# Regional Action Plan

## for the strategy on epidemic intelligence for strengthening early warning of health emergencies 2024-2029

PAHO
Pan American Health Organization
World Health Organization
Americas Region

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# Background

In May 2024, during the 174th Session of the Executive Committee of the Pan American Health Organization (PAHO) the proposed resolution on the "Strategy on Epidemic Intelligence (EI) for Strengthening Early Warning of Health Emergencies 2024-2029" (Document CE174/20) *(1)* was reviewed and adopted. In October 2024, the 61st Directing Council of PAHO approved the strategy recognizing its critical role in the timely detection of public health threats *(2).* Early identification of these threats is essential to rapidly implement containment measures, saving lives and minimizing socioeconomic impacts. Strengthening national and regional capacities to systematically detect signals of public health events, either from indicator or event-based surveillance was identified as a key component of epidemic intelligence, integrated with existing processes of detection, triage, verification, risk assessment, notification and response.

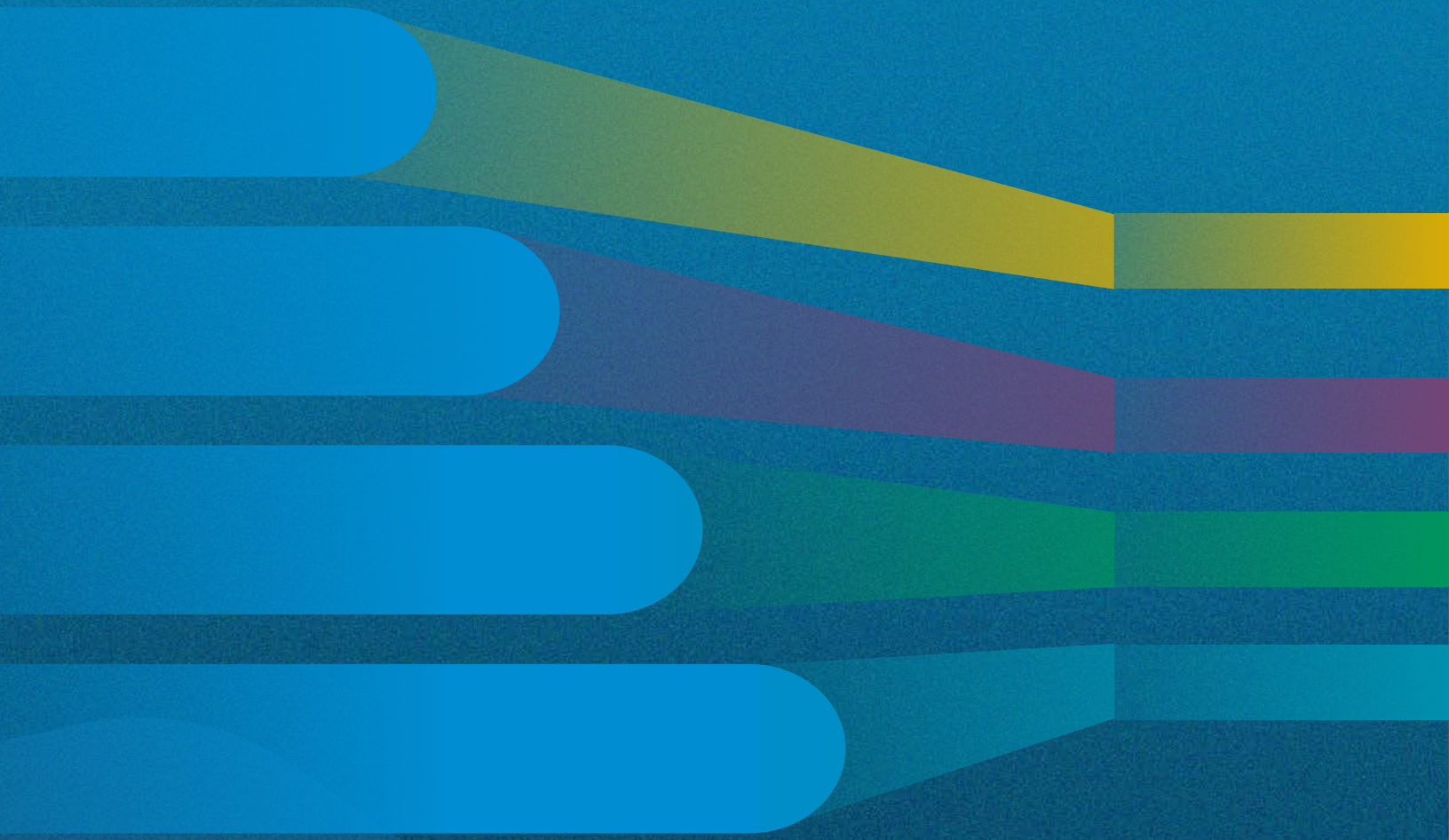
The importance of supranational entities in public health surveillance has also been recognized, mainly for small Island Developing States (SIDS).

Through this strategy, the Pan American Sanitary Bureau (PASB) and Member States in the Americas have committed to further strengthening their capacities for EI, an integrated process involving interlinked steps of detection, verification, risk assessment, notification and response. By enhancing EI, with a One Health approach, PASB and Member States aim to develop and/or consolidate efficient early warning systems, leveraging multiple data sources, to protect the health of the populations across the Americas and beyond from outbreaks, epidemics and pandemics.

# Consensus Plan

The aim of this plan of action is to support and create an enabling environment for strengthening EI in the Region of the Americas, enhancing early warning of health emergencies. The plan of action is grounded in the approved Strategy on EI for Strengthening Early Warning of Health Emergencies 2024–2029 which builds on existing mandates and plans, and on the experience of Member States.

# Plan of Action



The proposed plan of action includes four strategic lines of action to support Member States in strengthening EI capacity for early warning of health emergencies under the International Health Regulations (2005) (IHR) framework *(3)*, while contributing to enhancing the global architecture for health emergency prevention, preparedness, response, and resilience. The four strategic lines of action are as follows:

Strategic Line of Action 1

**Strengthen coordination and leadership** for EI for early warning and monitoring of acute public health events and emergencies.

Strategic Line of Action 2

**Strengthen technical capacity** for effective and sustained implementation of EI.

Strategic Line of Action 3

**Improving the integration and interoperability** of systems and tools to enhance EI.

Strategic Line of Action 4

**Foster collaboration** among surveillance institutions to share best practices, promote active engagement, strengthen information-sharing, and enhance rapid verification of public health signals.

The development of the action plan also considered other existing mandates, including the Strategy on Regional Genomic Surveillance for Epidemic and Pandemic Preparedness and Response *(4)*, the Plan of Action for Strengthening Information Systems for Health 2019–2023 *(5)*, the Roadmap for the Digital Transformation of the Health Sector in the Region of the Americas *(6)* and the IHR.

This plan of action also built on the outcomes of the Regional Meeting on EI for Early Warning and Response, held in Brasília, Brazil, in December 2023. During the meeting, Member States reviewed national progress in EI capacities through dedicated discussions and a consultation process via PAHO Country Offices.

Member States identified several key challenges and considerations for strengthening EI. The outcomes of the assessment and consultation process have guided the development of a comprehensive, actionable plan, that builds on existing achievements and addresses areas of opportunity at both the national and regional levels.

# Regional Action Plan for Strategic Lines of Action

Strategic Line of Action 1

## Strengthen coordination and leadership for EI for early warning and monitoring of acute public health events and emergencies

This strategic line of action is premised on PAHO and partners working together in EI processes, including early detection, triage, verification, risk assessment, notification, and prompt response to public health events, outbreaks, and emergencies.

| Activity | Objective | Indicator | Baseline | Target |
|---|---|---|---|---|
| **1. Enhance collaborative and intersectoral coordination and leadership for EI capacities.** | Establish structured and coordinated leadership mechanisms for EI, leveraging existing capacities and facilitating triangulation of sources for early detection, triage, verification, risk assessment and response to public health events, outbreaks and emergencies. | 1.1 Number of Member States with a legal or administrative framework to facilitate the intersectoral coordination and foster information-sharing[1], risk assessment and response with One Health Approach | BHS, BLZ, BOL, BRA, CHL[2], COL[3], CRI, CUB, DOM, ECU, HTI, LCA, NIC, PER, PRY, SLV, TTO, USA. | ARG[4], ATG, BRB, CAN[5], DMA, GRD, GTM, GUY, JAM, KNA[6], MEX[7], PAN, SUR, URY. |
| | | 1.2 Number of Member States with a landscape analysis on multisectoral EI capacities conducted | | ARG, ATG, BHS, BLZ, BOL, BRA, BRB, CAN, CHL, COL, CRI, CUB, DMA, DOM, ECU, GRD, GTM, GUY, HTI, JAM, KNA, LCA, MEX, NIC, PAN, PER, PRY, SLV, SUR, TTO, USA[8], URY |
| | | 1.3 Number of Member States with a dedicated EI plan based on landscape analyses, or with EI activities embedded in existing national public health plans | BHS, DMA, HTI, JAM, KNA | ARG, ATG[9], BLZ, BRA, BOL, BRB, CAN, CHL, COL, CRI, CUB, DOM, ECU, GRD, GTM, GUY, LCA, MEX, NIC, PAN[10], PER, PRY, SLV, SUR, TTO, URY, USA |

1 Examples include the exchange of information between public health, animal sector, and other relevant sectors during outbreaks.
2 CHL relies on Decree 2023 of December 2008 from the Ministry of Foreign Affairs, which enacts the International Health Regulations (2005), facilitating intersectoral coordination, information exchange, risk assessment, and response.
3 COL has technical working groups for information exchange, but lacks broader multisectoral engagement and a formal One Health framework.
4 ARG has a legal and administrative framework in place, but not explicitly aligned with a One Health approach.
5 CAN has working groups (CPHLN) and/or other means in place for PHAC to exchange information between public health, animal sector, and other relevant sectors during outbreaks.
6 KNA has recently implemented a One Health Committee. Positions at target to formalize the structure through SOPs.
7 MEX has disease-specific plans such as for zoonotic influenza. EI systems remain fragmented by sector. Positions at target to expand and strengthen.
8 USA has multiple surveillance landscapes (e.g., sentinel, syndromic) but lacks a consolidated EI landscape. Positions at target to address this gap.
9 ATG has EI partially embedded in existing plans. Based on COVID-19 lessons, ATG positions itself at target to develop a dedicated plan.
10 PAN has intersectoral coordination and plans with an EI approach, but they do not cover the full spectrum of EI activities. Positions at target to develop a more comprehensive plan.

| Activity | Objective | Indicator | Baseline | Target |
|---|---|---|---|---|
| **2. Facilitate the implementation of the Strategy for EI at regional and national levels.** | Enhance organization of EI activities at national and regional level following an inclusive One Health approach ensuring multisectoral collaboration and structured leadership. | **Regional Indicators** | | |
| | | 2.1 Regional guidelines for EI developed and disseminated in the four PAHO languages (English, French, Spanish, Portuguese) | | 1 |
| | | 2.2 Regional guidelines on common set of terminologies and concepts on EI developed and disseminated in the four PAHO languages (English, French, Spanish, Portuguese) | | 1 |
| | | **Country Indicators** | | |
| | | 2.3 Number of Member States with national EI guidelines, aligned to regional guidelines, for the full spectrum of activities including detection, triage, verification, risk assessment, notification and response | COL, CUB, LCA[11] | ARG, ATG, BHS[12], BLZ, BOL, BRA, BRB, CAN[13], CHL, CRI, DMA, DOM, ECU, GRD, GTM, GUY, HTI, JAM, KNA, MEX, NIC, PAN, PER, PRY, SLV, SUR, TTO, URY, USA |
| | | 2.4 Number of Member States with SOPs (or Operational Manuals) for EI activities which include detection, triage, verification, risk assessment, notification and response | CAN, COL, CUB, LCA, MEX, NIC, USA | ARG, ATG, BHS, BLZ, BOL, BRA, BRB, CHL, CRI, DMA, DOM, ECU, GRD, GTM, GUY, HTI, JAM, KNA, PAN, PER, PRY, SLV, SUR, TTO, URY |
| | | 2.5 Number of Member States with national public health surveillance guidelines, or similar, in which event-based surveillance is included | ARG, BHS, BLZ[14], CAN[15], COL, CUB, DMA, GUY, JAM, LCA, MEX, NIC | ATG, BOL, BRA, BRB, CHL, CRI, DOM, ECU, GRD, GTM, HTI, KNA, PAN, PER, PRY[16], SLV, SUR[17], TTO, URY, USA[18] |

11 LCA recently developed EBS guidelines incorporating EI activities but seeks review for alignment. Positions at baseline.
12 BHS is aligned with existing WHO and PAHO guidelines and open to adopting regional ones. Positions at target.
13 CAN positions within the target as the described activities have responsibilities disseminated across PHAC and other federal agencies.
14 BLZ is finalizing a Communicable Disease Surveillance Manual
15 CAN positions at the baseline, since the Global Public Health Intelligence Network (GPHIN) meets the indicator
16 PRY has a notifiable disease surveillance guide pending update and is institutionalizing EBS within national systems. Positions at target.
17 SUR has a national indicator-based surveillance manual (2022) and aims to integrate EBS components. Positions at target.
18 USA has multiple surveillance guidelines, but none include EBS. Positions at target to incorporate EBS.

Strategic Line of Action 2

**Strengthen technical capacity for effective and sustained implementation of EI**
This strategic line focuses on enhancing national capacities by supporting Member States in developing human resources across the entire EI process.

| Activity | Objective | Indicator | Baseline | Target |
|---|---|---|---|---|
| **3. Establish a framework to enhance national EI workforce capacities.** | Consolidate national workforces' capacities for EI implementation, including detection, triage, risk assessment, outbreak investigation verification, and notification. | **Regional Indicator** | | |
| | | 3.1 Regional core competencies and profiles for EI roles developed and disseminated in the four PAHO languages (English, French, Spanish, Portuguese) | | 1 |
| | | **Country Indicators** | | |
| | | 3.2 Number of Member States with multidisciplinary professionals trained in event-based surveillance (EBS), including the use of tools and platforms for early **detection** of public health signals such as the EIOS (Epidemic Intelligence for Open Sources) | ARG, BRA, CAN, CHL[19], COL, GUY, MEX[20], PER, USA, URY | ATG[21], BHS[22], BLZ, BOL, BRB, CRI, CUB, DMA, DOM, ECU, GRD, GTM, HTI[23], JAM, KNA, LCA, NIC, PAN, PRY[24], SLV, SUR, TTO |
| | | 3.3 Number of Member States with multidisciplinary trained personnel on **community event-based surveillance** for early warning of public health events and emergencies | CAN[25], CUB, MEX[26], NIC, PER, USA | ARG, ATG, BHS, BLZ[27], BOL, BRA, BRB, CHL, COL[28], CRI, DMA, DOM, ECU, GRD, GTM, GUY, HTI, JAM, KNA, LCA[29], PAN, PRY, SLV, SUR, TTO, URY |
| | | 3.4 Number of Member States with multidisciplinary trained personnel on a standardized **risk assessment** process to enhance transparent and evidence-based decision making | CAN[30], BLZ, BRA, BRB, COL, PER, USA | ARG[31], ATG, BHS, BOL, CHL, CRI, CUB, DMA, DOM, ECU, GRD, GTM, GUY, HTI, JAM, KNA, LCA, MEX, NIC, PAN, PRY, SLV, SUR, TTO, URY |

19 CHL has multidisciplinary professionals trained in EIOS. The last training session was in May 2025, and they are currently undergoing new training focused on learning specific system functions.
20 MEX is in the planning phase for EIOS implementation with PAHO. Positions at baseline.
21 ATG has some existing capacities, but considering key terms like "trained" and "multidisciplinary," more needs to be done. Positions at target for indicators 3.2 to 3.9.
22 BHS has a few staff trained through the regional EIOS workshop, but aims to expand in-country training. Positions at target.
23 HTI has some capacity in event-based surveillance, but does not yet use EIOS. Positions at target.
24 PRY has a national team trained in EBS and EIOS, with initial expansion to technical teams. Aims to expand further. Positions at target.
25 CAN positions at baseline for this indicator. At the federal level, Canada does not do community event-based surveillance, however this capability may be in place at the provincial/territorial, or local level.
26 MEX has some community-based surveillance activities, but information needs to be expanded and systematized. Positions at baseline.
27 BLZ has this capacity currently with the Health Education and Community Participation Bureau (HEPOCAB) to work along with community health workers and this is also being addressed in the communicable disease manual.
28 COL has community-based surveillance in place and seeks to strengthen it territorially and align events with each department's epidemiological profile. Positions at target.
29 LCA recently launched the EBS system, but widespread training is still pending. Positions at target.
30 CAN positions within the baseline as the Risk Assessment Hub meets this indicator.
31 ARG conducts risk assessments, but the process is not standardized. Positions at target.

| Activity | Objective | Indicator | Baseline | Target |
|---|---|---|---|---|
| | | 3.5 Number of Member States with teams trained in **advanced analytics** for enhanced epidemic intelligence processes | CAN, BRA[32], CHL, HTI, PER, USA[33] | ARG[34], ATG, BHS, BLZ, BOL, BRB, COL[35], CRI, CUB, DMA, DOM, ECU, GRD, GTM, GUY, JAM, KNA, LCA[36], MEX, NIC, PAN, PRY, SLV, SUR, TTO, URY |
| | | 3.6 Number of Member States with multidisciplinary teams trained in **outbreak investigation** | ARG, ATG, BHS, BRA, BRB, CAN, CHL, COL, DMA, HTI, JAM, KNA, LCA, MEX, PER, SUR, TTO, URY, USA | BLZ[37], BOL, CRI, CUB, DOM, ECU, GRD, GTM, GUY, NIC, PAN, PRY, SLV |
| | | 3.7 Number of Member States participating in the **in-service training** on Epidemic Intelligence facilitated by PAHO | CAN, BRA, USA[38] | ARG[39], ATG, BHS, BLZ[40], BOL, BRB, CHL, COL, CRI, CUB, DMA, DOM, ECU, GRD, GTM, GUY, HTI, JAM, KNA, LCA, MEX, NIC, PAN, PER, PRY, SLV, SUR, TTO, URY |
| | | 3.8 Number of Member States with professionals trained on **Whole Genome Sequencing** and its interpretation with data from other surveillance systems for enhanced epidemic intelligence processes | CAN[41], BRA, CUB, CRI[42], MEX, NIC, USA, URY | ARG, ATG, BHS[43], BLZ BOL, BRB, CHL, COL, DMA, DOM, ECU, GRD, GTM, GUY[44], HTI, JAM, KNA, LCA, PAN, PER, PRY, SLV, SUR, TTO |
| | | 3.9 Number of Member States with multidisciplinary teams trained on **Wastewater and Environmental Surveillance** and its triangulation with other surveillance systems for enhanced epidemic intelligence processes | CAN[45], CUB, HTI[46], USA | ARG[47], ATG, BHS, BLZ, BOL, BRA, BRB, CHL, COL, CRI, DMA, DOM, ECU, GRD, GTM, GUY, JAM, KNA, LCA, MEX, NIC, PAN, PER, PRY, SLV, SUR, TTO, URY |

32 BRA has advanced analytics capacity, but not all states have it uniformly. Positions at baseline.
33 USA has ongoing efforts to consolidate data pipelines and enhance analytics (e.g., 1CDP), but further integration is needed. Positions at baseline.
34 ARG has teams trained in advanced analytics at the central level and aims to advance in forecasting and nowcasting. Positions at target.
35 COL has advanced data analysis including modeling and forecasting, but aims to expand analytics and strengthen subnational capacities. Positions at target.
36 Only one person in LCA is trained in advanced analytics, which is insufficient for the workload. More comprehensive EI training is needed. Positions at target.
37 BLZ is currently using Go.Data for outbreak investigations with core surveillance teams (COVID, Measles, etc..)
38 Not applicable for the USA.
39 ARG has trained personnel, but lacks standardized and continuous training for human resources. Positions at target.
40 BLZ has established training for HCWs in rapid response training, responding to vector-borne outbreaks, Prioritization of Zoonotic Disease under One Health approach
41 CAN has established genomic and analytical capacity through NMLB and other PHAC laboratories, with professionals trained in WGS techniques and in integrating genomic with clinical/epidemiological data. The NML participates in the Canadian Public Health Laboratory Network, which is developing national genomic surveillance governance and quality systems. Positions at baseline.
42 CRI has genomic sequencing conducted at INCIENSA; while systematic triangulation with epidemiological and clinical data not yet institutionalized.
43 BHS has laboratory capacity for genomic surveillance, but integration and interpretation with other surveillance data need improvement. Positions at target.
44 GUY has built lab capacity for gene sequencing, but integration with the health surveillance system is needed. Positions at target.
45 CAN positions within the baseline referring to Wastewater monitoring dashboard.
46 HTI conducts wastewater and environmental surveillance for polio with trained personnel for collection, but lacks in-country lab testing capacity. Positions at baseline.
47 ARG conducts environmental surveillance, but needs to advance in triangulating with other surveillance systems. Positions at target.

Strategic Line of Action 3

**Improving the integration and interoperability of systems and tools to enhance EI**
This strategic line emphasizes the need to advance the integration and interoperability of health information systems to strengthen EI, including indicator-based and event-based surveillance systems.

| Activity | Objective | Indicator | Baseline | Target |
|---|---|---|---|---|
| **4. Improve the integration and interoperability of existing health information systems to support and improve EI.** | Catalyze the integration and interoperability of existing health information systems with EI functions, ensuring support to detection, risk assessment and response activities. | 4.1 Number of Member States with early warning systems that integrate event- and indicator-based surveillance through procedures and flows and, when possible, through integrated data system | BLZ, BRA, CAN, CUB, MEX[48], PER, USA, | ARG[49], ATG, BHS, BOL, BRB, CHL, COL[50], CRI, DMA, DOM, ECU, GRD, GTM, GUY, HTI, JAM, KNA, LCA[51], NIC, PAN, PRY, SLV, SUR, TTO, URY |
| | | 4.2 Number of Member States with functional systems that integrate laboratory diagnostic results for prioritized epidemic-prone pathogens with epidemiological and clinical data for timely analysis and response | ARG, CAN[52], MEX, NIC, USA, URY | ATG, BHS[53], BLZ, BOL, BRA[54], BRB, CHL, COL, CRI[55], CUB, DMA, DOM, ECU, GRD, GTM, GUY, HTI, JAM, KNA, LCA, PAN, PER, PRY, SLV, SUR, TTO |
| | | 4.3 Number of Member States in which the results of partial or whole genome sequencing is triangulated with epidemiological and/or clinical information to generate epidemic intelligence | ARG, CAN[56], CHL, HTI, MEX, PER, USA, URY | ATG, BHS, BLZ, BOL, BRA, BRB, COL, CRI, CUB, DMA, DOM, ECU, GRD, GTM, GUY, JAM, KNA, LCA, NIC, PAN, PRY, SLV, SUR, TTO |
| | | 4.4 Number of Member States integrating the results of nowcasting and/or forecasting into epidemic intelligence processes during outbreaks or emergencies | BRA[57], CAN, CHL, PER, USA | ARG, ATG, BHS[58], BLZ, BOL, BRB, COL, CRI, CUB, DMA, DOM, ECU, GRD, GTM, GUY, HTI, JAM, KNA, LCA, MEX, NIC, PAN, PRY, SLV, SUR, TTO, URY |
| | | 4.5 Number of Member States integrating AI-driven models, including machine learning, into early detection workflows | CAN[59], USA | ARG, ATG, BHS, BLZ, BOL, BRA[60], BRB, CHL, COL, CRI, CUB, DMA, DOM, ECU, GRD, GTM, GUY, HTI, JAM, KNA, LCA, MEX, NIC, PAN, PER, PRY, SLV, SUR, TTO, URY |

48 MEX conducts both animal and human surveillance, but integration into a single system is still needed. Positions at baseline.
49 ARG has a consolidated structure for indicator-based surveillance, but not yet for event-based surveillance. Positions at target.
50 COL has advanced in integrating EBS with indicator-based surveillance, but further integration with other sources (e.g., immunization, environment) is needed. Positions at target.
51 LCA has an EBS system under implementation, but full integration is pending. Positions at target.
52 CAN Public health surveillance systems, programs and network and Integrated approach for national surveillance of respiratory viruses
53 BHS has a strong relationship with the lab, but reporting integration can be improved. Positions at target.
54 BRA has a structure in place and can integrate information, but full integration of all data types is not yet possible. Positions at target.
55 CRI has made important progress in integrating lab and clinical data within the national health system, but further work is needed to ensure interoperability and prioritize events under a One Health approach. Positions at target.
56 CAN positions within the baseline as the WGS sequencing results generated by NMLB are fed into National and International data repositories and shared with Federal partners for the purpose of linking to clinical/epi information to support epidemic intelligence.
57 BRA notes that, although there are examples of application for Arboviruses, SARS, yellow fever, and leptospirosis, such practices do not yet fully strengthen early warning.
58 BHS is developing forecasting models with CIMH, CARPHA, and the national meteorology department. Positions at target.
59 CAN is considered within the baseline, as PHAC applies AI in surveillance (e.g., CFEZID machine learning for antimicrobial-resistance cluster and anomaly detection), with advanced analytics, forecasting and nowcasting performed by the Bioinformatics Core and SIAGE sections to inform national dashboards. Positions at baseline. Refers to Canadian respiratory virus surveillance report and Wastewater monitoring dashboard.
60 BRA highlights the need for more powerful servers and greater coordination with DATASUS security policies, although human resources are available for implementation.

| Activity | Objective | Indicator | Baseline | Target |
|---|---|---|---|---|
| **5. Expand indicator- and event-based surveillance incorporating geospatial data, community-based surveillance and automated tools** | Strengthen robust and integrated and interoperable surveillance systems for EI through enhanced and automated approach for improved early detection and risk assessment | 5.1 Number of Member States triangulating geospatial information with event-based and/or indicator-based surveillance for risk assessment | CAN, CHL, PER, USA | ARG, ATG, BHS, BLZ, BOL, BRA[61], BRB, COL, CRI, CUB, DMA, DOM, ECU, GRD, GTM, GUY, HTI, JAM, KNA, LCA[62], MEX, NIC, PAN, PRY, SLV, SUR, TTO, URY |
| | | 5.2 Number of Member States integrating community event-based surveillance (CEBS) into national surveillance and early warning systems | BLZ, CAN[63], COL, CUB, LCA | ARG, ATG, BHS, BOL, BRA[64], BRB, CHL, CRI[65], DMA, DOM, ECU, GRD, GTM, GUY, HTI, JAM, KNA, MEX, NIC, PAN, PER, PRY, SLV, SUR, TTO, USA[66], URY |
| | | 5.3 Number of Member States using the Epidemic Intelligence from Open Sources (EIOS), or other equivalent, for EI processes | ARG, BRA, CAN[67], CHL, COL, DOM, GUY, MEX[68], PAN, PER, SLV, USA, URY | ATG, BHS, BLZ, BOL, BRB, CRI, CUB, DMA, ECU, GRD, GTM, HTI, JAM, KNA, LCA[69], NIC, PRY, SUR, TTO |
| | | 5.4 Number of Member States with automated, or semi-automated processes for signal detection from indicator-based surveillance | ARG, CAN[70], MEX, PER, USA | ATG[71], BHS, BLZ, BOL, BRA[72], BRB, CHL, COL, CRI, CUB, DMA, DOM, ECU, GRD, GTM, GUY, HTI, JAM, KNA, LCA, NIC, PAN, PRY, SLV, SUR, TTO, URY |
| | | 5.5 Number of Member States with wastewater and environmental surveillance system integrated into national surveillance and epidemic intelligence processes | CAN, USA | ARG, ATG, BHS, BLZ, BOL, BRA, BRB, CHL, COL, CRI, CUB, DMA, DOM, ECU, GRD, GTM, GUY, HTI[73], JAM, KNA, LCA[74], MEX, NIC, PAN, PER, PRY, SLV, SUR, TTO, URY |
| | | 5.6 Number of Member States with Genomic Surveillance guidelines that support the integration of genomic surveillance outcomes into the surveillance system and epidemic intelligence processes | CAN[75], MEX, URY | ARG, ATG, BHS, BLZ, BOL, BRA, BRB, CHL, COL, CRI, CUB, DMA, DOM, ECU, GRD, GTM, GUY, HTI, JAM, KNA, LCA, NIC, PAN, PER, PRY, SLV, SUR, TTO, USA |

61 BRA conducts analyses, but greater focus on emergency-related risk assessment is needed. Positions at target.
62 LCA has 1–2 trained staff, but capacity remains low due to infrequent use and high staff turnover. Positions at target.
63 CAN has mechanisms for confidential information sharing, although community event-based surveillance is not yet integrated into national surveillance and early warning. Positions at baseline.
64 BRA has national initiatives to organize guidelines for implementing CEBS and has initiatives in place, but their implementation and the protocols for their integration into epidemiological intelligence need to be developed. Positions on target.
65 CRI has community-based initiatives (e.g., malaria volunteers) but these are not yet institutionalized within national surveillance systems.
66 USA has examples of CEBS, but none are integrated into the national surveillance system. Positions at target.
67 CAN has PHAC/IDVPB using EIOS and other EBS sources daily for signal detection, routine event-based surveillance, and threat identification, with GPHIN serving as the domestic lead for the EIOS community. Positions at baseline.
68 MEX does not use EIOS but relies on other tools for open-source surveillance. Positions at baseline.
69 LCA has only one trained person, highlighting the need for broader capacity building. Positions at target.
70 CAN has respiratory virus and vaccine-preventable disease surveillance systems with semi-automated analyses to detect trends and anomalies, while CNDSS remains limited to nationally notifiable diseases without automated signal detection. PHAC is working to modernize systems for future indicator-based signal detection. Positions at baseline.
71 ATG has semi-automated processes, but these are not sufficient to meet baseline level functionality. Positions at target.
72 BRA has not yet achieved automation in signal detection and requires further progress. Positions at target.
73 HTI has made some progress, but greater capacity is needed for wastewater and environmental surveillance testing. Positions at target.
74 LCA conducts some environmental surveillance, but capacity must be strengthened to include wastewater and more in-depth environmental monitoring. Positions at target.
75 CAN has respiratory virus and vaccine-preventable disease surveillance systems that include genomic surveillance data, integrated to varying degrees with other data streams and epidemic intelligence processes. Positions at baseline.

**Strategic Line of Action 4**

**Foster collaboration among surveillance institutions to share best practices, promote active engagement, strengthen information-sharing, and enhance rapid verification of public health signals**
This strategic line looks forward to promoting cross-border and international cooperation and collaboration for the implementation of EI at the national and regional levels.

| Activity | Objective | Indicator | Baseline | Target |
|---|---|---|---|---|
| **6. Foster partnerships and joint initiatives across Member States for enhanced knowledge management on EI** | Promote international collaboration in the Americas for the detection, triage, verification, notification, risk assessment and response to public health events, outbreaks and emergencies. | **Regional Indicator** | | |
| | | 6.1 Regional platform facilitating the exchange of procedures, practices, frameworks and mechanisms for EI | | 1 |
| | | 6.2 Number of regional EI meetings convened to identify common challenges, promote collaboration and exchange of best practices among Member States | | 1 |
| | | 6.3 Regional established protocols or coordination mechanisms to enable information exchange across PAHOGen[76], INFOSAN[77], IHR NFP[78] and other relevant networks | | 1 |
| **7. Establish and strengthen regional information-sharing platforms enabling international collaboration within the International Health Regulations (2005) framework.** | Enhance timely and transparent information-sharing on public health threats across Member States within the framework of the International Health Regulations (2005) (IHR). | **Country Indicator** | | |
| | | 7.1 Number of Member States sharing signals or risk assessments on public health events publicly and/or through PAHO platforms | ATG, BHS[79], BLZ, BRA[80], BRB, CAN[81], COL, DMA, DOM, GRD, GUY, HTI, JAM, KNA, LCA, MEX[82], TTO, URY, USA[83] | ARG, BOL, CHL, CRI, CUB, ECU, GTM, NIC, PAN, PER, PRY, SLV, SUR |
| **8. Develop a resource mobilization regional plan to support the implementation of the epidemic intelligence regional action plan.** | To identify funding needs and opportunities to mobilize financial, technical, and human resources for the effective implementation of the Epidemic Intelligence Strategy and its Action Plan at regional level. | **Regional Indicator** | | |
| | | 8.1 Regional resource mobilization plan developed and implemented to support the operationalization of the Epidemic Intelligence Regional Action Plan | | 1 |
| | | 8.2 Proportion of Member States' requests for technical support that have been responded by PAHO in the context of the implementation of the Epidemic Intelligence Regional Action Plan | | 100% |

76 PAHOGen: PAHO Genomic Surveillance Regional Networks. Information available at https://www.paho.org/en/paho-genomic-surveillance-regional-networks-pahogen
77 INFOSAN: International Network of Food safety Authorities, information available at https://www.who.int/groups/fao-who-international-food-safety-authorities-network-infosan/about
78 International Health Regulation National Focal Point: Information available at https://www.who.int/publications/m/item/designation-establishment-of-national-ihr-focal-points
79 BHS shares risk assessments and signals with PAHO, but public communication is limited and audience-tiered. Plans are in place to improve risk communication. Positions at baseline.
80 BRA already shares assessments with other countries. This still occurs passively, only when requested, and it is desirable to strengthen more proactive and systematic mechanisms.
81 CAN shares risk assessments publicly and provides signals to public health professionals, but not to the general public. Positions at baseline.
82 MEX shares information through bilateral agreements. Positions at baseline.
83 USA shares information through bilateral and multilateral mechanisms. Positions at baseline.

# Glossary

**Acute Public Health Event:** Any event [or emergency] that represents an immediate threat to human health and requires prompt action, i.e. implementation of response and/or mitigation measures to protect the health of the public *(7)*.

**Collaborative Surveillance:** 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 *(8)*.

**Community-Based Surveillance:** Systematic detection and reporting of events of public health significance within a community by community members *(9)*.

**Early Warning and Response:** The organized mechanism to detect as early as possible any abnormal occurrence or any divergence from the usual or normally observed frequency of phenomena *(7)*.

**Emergency:** A type of event or imminent threat that produces or has the potential to produce a range of consequences, and which requires coordinated action, usually urgent and often non-routine *(7)*.

**Epidemic:** The occurrence in a community or region of cases of an illness, specific health-related behaviour, or other health-related events clearly in excess of normal expectancy *(7)*.

**Epidemic Intelligence:** The systematic collection, analysis and communication of any information to detect, verify, assess and investigate events and health risks with an early warning objective *(10)*.

**Event:** A manifestation of disease or an occurrence that creates a potential for disease *(3)*.

**Event-Based Surveillance:** Organized collection, monitoring, assessment and interpretation of mainly unstructured ad hoc information regarding health events or risks, which may represent an acute risk to human health. Note: Event-based surveillance is a functional component of early warning, alert and response. This information can be rumours and other ad hoc reports transmitted through formal channels (i.e. established routine reporting systems) and informal channels (i.e. the media, health workers and reports from NGOs), including events related to the occurrence of disease in humans and events related to potential human exposure (WHO 2010[84], WHO 2014[85]) *(7)*.

**Forecasting:** In the context of infectious disease outbreaks, forecasting uses historical and real-time data to predict the future course of an outbreak. Forecasts can cover any length of time, but most target a window of several weeks to a few months *(11)*.

**Genomic surveillance:** Genomic surveillance is the process of constantly monitoring pathogens and analyzing their genetic similarities and differences. It helps researchers, epidemiologists and public health officials to monitor the evolution of infectious diseases agents, alert on the spread of pathogens, and develop counter measures like vaccines *(12)*.

**Health Information System:** Digital systems with open data that come from different sources and that is ethically used, through effective ICT tools, to generate strategic information for the benefit of public health. *(13)*.

**Indicator-Based Surveillance:** 1. The systematic (regular) collection, monitoring, analysis and interpretation of structured data, i.e. of indicators produced by a number of well-identified, mostly health-based, formal sources (WHO 2014[86]). 2. The routine reporting of cases of disease, including notifiable diseases surveillance systems, sentinel surveillance, laboratory-based surveillance, etc. Note: This routine reporting is commonly healthcare facility based, with reporting done on a weekly or monthly basis (WHO 2010[87]). *(7)*.

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84 WHO (2010). Protocol for assessing national surveillance and response capacities for the International Health Regulations (2005) (https:// www.who.int/ihr/publications/who_hse_ihr_201007_en.pdf?ua=1).

85 WHO (2014). Early detection, assessment and response to acute public health events. Implementation of early warning and response with a focus on event-based surveillance (http://apps.who. int/iris/bitstream/handle/10665/112667/WHOHSEGCRLYO2014.4eng.pdf;jsessionid=CC9990EC0DE59D7B9EFB32E2331356C1?sequence=1

86 WHO (2014). Early detection, assessment and response to acute public health events. Implementation of early warning and response with a focus on event-based surveillance (http://apps.who.int/iris/bitstream/handle/10665/112667/WHO_HSE_GCR_LYO_2014.4_eng.pdf;jsessionid=CC9990EC0DE59D7B9EFB32E2331356C1?sequence=1

87 WHO (2010). Protocol for assessing national surveillance and response capacities for the International Health Regulations (2005) (https:// www.who.int/ihr/publications/who_hse_ihr_201007en.pdf?ua=1).

**Interoperability:** The ability of different information technology systems, software applications, and networks to communicate, to exchange data accurately, effectively, and consistently and to use the information that has been exchanged *(14)*.

**National IHR Focal Point:** National centre, designated by each State Party, which shall be accessible at all times for communications with WHO IHR Contact Points under the IHR *(3).*

**Notification:** The formalized mandatory communication process through which reportable diseases events are communicated within national or international surveillance systems *(10).*

**Nowcasting:** In the context of infectious disease outbreaks, nowcasting refers to the real-time estimation of current disease activity, by adjusting for reporting delays and incomplete data while also factoring in key pathogenic, epidemiologic, clinical, and socio-behavioral characteristics of the ongoing outbreak *(15)*.

**Outbreak:** Often used synonymously with "epidemic", usually to indicate localised as opposed to generalised epidemics *(7).*

**Risk Assessment:** A systematic process for gathering, assessing and documenting information to assign a level of risk to human health to an event *(10).*

**Signal:** Data and/or information considered by the Early Warning and Response system as representing a potential acute risk to human health *(10).*

**Surveillance:** Systematic ongoing collection, collation and analysis of data for public health purposes and the timely dissemination of public health information for assessment and public health response as necessary *(3).*

**Verification:** The provision of information by a State Party to WHO confirming the status of an event within the territory or territories of that State Party *(3).*

**Wastewater surveillance:** Refers to the practice of monitoring and analyzing wastewater (sewage) to detect the presence of specific pathogens, chemicals, or biomarkers. It is often used as a tool for public health surveillance to track disease outbreaks or other environmental hazards *(16).*

**Whole Genome Sequencing:** Whole genome sequencing (WGS) is a laboratory technique that has the potential to change how we detect and monitor microbial hazards. WGS is useful for understanding diseases through enhancing routine surveillance, outbreak detection, outbreak response and for source identification using a One Health approach *(17)*.

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