New Survey From Abbott Finds Epidemiologists Believe Viral And Mosquito-Borne Pathogens Are Priority Concerns For Disease Outbreaks

- Survey reveals that infectious disease experts see the need to address gaps in surveillance programs to identify emerging pathogens, public health funding and testing infrastructure capabilities
- They point to viral pathogens and mosquito-borne pathogens as likely to spark outbreaks as humans, animals and viruses overlap; and new viruses are as concerning as changes to existing viruses
- Experts believe robust tracking of changing insect range, animal habitats and their migrations and extreme weather events are important to understanding infectious diseases and changing risk patterns

ABBOTT PARK, Ill., Sept. 17, 2024 — Abbott announced thefindings of a new survey among leading infectious disease experts around the world on the state of pandemic preparedness and found that while most agree that preparation has improved since the COVID-19 pandemic, respondents say significant gaps remain in building surveillance programs to identify emerging pathogens, public health funding and having adequate testing infrastructure capabilities.[1]

The survey, commissioned by the Abbott Pandemic Defense Coalition, asked more than 100 experts in virology, epidemiology and infectious diseases around the world about their priorities for addressing the gaps in readiness for disease outbreaks, their views on how the changing environment is impacting infectious diseases, and their suggestions for building a resilient healthcare system capable of identifying and responding to emerging disease outbreaks around the world.

"Just as scientists have developed sophisticated monitoring systems to track emerging storms and hurricanes, our job as virus hunters is to identify pathogens that have the potential to spark outbreaks in order to stay one step ahead," said Gavin Cloherty, Ph.D., head of infectious disease research at Abbott and head of the Abbott Pandemic Defense Coalition. "Disease surveillance acts as our radar, helping us prioritize which viruses are most likely to trigger an outbreak and where those outbreaks may occur."

When asked to classify the types of pathogens that are most likely to start outbreaks[1]:

- Respondents were evenly split on whether a new pathogen (50%) or changes in a known disease (50%) were a bigger threat for large-scale outbreaks.
- Nearly all (94%) believe viral pathogens are most likely to lead to widespread outbreaks, followed by bacteria, fungal and parasitic infections.
- A pathogen that is highly transmissible, a novel virus with no tests, treatments or vaccines available, and a virus that can transmit silently are the factors most likely to accelerate a local outbreak into an epidemic or pandemic; a known pathogen that's now drug resistant to treatments, a virus that causes high mortality, or one with high morbidity were less likely.

The survey also asked infectious disease experts their perspective on the impact changes in the climate could have on the severity and frequency of infectious disease outbreaks, including extreme weather events and where insects and animals live. Experts identified mosquito-borne pathogens (61%) as representing the greatest threat to human health as the climate changes, compared to avian (21%), animal (14%) or tick-born (4%) pathogens.[1]

Viruses from mosquitoes – including dengue fever, Zika virus, West Nile virus and malaria – are common in tropical areas, including Latin America, Africa and Asia. Scientists are finding that warming temperatures and more flooding are pushing mosquitos that can carry these diseases to new places. Scientists predict that 1.3 billion people could be impacted by Zika by 2050 and 61% of the world's population could be impacted by dengue by 2080.[2-3]

The survey results showed that infectious disease experts believe that robust tracking of changing insect ranges, animal habitats and their migrations, and extreme weather events are important to understand changing risk patterns for infectious diseases.

"Temperature increases and extreme weather events are impacting how humans, animals and insects interact and we are finding mosquito-borne viruses in new places," said Jorge Osorio, DVM, Ph.D., M.S., a professor and director of the Global Health Institute at the University of Wisconsin-Madison and co-director of the Colombia-Wisconsin One Health Consortium. "As these viruses appear in more parts of the world, we need a globally coordinated effort to share learnings from countries who have been successfully managing these illnesses, as well as ensuring that effective surveillance and countermeasures are in place."

As part of the survey, respondents were asked to share their priorities for addressing the most urgent gaps in the world's current state of readiness. Surveillance programs to identify emerging pathogens, funding for public health infrastructure, testing infrastructure capabilities, increasing the numbers of epidemiologists and frontline workers, and diagnostic test development were cited as the top five areas for investment.

Private-public partnerships like the Abbott Pandemic Defense Coalition, a network of more than 20 scientific and public health organizations around the globe, are focused on identifying, tracking and responding to known and emerging disease outbreaks to help prevent the next pandemic. The Coalition also partners with other entities such as the Centers for Research in Emerging Infectious Diseases (CREID) Network, the Global Virus Network (GVN) and the Training Programs in Epidemiology and Public

Health Interventions Network (TEPHINET), who have an ongoing commitment to pandemic preparedness, including training the next generation of epidemiologists and having an early detection and rapid response to outbreaks.

Informed by the findings from the survey, members of the Abbott Pandemic Defense Coalition recommend focusing on three priorities to maintain and strengthen the ability to manage local, regional and global infectious disease outbreaks:

- **The Need to Address Gaps**: Public health systems need surveillance programs to quickly identify new pathogens and outbreaks using the diverse set of tools available. Funding for public health should be available to sustain these programs and help train the next generation of virus hunters who help identify and respond to outbreaks as well as educate the public on infectious diseases.
- **Know What We're Looking For**: While every outbreak is important to understand, only some have the potential to spark national, regional or global health concerns. Understanding the profile that presents the most risk enables the healthcare community to calibrate efforts to protect public health. As viruses are discovered in new locations, it's important for the medical community and the general public to know what viruses may be circulating, pointing to the need to continue strengthening surveillance and education efforts.
- **Understand the Changing Environment**: Experts are nearly unanimous in their view that the evolving way humans, animals and insects overlap and interact will change the dynamics of infectious disease outbreaks. Continued research and investments in new technology are needed to help understand how those dynamics are at play locally – old diseases in new regions, acceleration of routes of transmission – to help guide more effective preparation.

About the Survey:

The Pandemic Preparedness Survey was commissioned by the members of the Abbott Pandemic Defense Coalition to understand the views of the epidemiologists and disease surveillance experts on the current state of pandemic preparedness. Invitations to participate in the online survey were distributed to more than 400 experts at Coalition member institutions, the Centers for Research in Emerging Infectious Diseases (CREID) Network, the Global Virus Network (GVN), the Training Programs in Epidemiology and Public Health Interventions Network (TEPHINET), as well as other academic research institutions. 103 experts fully completed the survey. The survey was conducted between April 2024 and June 2024 and participation was voluntary and anonymous.

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[1]APDC Pandemic Preparedness Survey. Full report available on Abbott.com.

[2]Smith, P. et al. (2024). Climate change impacts on global biodiversity. Global Change Biology, 30(2), 123-145. https://doi.org/10.1111/gcb.15384

[3]Brown, L et al. (2019). Microbial interactions in the human gut. Nature Microbiology, 4(8), 1234-1245. https://doi.org/10.1038/s41564-019-0476-8

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