June 26, 2020

Honorable Lamar Alexander
Chairman
U.S. Senate Committee on Health, Education, Labor & Pensions
428 Senate Dirksen Office Building,
Washington, DC 20510

Submitted electronically to: PandemicPreparedness@help.senate.gov

RE: Preparing for the Next Pandemic: HELP Committee White Paper

Sen. Alexander:

AMIA commends the Committee for issuing this white paper and facilitating an important conversation among stakeholders over what is necessary to suppress, mitigate, and manage pandemics.

Health Informatics is the science of how to use data, information, and knowledge to improve human health, including the execution of scientific research, the delivery of health care services, and the promotion of public health. AMIA is the multi-disciplinary, inter-professional home for more than 5,500 health informatics experts.

Our comments focus on ways Congress can improve our national data-driven public health surveillance ecosystem. Public health surveillance is the continuous systemic collection, analysis, and application of health data used to prevent and control disease, exposure, and injury. It is the primary method by which public health authorities (PHAs) establish situational awareness to identify and monitor infectious diseases across a population.

Effective public health surveillance requires multiple information systems to be maintained by multiple actors spanning health care and public health. For example, the nation's public health surveillance system consists of four core components:

- Case Reporting, which captures person-based data that are used to understand positive and negative case trends;
- Syndromic Surveillance (sometimes referred to as biosurveillance), which is used to identify disease-like illness at clinical points of care, such as hospitals and ambulatory sites;
- Electronic Laboratory Reporting, or ELR, which is used to track test results and establish testing and positivity rates; and
- Vital records reporting, such as death reporting, which provides mortality data and often is used to supplement case reporting during a pandemic.

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These core information systems must be operational across city, county, state, and national jurisdictions and interoperable across health care, public health, and government actors, to help manage any pandemic. Additionally, there are growing numbers of non-traditional data sources that may supplement the public health surveillance ecosystem. These include web-based home monitors, such as smart thermometers, public utility-based monitoring, such as sewage test sampling, and aggregate population movement data provided by the advertising industry. While these new sources may prove helpful, they are at best supplements to the information contained in case reports, vital records, ELRs, and obtained through syndromic surveillance.

At a basic level public health surveillance should provide situational awareness to distributed actors so they may make informed decisions regarding their population's health. Public Health is multi-jurisdictional by design and highly fragmented by default. To improve the nation's public health surveillance ecosystem, Congress must address three primary problems:

1. Limited connectivity between health care systems and public health systems for better surveillance and modeling;
2. Inconsistent, siloed funding for public health operations, such as workforce, data infrastructure, and planning capacity; and
3. Lack of coordination among local, county, state, and federal public health leaders.

Improve bidirectional exchange and interoperability between health care and public health

To improve the frequency and quality of health data exchange between health care and public health, Congress should:

- *Identify programmatic incentives to encourage cooperation and investment by health care organizations to report to public health electronically*
- *Prioritize efforts to improve interoperability (standardization) of clinical data needed for public health*

Implementation of electronic case reporting (eCR) requires cross-sector cooperation, involving multiple stakeholders including health care organizations, electronic health record (EHR) developers, and PHAs. Conceptually, a case report can be automatically generated and electronically sent to public health when a patient enters a care setting presenting with symptoms and diagnosed to have a specified disease. These case reports then form the foundation for various kinds of public health analyses and modeling, contact tracing, and aggregate reporting to higher jurisdictions at the state and national levels.

An emblematic challenge for eCR is that neither EHRs nor PHAs were consistently configured to generate and accept case reports electronically. EHRs were certified to generate case reports, but they were rarely used by health care organizations and consequently, not standardized. Likewise, PHAs rarely received electronic case reports and many jurisdictions did not have the systems to accept them if they did. Predictably, very few participants met Meaningful Use by using eCR as their public health reporting requirement. CDC data from 2018 indicates that 60% of hospitals report on

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syndromic surveillance and only 7 sites across the country were piloting eCR, even though nearly 98% of hospitals and 87% of ambulatory clinicians had EHRs.[1]

Some healthcare organizations do not participate in eCR efforts due to a lack of incentives to cooperate, concerns about sharing data, and the false perception that labs are already handling case reporting. For public health agencies, their systems have not had sufficient investment to be able to absorb eCR data routinely, so funding is needed to help public health agencies at all levels to improve their systems. EHR developers play a significant role in eCR, yet there is not universal participation in these efforts from major developers.

Despite barriers, the implementation of eCR is making significant progress through a new project called eCR Now. Promising work is being done with the Fast Health Interoperability Resources (FHIR) standard, involve both a native FHIR specification which is not yet implemented, and a bridging strategy which uses an open source back-end SMART app. This app queries an EHR via older FHIR standards and generates an HL7 C-CDA electronic Initial Case Report (eICR) that most EHRs can't generate themselves. By the end of May 2020, the APHL Informatics Messaging Service (AIMS), a national resource for ELR and eCR reporting, had received over 400,000 COVID-19 case reports from over 2000 facilities in 17 healthcare organizations which were shared with PHAs from 30 jurisdictions.[2]

eCR represents a case study for other core aspects of a public health surveillance ecosystem. Policies should incentivize health care organizations, EHR developers, and other clinical stakeholders to report to public health, such as through CMS payment policy, and policy should encourage the use of standards, such as FHIR, to create better interoperability between care settings and public health. State-level policymakers should consider mandating reporting of core aspects of the public health surveillance ecosystem.

Consistent, structural funding for public health operations

There is a strong need to enhance the nation's public health surveillance infrastructure so that the system needed to respond to an emerging infectious disease pandemic is the same system used routinely for tracking local outbreaks or endemic conditions. Building infrastructure for all surveillance tasks will ensure its continual use and subsequently its capability to surge and meet demand during a pandemic. To accomplish this, Congress should:

- *Substantially increase investments in public health preparedness and response with requirements that CDC*
    - *Invest in a portfolio / enterprise approach to developing a public health surveillance ecosystem*

[1] Office of Public Health Scientific Services. Centers for Disease Control and Prevention. Public Health Surveillance: Preparing for the Future. Atlanta, GA: Centers for Disease Control and Prevention; September 2018.
[2] Slides presented during HL7 Public Health Workgroup – available at: https://confluence.hl7.org/display/PHWG/2020-05-28+Public+Health+WG+Call+Minutes

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  - *Develop strategies to onboard state/local PHAs into the public health surveillance ecosystem, including funding for state/local PHA public health surveillance systems*
  - *Establish dedicated funding for workforce, especially public health informatics training programs*
- *Leverage CMS payment policy to improve collaboration among Medicaid and PHAs at state/local levels and to improve consistency of clinical data reported to PHAs*

The FY2021 Health and Human Services budget appropriate justification document has just two pages on public health preparedness and response, and the primary focus is on the Laboratory Response Network (LRN) which is an important but not solitary initiative.[3] The multidisciplinary, cross-sector nature of technologies like eCR demonstrate that we must end the culture of siloed program funding. Too often the federal government appropriates money in stovepipes that are for specific diseases or specific efforts like vaccine development. State health agencies need funding that requires them to work across division lines to address preparedness across the entire agency.

Furthermore, we need to fund efforts that bring together state Medicaid programs and state health agencies with transportation and housing divisions to address the social determinants of health. In other words, we need to truly transform how we fund health in all policies. In response to the crisis in Indiana, the state Medicaid program showed up with a team of data scientists, a robust technology platform, and funding to pay for testing efforts across the state. The state health department had few people who could work in the technology platform, and they had no platform of their own. The Medicaid program had to finance work that frankly should have been paid for by the public health agency.

Going forward we need to think about funding a public health system which can work together across agency boundaries to address the next pandemic. Planning efforts should include multiple agencies, and the funds for preparedness should be used to support the development of collaborative responses to disease outbreaks rather than just contact tracing. A significant barrier to the use of public health informatics tools is the lack of funding for on-going maintenance.

The public health workforce, including professionals at the state and local level, needs training and expertise in relevant informatics tools and methods. The public health workforce is aging and lacks key skills necessary to fully manage a pandemic. In its most recent survey of the public health workforce, the Association of State and Territorial Health Officers (ASTHO) found 70% of state-level public health workers were over 40 years of age and less than 20% possessed formal training in public health. The survey also found that few health departments employ informatics specialists who can harness the power of advanced computing systems and data science techniques. Preparing for the next pandemic demands we must train more public health workers to replace those retiring, and we need to empower the workforce with the knowledge and skills to lead the transformation of the public health system. These training programs must include informatics as a core competency,

[3] https://www.cdc.gov/budget/documents/fy2021/FY-2021-CDC-congressional-justification.pdf#page=409

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otherwise we are continuing to graduate public health scientists that don't have skills required for managing the data systems expected to function in a pandemic.

Coordination across local, state, national, and international surveillance efforts

Public Health is multi-jurisdictional by design and highly fragmented by default. The injuries sustained by decades of chronic underfunding have been compounded by siloed funding of disconnected projects and uncoordinated strategy development across jurisdictions. To improve coordination and strategy development, Congress should:

- *Reinstate and formalize the Joint Public Health Informatics Taskforce (JPHIT) to coordinate an enterprise approach to designing, developing, and deploying a national public health surveillance ecosystem*
- *Empower federal leadership during pandemic responses, positioning the Department of Health and Human Services to establish and manage official communications channels*
- *Work within established international organizations and commit to world-wide public health where international pandemics occur*

In a June 2020 report to the Senate and House Appropriations Committees, CDC Director Robert Redfield articulated his agency's approach to public health surveillance and data collection.[4] In this report, he described the CDC's six-point strategy, describing close to a dozen information systems that had been established, reoriented, and natively leveraged to achieve the strategy's goals, including the:

- National notifiable disease surveillance system (NNDSS)
- Data Collection and Integration for Public Health Event Response (DCIPHER)
- National Respiratory and Enteric Virus Surveillance System (NREVSS)
- US Flue Vaccine Effectiveness Network
- National Syndromic Surveillance Program (NSSP)
- Influenza-Like-Illness Syndromic Surveillance (ILINet)
- New Vaccine Surveillance Network (NVSN)
- COVID-19-Associated Hospitalization Surveillance Network (COVID-Net)

Most, if not all, of these information systems were borne of good intensions and in response to valid needs, but they were not part of a grand design nor strategically leveraged. These programs receive data from state/local PHAs and health care organizations inconsistently, rendering their full potential – even as standalone programs – unrealized.

Given the distributed nature of public health, CDC has an added responsibility to provide as much coordination as possible for public health surveillance, while empowering other stakeholders to act. Roughly two years ago, the CDC failed to support funding of the Joint Public Health Informatics

[4] https://www.cq.com/flatfiles/editorialFiles/CDCreport.pdf?utm_medium=newsletter&utm_source=hbmorning

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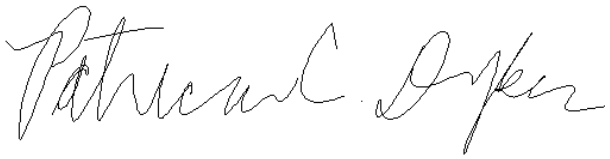
Taskforce (JPHIT), which included members from AMIA and every major public health organization including NACCHO, ASTHO, APHL, and CSTE. JPHIT was never leveraged to the extent it could have been and our lack of a data-driven coordinated public health surveillance is a consequence. These organizations should play an important role in helping develop strategy and for being a trusted communications channel to its members on the front lines of public health.

Finally, our public health infrastructure must also coordinate with international partners during a global pandemic. We must reassert CDC participation in WHO (with funding restored for WHO) and other global public health organizations, strengthen CDC ties to academic public health research and provide better coordination among HHS agencies and their international counterparts.

We hope our comments are helpful as you undertake this important work. Should you have questions about these comments or require additional information, please contact Jeffery Smith, Vice President of Public Policy at jsmith@amia.org or (301) 657-1291. We look forward to continued partnership and dialogue.

Sincerely,



Patricia C. Dykes, PhD, RN, FAAN, FACMI
Chair, AMIA Board of Directors
Program Director Research
Center for Patient Safety, Research, and Practice
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Disease Surveillance – Expand Ability to Detect, Identify, Model, and Track Emerging Infectious Diseases	
RECOMMENDATION 2.1: Ensure timely communication between health professionals, states, the CDC, and the public, as appropriate, of case data and information regarding how emerging infectious diseases affect populations, including who is at higher risk for severe disease and death, to help inform state and local response and address any potential disproportionate impact on minority populations. RECOMMENDATION 2.2: CDC, states, and health professionals should work together to identify barriers to earlier identification of cases, including whether case definitions and testing recommendations were overly narrow for too long. RECOMMENDATION 2.3: The Departments of Health and Human Services, Homeland Security, and Transportation should coordinate to improve access to passenger contact information by appropriate public health officials to inform public health responses to infectious diseases, like measles and COVID-19, with necessary privacy protections in place. CDC should, in coordination with state health officials, review and improve the systems used to communicate such information to states. RECOMMENDATION 2.4: Congress should pass the Public Health Data Systems Modernization Act, included in the Lower Health Care Costs Act, to modernize our nation's biosurveillance systems.	
1. What other barriers, in addition to limited testing capacity, and insufficient and outdated technology, make it difficult to detect and conduct public health surveillance of emerging infectious diseases?	As mentioned previously, strengthening data-driven public health surveillance should be the primary objective of Congressional action under this category of issues. Public health surveillance uses data at state and local levels and has numerous supplemental uses including trending and modeling infectious diseases. Limited connectivity between health care systems and public health systems is one of the main barriers to effective and efficient surveillance. Underlying this limited connectivity are: (1) weak incentives for public health reporting by health care organizations; (2) barriers to establishing bi-directional exchange of data between public health data systems and electronic health records (EHRs); and (3) non-standard laboratory data systems and data infrastructures.

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	We also note there currently exist weak – and non-existent – incentives for public health reporting from hospitals and ambulatory settings. Despite numerous surveillance programs managed by the CDC, there are few meaningful requirements for such data to be captured by EHRs or other clinical/lab information systems and reported to PHAs. For example, the requirements established by CMS to grade hospitals and Eligible Clinicians participating in the Promoting Interoperability Program have remained perfunctory for the last several years based on the logic that public health was unable to accept such electronic reports. Weather this claim is accurate, CMS should use its payment policies to promote more robust and consistent public health reporting. Emerging infectious diseases are especially difficult to track for two additional reasons: First, emerging infectious diseases do not have standard diagnostic codes or test results codes to identify relevant events quickly. Secondly, these diseases require real-time or timely access to computable data and this lack in capacity harms public perception and erodes public confidence. We recommend efforts be made to establish a standard protocol for labeling diagnosis and test result codes for emerging infectious diseases that can be used in a crisis for an unknown pathogen before codes exist.
2. What appropriate role can innovative technologies play to improve public health surveillance?	It is important to recognize the innovation of current public health informatics technologies such as those leveraged by the national eCR initiative. For example, one key component is the Reportable Conditions Knowledge Management System (RCKMS) which provides modern clinical decision support (CDS) services specific to every jurisdiction to help clinicians determine what conditions are reportable and how that reporting needs to be done. Other potential innovations are consistent and appropriate use of social media platforms, improvements in technologies such as Zoom to provide remote learning, conferences, and social connections, more accessibility to telehealth, including the upgrade and expansion to wide area networks, especially to rural and urban poverty areas. Technologies such as natural language processing (NLP), clinical decision support (CDS), and the aforementioned eCR functionality could help to automate end-to-end processes

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	for case reporting. For example, NLP could be used to define cases from text data in the EHR, and CDS and eCR would be leveraged to automatically generate reports from the data and route them to the necessary public health organizations. To support contact tracing, we need to create identifiers that can be used to link events and create a person-based record. Since the pandemic has affected all states and mass spreader events such as Mardi Gras, spring break celebrations, and Memorial Day events may involve people from many different states, we need innovative ways to disseminate and link case data across jurisdictional boundaries to truly understand the spread of the disease.
3. What privacy protections should accompany new technology? Would these technologies be utilized and maintained by HIPAA-covered entities or others?	We understand that pandemics create extraordinary circumstances for individual privacy. However, we also note that public health has successfully protected privacy as a function of its handling of health data for decades. We are less concerned about the current HIPAA exclusions for public health and the capacities of PHAs to keep data private than we are of new organizations generating, managing, and exchanging health data outside the context of HIPAA. Individual privacy protections are largely non-existent outside the context of HIPAA for health data; the FTC has never successfully prosecuted a privacy case involving health data; and has in 10 years only leveraged the 2009 health breach notification rule twice. We have observed that several pieces of legislation would attempt to address this gap in consumer protections related to the current pandemic. The Public Health Emergency Privacy Act seems to provide the most comprehensive approach to pandemic-specific privacy protections and should be reviewed more closely by Senate leaders for its applicability now and in the future.
4. Has our focus in medical countermeasure development been too much on the known threats, such	The focus on known threats is not to the detriment of addressing emerging threats, especially because we don't know the nature of new threats until they emerge. Regardless of the topic of investigation, we need to make sure that we are learning generalizable lessons or developing resources and a workforce that can respond to new threats as well as known threats. We need to continue to focus on what we know, and

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as anthrax and smallpox, to the detriment of emerging threats like coronaviruses, including COVID-19, SARS and Middle East Respiratory Syndrome?	in fact, we should not be losing sight of the real possibility of major outbreaks due to vaccine preventable diseases in the near future. Our focus has been too much on medical countermeasure development, and not enough on policy and social behavior intervention development, including how to motivate behavior. That is obvious from what has worked for COVID-19 - the most effective measures are non-medical, and may always be.
5. How can emerging infectious disease modeling be improved?	Addressing this pandemic requires understanding what is happening to patients in the hospital and modeling the potential impact on the health system. Modelers and epidemiologists in public health departments struggle to access data and information from hospitals that they need to get a good handle on the spread of the disease. Manual data entry systems are being built and used to try to bridge this gap, and this requires significant labor costs as well as valuable time. Interoperability between hospital and public health information systems would have made the process more efficient and effective. Many of the COVID-19 models developed early in the pandemic relied upon American Hospital Association survey data which is readily available but typically outdated. Since more accurate, up-to-date information from hospitals was not available to public health agencies and disease modelers, these early models were not valid. Some models predicted there would be enough hospital beds for COVID-19 patients when in reality there were not. As a result, resources were not where they should have been when needed early in the outbreak. There are many smart modelers - what they need is high quality data to model. Case reporting and PH surveillance systems need to be enhanced to meet the needs for timely and high-quality data. Speaking to the emergent nature of a pandemic like COVID-19 and the fast tracking of tests and treatments, one of the biggest challenges is having the limited information on test sensitivity, specificity, positive predictive value, and negative predictive value. We now know that many COVID-19 tests have a false negative rate as high as 30%. This means that up to one-third of individuals who test negative might actually be infected. Statewide testing in Indiana revealed that around 40% of individuals who tested positive in the

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	community do not report having any symptoms. This means that individuals can feel no symptoms, test negative, but actually be infected and potentially spread the virus to others. Future fast-tracking needs to build-in transparent processes for assessing the performance of tests even if they can be approved for use in clinical decision-making. Accuracy of testing is very important, because it often provides data to downstream processes like surveillance and disease modeling. Many models are based on the number of newly reported cases. If these numbers are flawed then our models and understanding of disease spread could be very wrong. And this can cost lives and time during a pandemic. Test manufacturers, public health laboratories, and hospital laboratories need to continue to test the accuracy of tests even after they are approved and used on patients. These data need to be publicly available so that disease models and surveillance efforts that use case counts can adjust for any bias in the test results. Furthermore, none of the existing models that estimate disease spread and hospitalization accounts for patient characteristics like race, gender, or co-morbid conditions. Generally, models account for total population size and some models account for age. We need to develop algorithms that can better predict risk for various sub-populations at the state and city level. Furthermore, these models need to examine the relationships between various sub-populations and the major non-pharmaceutical interventions implemented at city and state levels. Our group (at IU) has spoken with CDC, IHME, New York City, and other groups around the country. All agree this should be done, yet no one seems to be doing it. We recommend targeted grant funding from NLM/NIH or CDC that specifically calls attention to the need for modeling that can account for underlying population demographics, social determinants, and risk factors so that we can be better prepared for the next pandemic. Basic models are not sufficient for complex diseases like COVID-19. Furthermore, in the modern age we have sophisticated computing power to handle complexity so our models and algorithms need to be updated to account for the complexity in much the same way we do for modeling congestive heart failure or surgical risks.

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	The models further need to take into account for variability in the parameters they use. For instance, most persons with COVID may be infective for about 7 days, but many appear to be infective for much longer. Models that assume everyone is infective for just 7 days are bound to produce unrealistic results. Likewise, variability in time from infection to infectivity, 1st Sx, getting tested, hospitalized, or dying can have large impacts on model outcomes, but that variability is usually ignored. Changes in degree if infectivity over the course of infectivity may also have a large impact on number of other persons infected. We need more science to focus on these aspects of the disease.
6. How can the private sector innovations to support and modernize federal and state surveillance be better leveraged?	While private industry has the potential to create innovative solutions during a pandemic, we must not lose sight of the technology gap between private sector abilities to collect information and public health ability to consume and use the data. While the push for current push for interoperability between systems is a step in the right direction, this is a problem which has not been solved. Beyond just considering the innovations that private industry can provide, we must also consider how these innovations should interact with existing clinical and public health data systems. For example, there are a number of commercial contact tracing software products currently available – these vendors must be engaged along with EHR vendors and public health informatics software providers and informatics experts to understand how the data from these interventions must be integrated to produce an accurate picture of the extent and spread of an epidemic or pandemic in a manner that is safe and that protects data privacy. Part of this is a funding gap, but it is also due to the organization of technology in the public sector and the role of health technology within other technical realms of state health, including Medicaid which is probably the largest "health" user in state government and individualized by each state. The US public health infrastructure could also learn much from existing operations and supply chain software that already exist in other industries. For example, Most states utilize manual processes for managing hospital and PPE capacity. Each day someone from a hospital, long term care facility, or clinic

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	logs into a website or receives a phone call from the state health department. Numbers are entered and then algorithms are performed to assess the inventories of patients or beds or ventilators. In 2020 we should not rely on manual data entry during a pandemic. Inventory systems in the private sector are amazing. Walmart knows when it is running low on diapers in a rural Walmart somewhere in Indiana. Why can we not envision a system where hospital bed management and PPE inventories are shared with state health officials on an ongoing basis. Integrated inventory management systems will allow each facility to monitor its own supplies and the state to better gauge what resources should be stockpiled or replenished over time. We have systems that can in an emergency move supplies around. The challenge is managing the ongoing pipeline of supplies during a pandemic and in between pandemics. Also, one often-neglected fact is the severe lack of leverage of open source solutions to help with all this in the US, which is not the case in much of the rest of the world. CDC does not seem to have a particular stance on this and that affects how the open source market reacts. And it is not really any better elsewhere in the Federal government (look at VA's replacement of VistA with Cerner's system as an example). The US is missing an opportunity to draw upon a wealth of available open source software well-established in healthcare (like openEHR and OpenMRS) being used for COVID response elsewhere in the world. To make matters worse, many of these projects are funded and developed by US-based contributors. Congress would get more "bang for its buck" with greater emphasis on using existing and new open source solutions.
Public Health Capabilities – Improve State and Local Capacity to Respond	

RECOMMENDATION 4.1: Get Americans back to their routine health care safely, and develop better plans for the future so that doctors and hospitals can continue to provide health care services and outpatient treatment during a pandemic. RECOMMENDATION 4.2: Ensure that the United States does not lose the gains made in telehealth. RECOMMENDATION 4.3: States need to maintain the capacity to trace contacts for emerging infectious diseases, and have programs in place to surge that capacity if necessary. RECOMMENDATION 4.4: Remove red tape and allow states to use Public Health Emergency Preparedness and Hospital Preparedness Program funds to respond to a public health emergency and report back to HHS on how they were used, rather than having to wait for written approval from Washington.	
1. What specific changes to our public health infrastructure (hospitals, health departments, laboratories, etc.) are needed at the federal, state, and local levels?	There needs to be an increased focus specifically on the informatics tools that national, state, and local health jurisdictions need to conduct surveillance, accurately report to various stakeholders, and perform contact tracing. There is only one direct mention of 'informatics' in the white paper, when informatics undergirds all modern public health activities. Very few political jurisdictions have public hospitals, so non-profit and for-profit healthcare systems are not necessarily integrated into a public health infrastructure, and the community health assessment in the ACA does not necessarily promote integration.
2. What changes can be made to Public Health Emergency Preparedness and Hospital Preparedness Program to help states prepare and respond more quickly?	Simply put, we cannot return to a pattern where PHEP funds are cut year over year in between pandemics. While emergency funds for COVID-19 have been appropriated, history suggests that post-crisis we will return to underinvestment in public health. Public health spending represents just 2.5% of all health spending, and reports from the National Academy of Medicine (NAM) over the past 20 years suggest the public health system lacks the funding, infrastructure, and workforce to respond to regional, national, and international disease outbreaks. **Figure 1** summarizes Centers for Disease Control and Prevention (CDC) per capita funding, adjusted for inflation, for public health emergency preparedness (PHEP) since 2001. These funds are used to support surveillance as well as resilience in communities, including planning and implementation of mitigation strategies designed to support vulnerable populations during an emergency or natural disaster. Following major public health events there is

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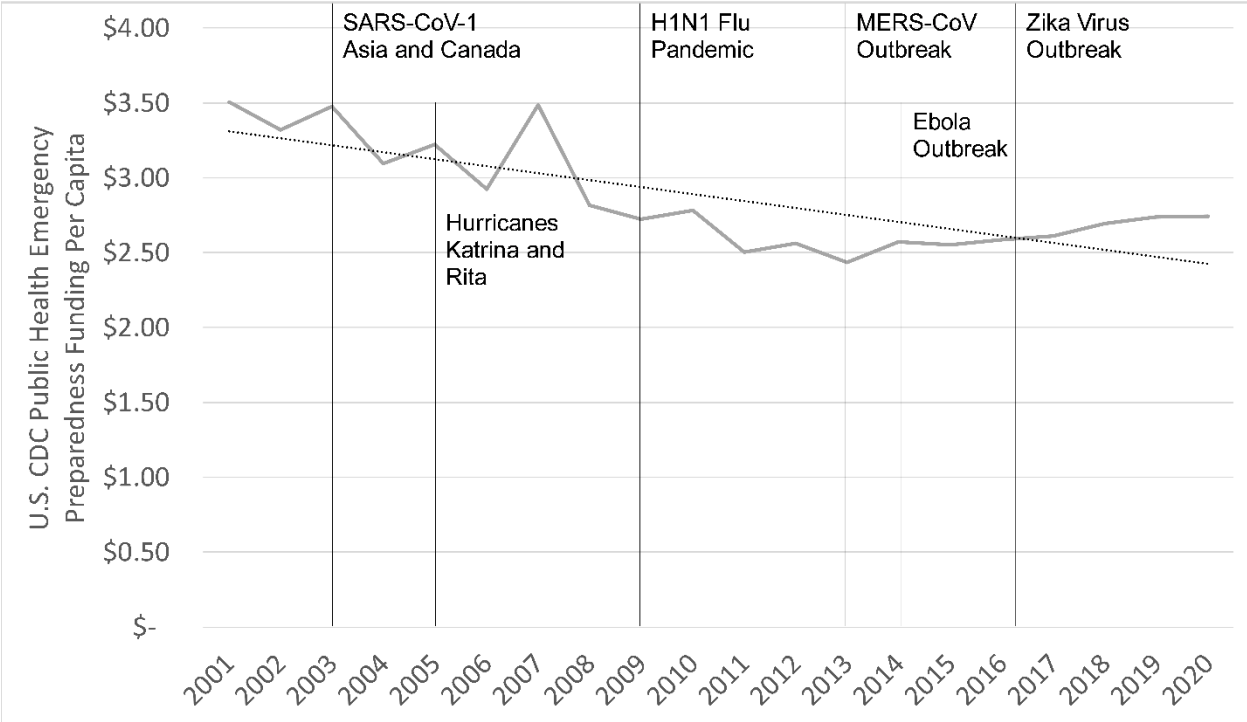
usually a temporary increase in funding followed by reductions that de-fund PHEP over time. Although recent PHEP funding has increased modestly ($0.30 per capita), total spending is down 27% since 2001.



Additionally, many jurisdictions had updated flu preparedness and conducted tabletop exercises prior to Covid, but identifying stockpiles of PPE, respirators, etc. were not sufficient. The elements to a preparedness plan need to be reviewed and updated. Funding increases to public health and even to healthcare specific to upgrading preparedness and response.

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3. How can the federal government ensure all states are adequately prepared without infringing on states' rights and recognizing states have primary responsibility for response?	In addition to the Public Health Data Modernization Act highlighted in the white paper, we urge the HELP Committee to consider several provisions in the HEROS Act, particularly Title V subtitles C, D, and E. While we are not endorsing this legislation, several sections within these subtitles seek to address funding shortfalls and needed data infrastructure improvements in public health. The Federal government should also list detailed required preparedness and guidelines and provide funding to states to apply for those which meet the State's guidelines. However, such funding possibility might incentivize states to upgrade their preparedness if there is funding to support it. Funding should be annual and not subject to cuts.
4. How should the federal government ensure agencies like CDC maintain an appropriate mission focus on infectious diseases in the periods between emergencies to strengthen readiness to respond when a new threat arises?	Continuous data sharing, year-round, between health care facilities and health departments through integrated information systems is an infrastructure challenge that needs to be addressed through investment during "peacetime" so we are prepared for the next pandemic. There is a strong need to enhance the nation's case reporting and surveillance infrastructure so that the system needed to respond to an emerging infectious disease pandemic is the same system used routinely for tracking local outbreaks or endemic conditions. Building infrastructure for all surveillance tasks will ensure its continual use and subsequently its capability to surge and meet demand during a pandemic. Public health organizations are already responding to frequent outbreaks and the systems and functions needed are the same whether the disease outbreak is local or nationwide. The systems required for an outbreak should be in place and routinely used during 'normal' times so we can scale up surveillance processes during a pandemic instead of having to build new systems from scratch during a global emergency. We need systems to streamline surveillance and need the stakeholders to participate in the process (EHR vendors, health systems, surveillance systems, and the clinical and public health practitioners involved).

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