

Championing Innovations in Health

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Beyond Technology: Defining Public Health Innovation

The theme of this year's Caribbean Public Health Agency (CARPHA) 70th Annual Health Research conference is "Innovations in Health." While the word "innovation" often brings cutting-edge technology or digital tools to mind, its definition within public health is much broader and more nuanced. In this discipline, innovation is the introduction of a new concept, idea, service, process, or product aimed at improving treatment, diagnosis, education, outreach, prevention, and research (1).

The ultimate goal of these advancements is to improve the overall quality, safety, outcomes, efficiency, and cost-effectiveness of health systems (1). Therefore, a genuine public health innovation is rarely a standalone product. More commonly, it comprises a suite of interventions: including the processes and training necessary to build sustainable implementation capacity within a health system, as well as acceptability by the target population (1, 2). Ultimately, innovation is a prerequisite for achieving true health equity (3).

Innovations in health are not just scientific breakthroughs or clever technologies advances; they are our defence, our strategy, and our promise to future generations that we will do better than the generations before us. Such innovations are the engines that power healthier communities, stronger health systems, and brighter futures.

Innovations in healthcare the drivers of modern well-being, transforming entire societies by pushing the boundaries of what is possible in disease prevention, diagnosis, and community care. It turns previously deadly outbreaks into manageable obstacles, extend life expectancy, and bring high-quality health services to the world's most remote corners. From AI-powered tools that predict epidemics before they start, to smart vaccines that save millions of lives, public health innovations do not just improve life; they redefine it, creating healthier, more resilient, and more equitable futures for all

The Caribbean Context: Navigating the Epidemiological Transition

The Caribbean represents a heterogeneous mix of health systems and economic development. Many nations in the

region are undergoing an epidemiological transition, where lifestyle-related conditions such as obesity, hypertension, diabetes, cardiovascular diseases, and violence have become major sources of morbidity and mortality (4-7).

Despite these challenges, all CARICOM countries have committed to **Universal Health Coverage (UHC)**, striving to ensure their citizens have access to the full range of quality health services they need, on demand, and without financial hardship (8). Within this context, deliberate strategies are urgently required to promote innovative solutions that improve the health of Caribbean peoples.

The Role of CARPHA as an Engine of Innovation

The Caribbean Public Health Agency (CARPHA) itself is a health innovation: It unifies 26 Caribbean countries under one modernized public health authority. It is the sole regional public health agency for the Caribbean mandated by a CARICOM Inter-Governmental Agreement as the lead regional public health agency under the Caribbean Cooperation in Health framework, to protect and promote health in the region, including leading in health innovations as a collective, regional approach (9). The latter is crucial given the Caribbean's unique context of small island developing states (SIDS), with highly interconnected, porous borders, varying surveillance and response capacities, heavy reliance on tourism and susceptible to climatic change and disasters. These factors increase the risk of disease introduction and rapid spread in the region, and an outbreak in one country will likely lead to an outbreak in the region; all necessitating a regional approach as functional regional capacities are greater than the sum of the capacities of individual countries for Caribbean SIDS.

In September 2025, the CARICOM's Ministers of Health 50th Council for Human and Social Development (COHSOD) endorsed CARPHA's Caribbean-tailored, innovative regional integrated early warning and response surveillance systems (RIEWSS) and mechanisms. This will address early warning emergency and response (E&R) to public health emergencies and advance pandemic preparedness and response in the Caribbean. These health innovations were specially designed to suit the unique epidemiological, geographic, and health system contexts of Caribbean SIDS

for which traditional global E&R frameworks (developed for larger, resource-rich countries with mature epidemiological, laboratory, and workforce capacities) may not always be fully adaptable to regional needs. These include:

- Regional Integrated Early Warning Surveillance System (RIEWSS) – a next-generation regional digital surveillance architecture, integrating notification, preparedness, and response functions.
- Timeliness Metrics – regional innovation designed to improve the timeliness of how quickly public health threats are notified/detected, reported, and responded to in unique Caribbean local and visitor settings and health systems infrastructure.
- Caribbean-tailored Tingua Simulation Emergency & Response Exercises: preparedness platform, set in a fictional Caribbean context designed to strengthen the region’s capacity to detect and respond to complex public health threats (10).
- Enhancing the ability to manage large volumes of information including false or misleading information in digital and physical environments during a disease outbreaks (infodemics) through continuous monitoring of the information environment

Other health innovations include:

- Expanded Diagnostics: CARPHA’s typing and Antimicrobial Resistance (AMR) services now span three regional hubs, covering clinical, environmental, and veterinary isolates.
- Logistics & Infrastructure: Enhanced sample transport for quicker results, a mobile insectary, and a high-tech Emergency Operating Centre (EOC).
- Collaborative Networks: Implementation of Caribbean Moves and the regional Laboratory, Epidemiology, and Vector networks (CARiPHLN, CariEpiNet, Carivec-Net).
- Surveillance & Security: Digital tracking for non-communicable diseases (including injuries) and the establishment of the Regional Coordinating Mechanism for Health Security (RCM-HS).

These regional specific innovations are transforming the way the Caribbean detects, tracks and responds to public health threats, strengthens regional surge and health security capacity and ensures a more coordinated and agile response to emerging health threats.

The Role of Universities as Engines of Innovation

Universities play a critical role in driving innovation within the health sector and the broader economy through research, training, and partnerships with communities, private capital, and governments. Traditionally, universities operationalize these activities through two distinct, yet complementary, nodes:

- Translational Research Units: These units, along with research clusters and implementation science programs, act as the bridge translating basic science discoveries into real-world solutions. They unite networks of researchers, policymakers, and practitioners to address pressing regional knowledge gaps and shape policy through actionable research (11-13).
- Innovation Hubs: These are collaborative spaces designed to encourage creativity and the exchange of ideas across diverse disciplines toward shared goals. These hubs often expand into broader ecosystems, involving interconnected organizations with access to venture capital, frequently serving as launching pads for new businesses (14-16).

While there is considerable overlap between these approaches, both are fundamentally underpinned by robust partnerships across academia, the private sector, local communities, and the public sector.

Scaling for Impact: Sustaining Innovation

The full benefits of public health innovations will only be realized and sustained if they can be successfully scaled and incorporated into policy or law (17, 18). Scaling generally takes two forms (17):

- Horizontal Scaling (Expansion): Replicating innovations in different locales or extending them to serve new population groups.
- Vertical Scaling (Institutionalization): Securing formal government decisions to integrate the innovation into national programmes, policies, or legal frameworks.

The corollary of successful scaling is acceptability (2), which heavily influences how an innovation is adopted and diffused. As innovations are scaled, they must be carefully adapted to changing sociocultural, economic, and institutional contexts, all while ensuring their essential, non-negotiable features remain intact (17, 18). A crucial strategy to mitigate risks to acceptability is building broad-based coalitions that involve local community champions, secure widespread political support, and attract private capital buy-in.

Call to Action

In conclusion, this 70th iteration of the Caribbean regional health research conference emphasizes a key mandate of CARPHA to collaborate with member states in strengthening their health systems and policies through public health innovations. In keeping with this commitment to strategic partnership, the event will feature a dedicated session where CARPHA’s scientists and experts will present cutting-edge advancements in disease surveillance, early warning and response emergency preparedness and One Health initiatives, and. Therefore, as we participate in this year’s conference by listening to diverse talks, reading abstracts,

and engaging in networking let us all actively seek out innovative solutions that we can champion and adapt within our own local settings.

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