Organization [website]. Geneva: World Health Organization; 2023 (<https://pandemichub.who.int/news-room/events/item/2023/06/13/default-calendar/complexity-of-pandemics-embracing-open-source-solutions-for-health-emergencies>, accessed 16 January 2024).

We scale up the most successful solutions to surveillance barriers

The WHO Hub builds resilient epidemic intelligence by supporting countries to adapt and develop their surveillance systems and capabilities. We are working with countries and experts to set clear standards and best practices, such as better contact tracing guidelines for outbreaks. Recognizing the specific challenges of low-resource settings in establishing effective surveillance systems, the WHO Hub is supporting countries to evaluate their current surveillance capabilities, prioritize improvements and design optimized systems. To keep up with changing threats, we are helping create a skilled workforce with multidisciplinary expertise to respond to global health challenges.

Strengthening Public Health Intelligence (PHI) Competencies

Developing and sustaining PHI capacity requires people with these professional competencies. As the PHI community grows and evolves, training and capacity-building for a unified all-hazards, One Health approach are essential. In 2023, we created a comprehensive PHI landscape analysis report, developed a draft competency framework and curriculum, and established a dedicated working group to guide future training efforts. We also defined PHI learning profiles to facilitate customized training programmes. Partnerships with key stakeholders such as TEPHINET, the United States Centers for Disease Control and Prevention (CDC) and RKI furthered our goal of building strong PHI workforces.



Trainers learn about PHI in September 2023 in Berlin. © WHO/Alfonso Moral

The PHI Training Working Group was formed in 2023, comprising representatives of the Africa CDC, European Centre for Disease Prevention and Control, RKI, WHO headquarters, Food and Agriculture Organization of the United Nations, United States CDC and the WHO Hub. The group convened in Rome, Italy, for its first in-person meeting in September 2023. During this session, an expert review of the PHI competency framework and curriculum was conducted, which set the stage for a comprehensive and globally relevant training approach.

This work not only integrates seamlessly with collaborative surveillance initiatives but also aligns with other frameworks and curricula, fostering a harmonized approach to PHI development. Our collaboration with the RKI has borne fruit in the design and development of the first training course, which is aligned with the competency framework. This course, which focuses on PHI foundation training, will be piloted in three countries in 2024 (Fig. 8).

Our dedication to strengthening PHI capacity extends beyond global levels. In 2023, we engaged closely with various partners in the field, fostering collaboration to fortify PHI capacity at the global, national and subnational levels. Through these multifaceted efforts, we are not only shaping the present landscape but also laying a robust foundation for an agile and adaptive response to future health challenges.

Fig. 8. A selection of relevant PHI areas



Global Outbreak Alert and Response Network (GOARN) Berlin Fellowship Programme with the Robert Koch Institute

The GOARN Berlin Fellowship Programme offers senior experts from GOARN member institutions, such as NPHAs, the chance to contribute to work on epidemic intelligence, surveillance and rapid response efforts at the WHO Hub in Berlin. The inaugural cohort of the GOARN Berlin Fellowship includes two fellows selected from more than 40 applicants from five of the six WHO regions. The fellow from Pakistan’s National Institutes of Health is working on integrating disease and event-based surveillance. The fellow from the Nigeria Centre for Disease Control and Prevention is piloting and adapting the Quadripartite One Health competency and curriculum framework for the Nigerian Field Epidemiology Training Programme.



On 11 July 2023, the WHO Hub for Pandemic and Epidemic Intelligence welcomed partners from the RKI and the German Federal Ministry of Health, along with colleagues from WHO headquarters in Geneva, Switzerland, for the first WHO Hub-RKI partnership steering committee meeting of 2023. © WHO

Integrated Genomic Surveillance with the Robert Koch Institute

The COVID-19 pandemic exposed the stark inequalities in genomic surveillance, especially in low- and lower-middle-income countries. The WHO Hub is working with national partners in five African countries to build stronger genomic surveillance systems. This initiative includes training, political support and other capacity-building measures, alongside considerations for a regional integrated genomic surveillance network and conference. The project conducted in-depth stakeholder consultations and needs assessments in Côte d’Ivoire, Madagascar and Namibia to inform projects dedicated to enhancing pathogen genome sequencing, bioinformatics and integrated genomic surveillance capabilities. Projects will be further defined and rolled out in 2024.

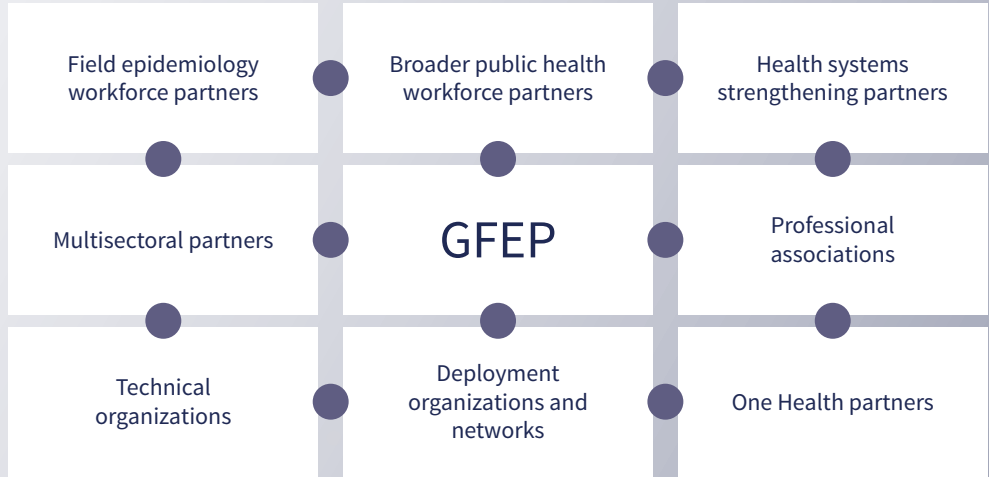
Highlights from the Surveillance Systems Department

Global Field Epidemiology Partnership (GFEP)

Public health initiatives rely on strong implementation, which depends on field epidemiologists with the skills and knowledge to detect and respond to health threats rapidly. As a side event to the 2023 World Health Summit, we launched the GFEP at the WHO Hub, co-hosted with TEPHINET and the United States CDC.

The GFEP brings together a wide range of partners to build robust field epidemiology workforces through field epidemiology training programmes and in-service training (Fig. 9). The WHO Regional Office for South-East Asia has begun implementing a field epidemiology training programme roadmap and requested a dedicated staff position for it, setting a precedent for other regional offices to follow.

Fig. 9. Network of GFEP partners



Contact Tracing Guidance

The WHO Hub is supporting the development of a disease-agnostic contact tracing guideline, which will set a new global standard for best practices in contact tracing. By drawing on diverse expertise and following WHO’s rigorous guideline development process, this guideline will harmonize global standards for public health emergencies. In 2023, the Surveillance Systems project team convened 17 experts to form the Guideline Development Group (GDG) and commissioned a systematic review of the literature. In December, the GDG met for a week-long workshop at the WHO Hub in Berlin to review the results of the systematic review and to begin formulating recommendations. Guideline writing will begin in early 2024, followed by publication and dissemination later in the year. By equipping countries with a standardized approach, this guidance will help reduce the impact of future outbreaks through informed public health and social measures, ultimately guiding faster and more effective decision-making to respond to future public health threats.



The GDG met in December 2023 to review the evidence on contact tracing and to make preliminary recommendations. © WHO

7. WHO handbook for guideline development, second edition. Geneva: World Health Organization; 2014 (<https://iris.who.int/handle/10665/145714>, accessed 16 January 2024).

Accelerating delivery

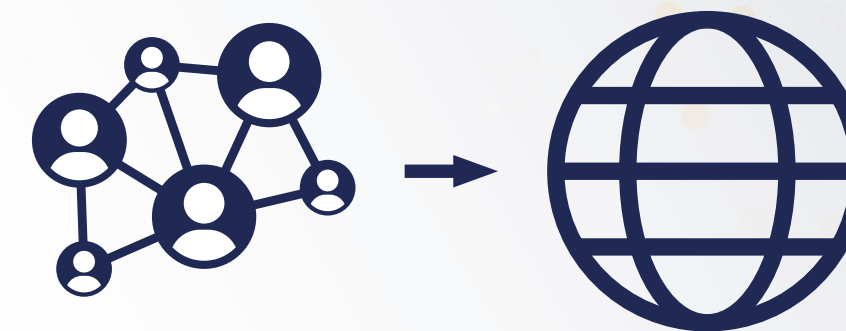
Accelerating delivery with Member States, regional offices and partners

2023 marked a pivotal year for the WHO Hub (Fig. 10). We worked across sectors and continents, forging vital partnerships that fuelled advances in public health preparedness. Our vision is a future powered by data, analytics and collective action. The WHO Hub champions a new model – one that goes beyond traditional actors and brings all stakeholders to the table, including NPHAs, genomic sequencers, data modellers, climate and environmental scientists, academics, philanthropists and more. These diverse partnerships form the foundation of our efforts, inspiring innovative approaches and shaping the future of disease surveillance.

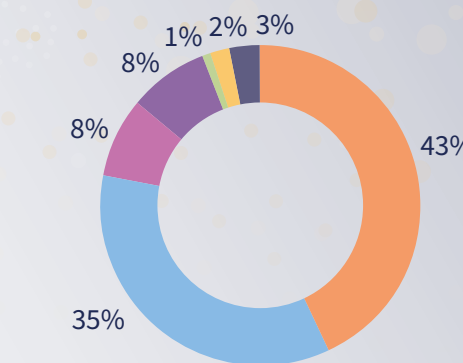
Fig. 10. 2023 WHO Hub stakeholder engagements

>400 stakeholder engagements*

from **44** Member States

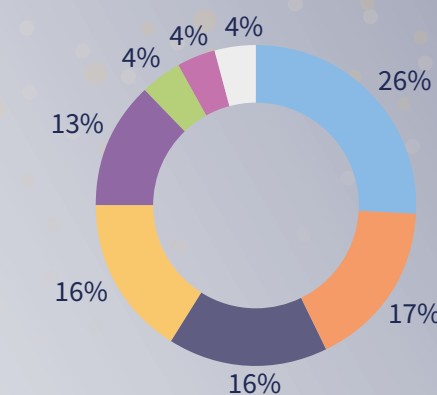


across **6** WHO Regions



Americas **43%**
Europe **35%**
Africa **8%**
Western Pacific **8%**
South-East Asia **1%**
Eastern Mediterranean **2%**
Global **3%**

and **196** institutions



Public institutes/initiatives **26%**
Governments **17%**
Academia/universities **16%**
Foundations **16%**
Nongovernmental organizations **13%**
Cross-stakeholder platforms **4%**
Private institutions **4%**
International organizations **4%**

*Defined as unique engagements at Assistant Director-General level and Director level with institutions. Does not include attendance at conferences or internal WHO meetings.

Delivering across all WHO regions



WHO Region of the Americas

In May 2023, the WHO Hub announced a partnership with Fiocruz to advance surveillance systems in Brazil and beyond. © WHO/Heraa Hajelsafi



WHO European Region

Dr Chikwe Ihekweazu, Assistant Director-General, attended the HERA Conference 2023: Is the EU Better Prepared? on 5 December 2023. © WHO/Heraa Hajelsafi

WHO African Region

Dr Chikwe Ihekweazu, Assistant Director-General, participated in the 3rd International Conference on Public Health in Africa (CPHIA 2023) 27–30 November 2023 in Lusaka, Zambia. © WHO/Heraa Hajelsafi



WHO Eastern Mediterranean Region

Dr Chikwe Ihekweazu, Assistant Director-General, met with the Minister of Public Health of Lebanon, Dr Firass Abiad, during the seventy-sixth World Health Assembly. © WHO



WHO Western Pacific Region

Dr Chikwe Ihekweazu, Assistant Director-General, met with the Commissioner of the Korea Disease Control and Prevention Agency, Dr Youngmee Jee, during the seventy-sixth World Health Assembly. © WHO



WHO South-East Asia Region

Dr Chikwe Ihekweazu, Assistant Director-General, met colleagues at India's National Centre for Disease Control during a visit to the WHO Regional Office for South-East Asia. © WHO/Heraa Hajelsafi

Fig. 11. The WHO Hub's 2023 impact in numbers

200 global partners

committed to supporting advancements
in pathogen genomics worldwide

34 Member States

joined the Epidemic Intelligence
from Open Sources initiative

6 pilot countries

for the Health Security Partnership to
Strengthen Surveillance in Africa project

2 GOARN fellows

welcomed to the WHO Hub

1st United Nations agency

open source programme office

The WHO Hub's own achievements are significant; however, it is through collaboration with partners that lasting change is created. By bringing people together to form new networks, co-create and scale up solutions, the WHO Hub champions a more interconnected and responsive global health ecosystem. Although numbers alone cannot capture the full extent of our impact, Fig. 11 highlights a few that demonstrate what we have achieved this year.

2024 will be a year of action, where we build upon these milestones and translate plans into action. We will work alongside WHO regional offices and partners to finalize the collaborative surveillance roadmap, which sets out to strengthen national surveillance capacities. A comprehensive report on the global surveillance landscape will inform targeted advocacy and investor engagement, galvanizing support for this critical work.

Through continued collaboration with Member States, WHO regional offices and partners, a number of engagements are confirmed for the first quarter of 2024, beginning with an EIOS governance meeting in January in Singapore, a consultation with NPHA leaders in February in Rwanda, and a Collaboratory Technical Advisory Group meeting in March in Berlin. We will continue to accelerate initiatives such as wastewater surveillance, launch EIOS 2.0 and disburse the first round of the IPSN catalytic grants fund, to further strengthen pandemic and epidemic intelligence.

The WHO Hub strives for a safer future for all people and communities, where pandemics do not catch us unprepared. We are working towards a world that stands together, informed, equipped and ready to navigate any health crisis.



WSE strategy and planning workshop in January 2023 in Berlin. © WHO



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