

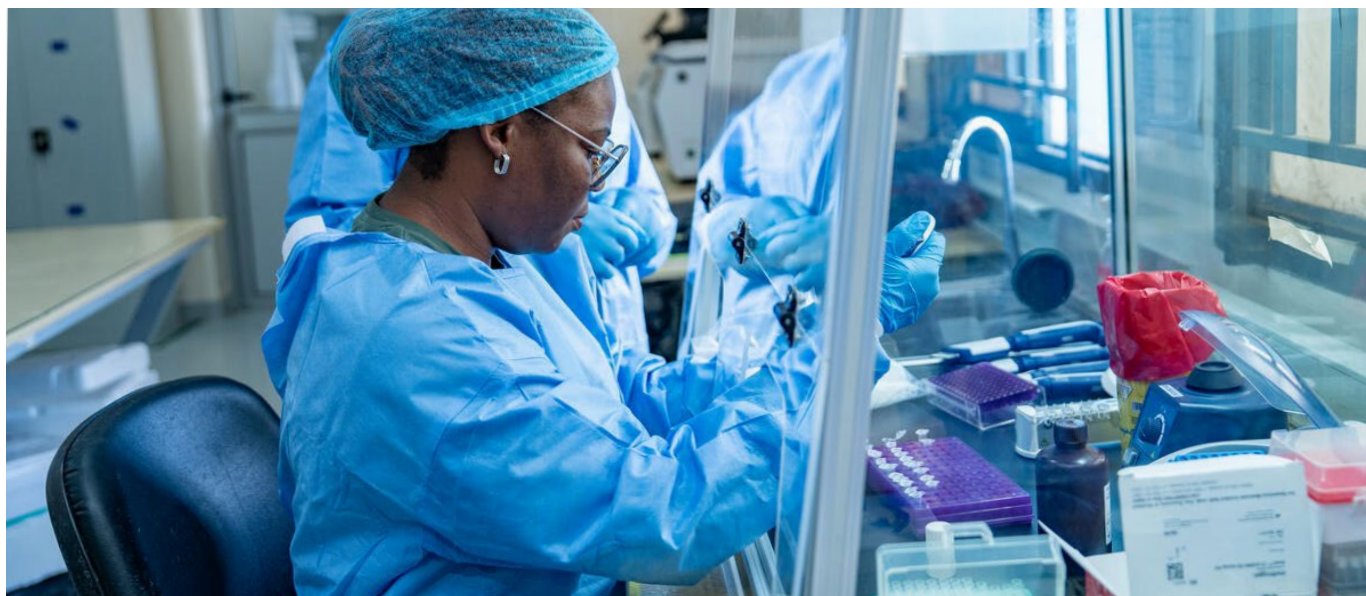


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INVESTING IN DISEASE SURVEILLANCE: **FOUR PRACTICAL APPROACHES**



>> WHY INVESTING IN SURVEILLANCE MATTERS

Governments broadly recognize disease surveillance as an essential public health function, yet investment remains uneven and often declines once immediate health threats subside^{i,ii,iii}. The challenge is not demonstrating that surveillance matters — it is making the case for sustained political and financial support.

Disease surveillance is much more than an outbreak detection system. It is a core public health function that systematically collects, analyzes, and interprets data to detect and track health threats and inform timely public health action. Surveillance systems integrate laboratory networks, data platforms, trained personnel, and community-based reporting to generate actionable insights into who is getting sick, where disease is spreading, and how risks are changing. This information enables public health authorities to identify trends, target interventions, and respond proactively to emerging threats^{iv}.

Too often, however, surveillance is viewed only as a preparedness tool. While surveillance is indispensable for detecting and responding to outbreaks, its value extends far beyond emergencies. Every day, surveillance data support endemic disease management, guide health programs, inform planning and resource allocation, and strengthen health service delivery^v.

The business case for investing in surveillance is rooted in both health and economics. Effective surveillance contributes to better endemic disease control and enables earlier detection of and response to emerging threats, saving lives and money^{vi,vii}. For example, modeling studies suggest that systematic tuberculosis screening could reduce cases by 10-17 percent across high-burden settings, reducing morbidity, mortality, and treatment costs^{viii}. At the same time, the 2003 SARS outbreak, which caused 916 deaths and an estimated US\$40 billion in economic losses, illustrates the potentially enormous costs of delayed detection and response^{ix,x}. As studies warn that up to a billion people could be exposed to dengue and Zika viruses by the end of the century — illustrating the growing threat of zoonotic and emerging diseases — the cost of sustained investment in surveillance remains small compared with the health and economic losses it is intended to prevent^{xi,xii}.

Yet despite its widely recognized value, disease surveillance remains under-resourced and subject to fluctuating political and financial support^{xiii}. Many of its greatest successes are difficult to see: outbreaks detected early, transmission interrupted, or health threats contained before they escalate. Surveillance also competes with more visible and immediate health priorities, is supported by financing that is often fragmented across multiple programs and institutions, and is subject to cyclical political attention as public health emergencies emerge and fade^{xiv,xv,xvi}. Together, these characteristics make surveillance a difficult investment to prioritize and sustain.

This paper argues that these barriers are not insurmountable. Drawing on experiences from the Caribbean, Thailand, and Uganda, it highlights actionable lessons on how countries and regions have strengthened and sustained surveillance financing and distills those lessons into four practical approaches that policymakers can adapt to their own contexts.



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>> FROM COMMITMENT TO INVESTMENT: FINANCING DISEASE SURVEILLANCE

1. EMBEDDING SURVEILLANCE WITHIN ROUTINE HEALTH SYSTEM FUNCTIONS

Countries that embed surveillance within their health systems benefit from its support of endemic disease management, health program guidance, and resource allocation. They are also better positioned to sustain investment because decision-makers can see surveillance's day-to-day impact. Shifting surveillance from a preparedness activity to core health system infrastructure makes it more useful, more visible, and ultimately more likely to attract sustained financing while improving population health.

Surveillance systems can often operate in parallel to health systems, serving as a preparedness activity that is most active when a threat emerges. However, when surveillance systems are fully integrated into health system functions, they generate information that supports the day-to-day success of health programs like immunization, tuberculosis control, malaria elimination, maternal and child health, endemic disease monitoring, and other public health decision-making^{xvii}. The visible benefits of such programs are easier to explain than preparedness activities, making the business case for surveillance investment much stronger. By informing more effective public health programs and interventions, this integration also contributes to improved population health.

Experience from Rwanda illustrates the value of health system and surveillance integration. In 2013, Rwanda became the first low-income country to implement an electronic disease surveillance and response system^{xviii}. The platform supports routine collection, analysis, and reporting of data from health facilities across the country. These data are used for outbreak detection and response as well as ongoing disease monitoring and management. Since 2015, the system has identified hundreds of potential outbreaks annually while simultaneously supporting routine public health functions, demonstrating how surveillance can generate value in both emergency and non-emergency settings^{xix}.

Embedding surveillance within routine health system functions can be enabled and codified through legal, institutional, and governance arrangements. Legislative frameworks can establish surveillance as a core responsibility of the health sector, supporting its integration into the existing system rather than creating new, potentially duplicative structures. National Public Health Institutes and similar entities can further strengthen the path toward integration and sustained funding by both consolidating surveillance functions and clearly indicating financial requirements in government planning and budgeting processes^{xx}.

Box 1 describes Thailand's success in leveraging such legal, institutional, and programmatic arrangements to embed surveillance in routine health practice and long-term government financial planning.



Photo: WHO

BOX 1. **THAILAND: CONNECTING SURVEILLANCE TO** **ROUTINE HEALTH SERVICE DELIVERY**



Beginning in 2001, Thailand strengthened its surveillance systems and embedded them within broader health sector reforms, ensuring that surveillance could support outbreak preparedness and response as well as the ongoing management of priority public health challenges^{xxi}.

Thailand's Communicable Disease Act of 2015 enabled further integration and sustained funding by providing a comprehensive legal basis for disease control, clarifying roles and responsibilities, supporting coordination, and establishing a National Communicable Disease Committee with representation from ministries and agencies across the government, chaired by the Minister of Public Health^{xxii}. Surveillance is further embedded in Thailand's long-term financial planning through the 20-year National Strategy (2018–2037), which prioritizes health security across political cycles^{xxiii}. These arrangements position surveillance as part of the everyday functioning of the health system, not only as a mechanism for emergency response.

Thailand's "1-3-7" malaria strategy illustrates the value of health system and surveillance integration^{xxiv}. Through the Malaria Online platform, cases identified through routine health services are reported, investigated, and addressed with defined response protocols and timelines^{xxv}. Surveillance data therefore do not sit separately from service delivery; they help trigger and guide concrete actions by health workers and local health authorities. This makes surveillance visibly useful in the routine management of disease, while also strengthening readiness for emerging threats

Thailand's experience illustrates not only the benefits of integrating surveillance activities into the day-to-day function of its health care system, but also how legal frameworks can be deployed to ensure long-term political and financial support for surveillance and related public health functions.

2. BUILDING SURVEILLANCE THROUGH INCREMENTAL INVESTMENTS

Strengthening surveillance systems does not require large-scale reform. A gradual approach that strengthens existing systems, expands proven capacities, and delivers visible improvements over time can demonstrate value, build confidence, and establish the demand for more expansive and integrated systems as resources become available^{xxvi, xxvii, xxviii}.

Initiating a disease surveillance system is often understood to be expensive, complicated, and technically challenging — and large up-front investments are often required to establish laboratories, information systems, data management, and workforce capabilities. However, a surveillance system does not need to be built all at once. In fact, a phased approach is often more practical, allowing countries to strengthen existing capacities, address critical gaps, and expand successful initiatives over time^{xxix, xxx, xxxi}.

This approach reduces the volume of upfront financing, allows for the integration of lessons learned, and enables decision-makers to observe tangible improvements before committing additional resources. For example, early advances in outbreak detection, timely reporting, or response performance could provide visible evidence of progress and help justify continued investment. Over time, these incremental improvements can develop into more

comprehensive and resilient surveillance systems, built slowly and thoughtfully while avoiding the financial and institutional risks associated with large-scale transformation.

Many countries have adopted this phased approach by building their surveillance programs atop existing disease-specific initiatives. Because core surveillance capacities like case detection, reporting, laboratory confirmation, and data analysis are often similar across diseases, those investments can often be adapted for broader disease surveillance, avoiding the costs of creating entirely new systems^{xxxii, xxxiii, xxxiv}. For example, in Nigeria, infrastructure and operational capacities originally developed for polio eradication were subsequently adapted to support responses to meningitis, Lassa fever, Ebola, and other public health threats^{xxxv}. Building on existing systems allowed Nigeria to broaden its surveillance efforts while demonstrating the value of prior investments.

The Caribbean experience illustrates that incremental investment can also occur at the regional level. Rather than relying on each country to develop surveillance assets independently, Caribbean states progressively expanded shared capacities through the Caribbean Public Health Agency (CARPHA) over a decade, enabling the states to collectively utilize joint laboratories, technical expertise, information systems, and workforce resources. This approach, detailed in Box 2, reduced duplication, generated economies of scale, and allowed countries to achieve surveillance gains that would have been prohibitively expensive to pursue individually or all at once.



Photo: Estefania Bravo / UN Foundation

BOX 2. THE CARIBBEAN: STRENGTHENING SURVEILLANCE THROUGH INCREMENTAL AND COLLABORATIVE REGIONAL INVESTMENT



Small island states often face challenges in financing comprehensive surveillance systems, including justifying investments in specialized laboratories, platforms, and technical expertise^{xxxvi}. The Caribbean addressed this challenge through regional collaboration and gradual investment built on longstanding cooperation^{xxxvii,xxxviii}.

In 2011, Caribbean countries established CARPHA by consolidating several existing national health institutions into a single regional entity^{xxxix}. Rather than creating entirely new systems from scratch, CARPHA built on pre-existing technical capacities and institutional arrangements, allowing Member States to slowly and collaboratively expand CARPHA's capacity for surveillance, laboratory services, workforce development, and emergency preparedness.

This regional, incremental approach enabled Member States to develop and share specialized laboratory assets and reference testing capacity that may have been difficult for individual countries to maintain independently^{xl}. It also created opportunities for pooled procurement, joint development of surveillance tools and information systems, and coordinated technical support, helping to further reduce costs and avoid duplication^{xli}. The benefits of these investments became particularly visible during the COVID-19 pandemic, when CARPHA was able to support regional information sharing, technical coordination, and public health action across Member States^{xlii}.

The Caribbean experience demonstrates the benefits of regional collaboration and incremental investment: by collectively building on existing institutions, sharing costs and capacities, and expanding successful arrangements thoughtfully over time, Caribbean Community Member States progressively developed an integrated and sustainable surveillance system.

3. IMPROVING TRANSPARENCY IN SURVEILLANCE FINANCING

When decision-makers understand the total cost of surveillance, where funding comes from, and the value it delivers, it is easier to plan for future investments and ensure accountability. While the value of surveillance is well known in the abstract, governments must understand the exact financial cost of that value so that investments can be protected and adjusted as financial circumstances change.

Governments cannot sustain investments they cannot see, and surveillance activities are frequently financed through multiple programs, budget lines, and external

funding sources with expenses embedded in broader public health, laboratory, workforce, or disease-control budgets — making spending extremely difficult to track and quantify^{xliii}. When surveillance expenditures are unclear, it becomes more difficult to plan for recurring costs, assess funding gaps, and demonstrate the value of existing investments. Fragmented financing can also endanger critical functions when support declines or financial pressures intensify, as the financial and operational history of the function may not be well known.

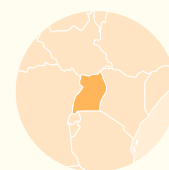
Improving the visibility of surveillance financing does not necessarily require creating separate budgets for surveillance. Instead, surveillance objectives should be reflected in national strategies, medium-term expenditure plans, annual budgets, and financial

reporting systems to help governments understand what is being financed, identify resource needs, and make more informed decisions about future investments.

Uganda's approach to ensuring the transparency of surveillance financing, as discussed in Box 3, was to consolidate surveillance and associated key public

health functions within a dedicated national institution. The creation of the Uganda National Institute of Public Health (UNIPH) helped bring together previously fragmented surveillance, laboratory, and outbreak response functions, allowing for more straightforward planning, budgeting, and resource mobilization.

BOX 3. UGANDA: ENSURING TRANSPARENT SURVEILLANCE FINANCING BY CENTRALIZING PUBLIC HEALTH FUNCTIONS



Repeated Ebola outbreaks in Uganda motivated the Government to strengthen and institutionalize core public health functions by establishing the UNIPH in 2013 as a dedicated institution that would coordinate surveillance, laboratory services, emergency preparedness, and outbreak response^{xliv}. UNIPH brought together functions that were dispersed across multiple programs and funding streams, a consolidation that improved coordination, clarified institutional responsibilities, and created a more visible platform for planning and financing surveillance activities. A 2019 Presidential directive further strengthened the UNIPH by granting it autonomous status, providing a legal basis for a dedicated budget line within the national Medium-Term Expenditure Framework and enabling it to receive donor funding directly^{xlv}.

Creating a distinct institutional home for surveillance and related public health functions improved the visibility and transparency of surveillance financing by centralizing previously fragmented funding streams and elevating that single funding need for formal inclusion in government budgets. While the country continues to pursue legislation to formalize UNIPH through an Act of Parliament, the experience illustrates how institutional centralization can help make surveillance financing more visible within government systems and strengthen its prospects for long-term sustainability^{xlvi}.

4. LEVERAGING POLICY WINDOWS CREATED BY PUBLIC HEALTH EVENTS

Public health emergencies often create brief windows of heightened political attention that elevate willingness to pursue surveillance investments and associated reforms. Countries must utilize these fleeting windows to establish lasting institutions, strengthen legal and governance frameworks, and secure sustainable financing to ensure long-term gains.

Investment in surveillance too often follows a “cycle of panic and neglect”: major outbreaks trigger emergency

funding and renewed political commitment, but attention and resources decline once the immediate crisis passes^{xlvii}. Countries that break this pattern use policy windows to institutionalize reforms within laws, budgets, organizations, and routine government processes so that they will endure beyond the emergency itself^{xlviii}.

For example, the COVID-19 pandemic created such policy windows^{xlix}. In Nepal, the pandemic enabled the expansion of disease surveillance to address SARS-CoV-2, influenza, and RSV^l. Additionally, during the 2023 Western Equine Encephalitis outbreak, officials in Argentina and Uruguay leveraged informal communication channels like WhatsApp to more

rapidly share surveillance information and operational updates^{li}. Both countries are now working to formalize these mechanisms and further integrate human and animal surveillance systems.

Outbreaks expose weaknesses and create political momentum for change, and lasting impacts can arise when these policy windows are captured to enact bold and targeted institutional, financing, and governance reforms.

>> KEY TAKEAWAYS FOR POLICYMAKERS AND DEVELOPMENT PARTNERS

Although disease surveillance is widely recognized as an essential public health function, investment is difficult to prioritize and sustain when competing with more tangible and immediate needs. The experiences reviewed in this paper suggest that successful countries and regions have addressed this challenge not through a single financing model, but through practical approaches that increase the visibility, relevance, and function of surveillance within health systems, including:

- **Embedding surveillance within routine health system functions.** Countries that embed surveillance within their health systems benefit from its support of endemic disease management, health program guidance, and resource allocation — as well the improved ability to justify continued investment when decision-makers can see surveillance's day-to-day impact^{lii}. Shifting surveillance from a preparedness activity to health system infrastructure is imperative for securing sustained financing and improving population health.
- **Building surveillance through incremental investments.** Strengthening surveillance systems does not require large-scale reform. A gradual approach that strengthens existing systems, expands proven capacities, and delivers visible improvements over time can demonstrate value, build confidence, and establish the demand for more expansive and integrated systems as resources become available^{liii, liv, lv}.
- **Improving transparency in surveillance financing.** When the total cost of surveillance, funding sources, and positive impacts are understood by decision-makers, it is easier to plan for future investments and ensure accountability. While the value of surveillance

is well known in the abstract, governments must understand the exact financial cost of that value so that investments can be protected and adjusted as financial situations change.

- **Leveraging policy windows created by public health events.** Public health emergencies often create brief windows of heightened political attention that elevate willingness to pursue surveillance investments and associated reforms. Countries must utilize these fleeting windows to establish lasting institutions, strengthen legal and governance frameworks, and secure sustainable financing to ensure long-term gains.

Robust, integrated, and well-financed disease surveillance systems are not created through a single decision or investment. Rather, they are typically the result of a gradual process of institutionalization, integration, and adaptation. While countries will inevitably differ in their starting points, resources, and priorities, the underlying lesson is consistent: surveillance is most likely to be sustained when it is routinely useful, financially visible, institutionally embedded, and supported by governance arrangements that endure beyond individual projects, funding cycles, or public health emergencies.

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