



CALL FOR A RESILIENT PUBLIC HEALTH

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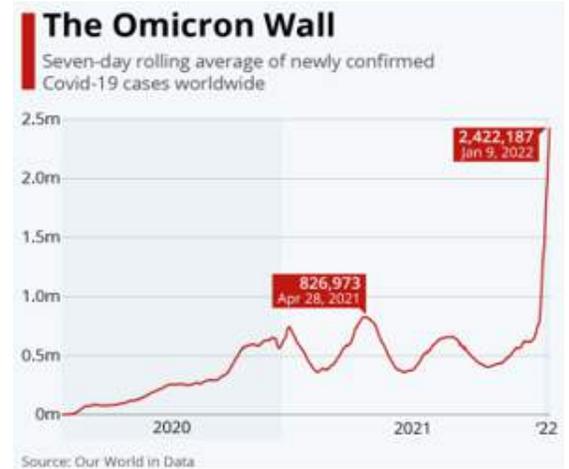
Investing in Public Health

The COVID-19 pandemic was an unexpected wakeup call of unprecedented urgency for our recent times. Faced with a highly transmissible virus, public health's antiquated systems and manual processes greatly impeded the ability to respond effectively and quickly enough. With a peaking number of infections, hospitalizations, and staffing shortages across all the different sectors within communities, it is becoming increasingly clear that the current public health approach of responding to waves of infectious diseases is no longer sustainable. The lack of timely and accurate data prevented public health from detecting and responding to the rapidly changing epidemiological conditions. Furthermore, lack of coordination with the community and other stakeholders resulted in conflicting and confusing policies and protocols.

Despite these continued challenges, the current pandemic revealed significant advances in the biomedical sector. However, the biomedical sector is not enough on its own – it continues to be our population-level response that is hindering our progress. What is pivotal in disaster control is how to reach the people and protect the health of communities at a population level. Consequently, there is a need for coordination between our readiness to respond with pharmaceutical science, as well as public health.

Stakeholders

- ✓ Public health organizations
- ✓ Populations
- ✓ Health systems
- ✓ For-profit Organizations
- ✓ Not-for-profit Organizations
- ✓ Policymakers
- ✓ Elected officials
- ✓ Emergency responders



NEGATIVE TEST*
& MASKS
REQUIRED

Public Health has a bigger mandate



It is important to note that the public health system should not be only concerned with the current pandemic. Public health promotes the welfare of the entire population, ensuring the public's security as well as accessibility to safe and quality care. The goal is to benefit the population and protect it from the spread of infectious disease and environmental hazards. The ability of public health organizations to capture and analyze community data to understand and respond to health crises is critical.

Public health also has a vital role in disease prevention, behavioral health, environmental health, as well as the incorporation of our increased understanding of the social determinants of health within healthcare and policy making. Furthermore, and given the multifactorial nature of a public health response, coordination and collaboration among different stakeholders is crucial. For public health to effectively deliver on its mandate, it has a great role to play in effectively collaborating with all stakeholders. Upon these bases, it is of profound importance to advance our public health system and utilize new approaches.

- Disaster Response
- Public Health Emergency
- Crisis Prevention
- Disease Prevention
- Immunizations
- Therapeutics
- Behavioral Health
- (Substance Use/Mental Health)
- Wellness and Healthy Living
- Environmental Health (Food, Water, Soil, Air)
- Social Determinants of Health (SDOH)

Role of Technology in Public Health

For the future of our communities, there are many lessons we can learn and modifications that we can implement to the public health response, extrapolating to other diseases and crises. With the current pandemic and its aftermath, the case is much stronger for public health organizations to invest in technologies that create a digital foundation for the future. These are primarily consumer-grade technologies such as mobile devices, social media, wearable sensors, cloud, big data analytics, that can be deployed and scaled in real time helping transform public health. Modern technologies have helped several other sectors and are considered a vital aspect of finance, hospitality, manufacturing, distribution, etc. It is imperative that public health adopts technologies that will help create a digital transformation for the future and to recognize the divide between digital and non-digital approaches will disappear.



Role of Technology in Public Health



Based on the Precision Public Health Framework

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Most public health agencies have already invested in some technologies such as websites, google spreadsheets, EHR, ERP, state-provided systems, dashboards, CMS, etc. It is often difficult to string together disparate tools to meet the key requirements related to data privacy, security, scalability, and high degree of interoperability that must form the backbone of any public health solution stack. Investing in public sector means not only investing in new community facing technologies, but also leveraging existing technologies. With the right tools, our interventions to address public health threats can be greatly enhanced and prepared for future crises.

Under the model described here, the technology implementation can be categorized into four main domains: detection, response, recovery, and prevention. A common theme across all domains is a data-platform that integrates data from the community and provides timely and relevant insights to public health stakeholders in real time, allowing improved coordination and proactive responses. The cyclical nature of the proposed model attempts to capture the need for an adaptive, recurring, and continuously improving public health response.

Detect



Public health relies on timely availability of population data to monitor the spread of diseases in communities and to investigate disease outbreaks. Without automation, this information is often collected via time-intensive and costly manual processes. For instance, the current approach for detection involves paper-based forms, faxing cases, and running spreadsheets. Travelers into the US, for example, submit a paper-based form reporting their symptoms upon arrival. Workplaces continue filling spreadsheets for new infection cases and reporting them to health authorities. Inherently, this manual approach leads to a delay in the first phase of overcoming an incoming wave of infections – the detection phase. Inevitably, this leads to a response that forces workplaces to close, schools to shift to remote education, and life within communities to be put on hold. However, with the right tools, this could be avoided. Replacing the manual approach to detection with the use of mobile devices and smart technologies to capture and monitor real-time data can assist in accelerating our understanding of an epidemiological situation. Additionally, integration of third-party data and interoperability with external systems allows for a comprehensive understanding of the epidemiology of all workplaces within a given geographical context. Real-time collected data can also be supplemented with automated detection via rules-based algorithms to detect abnormal patterns or changes.



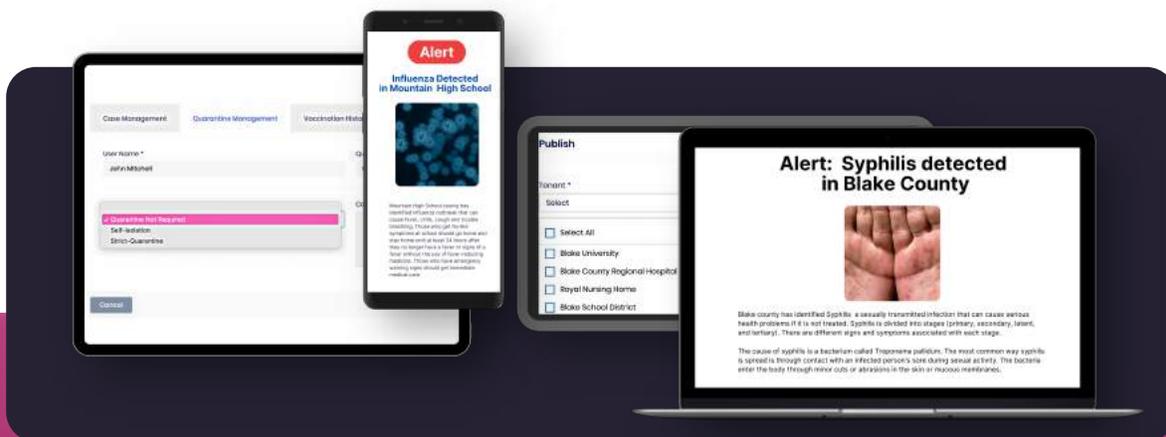
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Respond

Once the threats, patterns, and emerging issues are identified, a swift and appropriate response is needed through a two-way communication with the community. The traditional communication methods (e.g., websites, emails, flyers) not only take time to produce but also lack in speed of delivery.

Responding to an existing wave of infections requires collaboration among different stakeholders. The right technology can allow for real-time secure collaboration with instant distribution of targeted communication based on policies, protocols, and guidelines. It can further help in responding quickly by automating processes to contain the spread of diseases (isolation, quarantine, NPIs, vaccination recommendations) and thus increase accuracy and speed. This communication can be achieved through a multi-channel distribution approach (e.g., automated email, text alerts, applications, kiosks and online content).



Recover



Recovery includes delivery of interventions such as vaccines and/or therapeutics which still requires monitoring of vaccine outcomes, such as the need for revaccination or boosters, detecting early potential disease outbreaks from existing or new variants, and measuring case seasonality, among others. In some sectors or regions, vaccination certificates and even immunity passports may be required to help circumvent travel restrictions for “certified” individuals. This requires integration with state, local and national vaccination registries and testing data, and sharing this information securely when needed.

Conducting enforcement activities is not limited to disease outbreaks but also to sanitary codes, protection of drinking water supplies; and timely follow-up on hazards, preventable injuries, and exposure related diseases identified in occupational and community settings. Here again, the technology can come to the rescue by replacing phone calls, in-person inspections and paper-based documentations with customizable inspection and compliance tools, online referrals to other agencies, and telehealth counseling. Furthermore, and at an institutional-level, customizable inspection and compliance tools could be made available for organizations to adequately deploy successful policy and interventions.





Prevent

Perhaps the most important lesson we have learned during these repeated waves of COVID-19 variants affecting our communities is that our efforts do not stop merely when a wave of infection subsides. To better build resiliency and prevent repeated closures within our societies, our public health response should place further emphasis on prevention. Replacing the current “reactive” approach with “upstream” prevention can go a long way. This may be achieved through a variety of strategies.

There are many facets of prevention including hiring and training resources, infrastructure, and technology adoption. There are components of technology, such as data and ‘intelligent’ content delivery, that can play a significant role. Powerful predictive analytics engines can be employed to prepare a proactive response to an emerging crisis. Regardless of the epidemiological situation within our environment, technology can be leveraged to deliver timely evidence-based health education and content. In turn, this can promote health behaviors that are in line with most recent public health recommendations. As part of more advanced strategies, vulnerable populations can be selectively involved based on social determinants to address health disparities and support more uniform population well-being.



Challenges



Despite the promise of technology, some countries, including the United States, are prone to face enormous hurdles in leveraging technology for public health measures. We have already seen challenges arising due to privacy concerns, personal autonomy, non-compliance (e.g., vaccine hesitancy, masking policies, etc.), and interference from elected officials. Then there is the digital divide, health disparities, language and literacy issues, that further amplify the challenges of any population-facing technology rollout. Additionally, this will likely leave behind portions of the population and the economy. Although the Biden administration has allocated \$65 billion as part of the infrastructure spending to improve internet services for rural areas, low-income families and tribal communities, the roll-out timelines are uncertain at this point.

Implementation of technology platforms requires time and resources. In the middle of the pandemic where all resources are diverted to fighting the disease, there is little appetite or time left for implementing new solutions. Even though some solutions, particularly those delivered as Software-As-A-Service or SaaS, can be deployed quickly, there is still the issue of training and rollout. Some of these challenges can be mitigated with a phased roll-out that provides optimal benefit to the public health organization. An example of immediate benefit would be the diversion of resource time from the manual collection of data, paperwork, and phone calls to more value-added activities such as focusing high-risk or vulnerable population groups.

Making Public Health Resilient is Our Only Hope

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“... we must be ready, both in terms of speed and the scale of our response, to respond to future threats.”

— Richard Hatchett, Chief Executive CEPI (Coalition for Epidemic Preparedness)

Despite momentary respite from COVID-19, most public health experts believe that we will learn to live with the virus. Vaccines and other expected therapeutics that are on the way will continue to change the landscape substantially. Regardless, public health needs to reevaluate its approach and embrace technologies that will allow us to overcome this never-ending epidemiological storm and help prepare us for future ones. It is time to prevent rather than react and prepare for future pandemics and other health crises in a more proactive manner.

There continues to be a lag in the public health response to a rapidly evolving epidemiological situation which has been neglected and under-funded for a very long time. Fortunately, a great deal of private and public funding has now become available for Public Health systems to utilize. Under several Acts (Cares Act, ARP and COVID Relief) passed by US Congress, over \$200 billion has been allocated to public health and schools to help recover from the COVID-19 pandemic. This includes addressing the resulting physical and mental health crises and building resiliency for any potential future crises.

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About Aztute



Aztute is a public health platform that enables community organizations to keep their communities safe & healthy with a comprehensive set of tools designed to DETECT, RESPOND to, RECOVER from, and PREVENT health crisis using real-time, secure collaboration with community partners and stakeholders.

For more information, visit www.aztute.com/public-health

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