MODERNIZING IMMUNIZATION INFORMATION SYSTEMS

Priorities and Considerations for Governors

NATIONAL **GOVERNORS** ASSOCIATION

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INTRODUCTION

Governors are responsible for making strategic decisions on how best to spend limited public health resources during the COVID-19 pandemic. Governors have the opportunity to leverage federal funding from the American Rescue Plan Act (ARPA) and other COVID supplemental funds to both improve current response efforts and make lasting investments in public health infrastructure. Modernizing public health data systems, improving surveillance and analytic capabilities, and improving real-time sharing between public health and health system partners can help state leaders respond to the current crisis while better preparing states to prevent and respond to outbreaks of infectious disease in the future.

The COVID-19 pandemic revealed a number of challenges for public health information systems, including the limited capacity of some existing state Immunization Information Systems (IISs, also commonly referred to as immunization registries) to dramatically scale up during the COVID-19 vaccination effort. Many state systems struggled to accommodate additional demand, implement new functionalities, onboard immunization providers, support interoperable exchange with health care partners and enable timely reporting of immunization data to federal partners.

A modernized, interoperable immunization data infrastructure, capable of securely exchanging data in real time with health system and federal partners, is critical to the current COVID-19 response. It can also assist efforts to promote "catch up" vaccinations for routine childhood and seasonal immunizations that have lagged during the pandemic, as well as efforts to limit the spread of future infectious diseases. Further enhancements to IIS capabilities and functionality can also promote consumer access to vaccination records, facilitate state-to-state information sharing, improve analytic capabilities to better target vaccine resources and support vaccine program activities that can better prepare states for booster shots or future pandemics. As states provide third vaccine doses to immunocompromised individuals and prepare for potential booster efforts for the general public, further enhancements to IIS capabilities and functionality can support state leaders by enabling improved consumer access to vaccination records, facilitating state-to-state information sharing, improving analytic capabilities to target vaccine resources and supporting vaccine program activities.

This issue brief provides Governors and senior state officials with key priorities and considerations for modernizing IISs, including leveraging federal funding available to support these efforts. Specifically, this issue brief outlines key functions and current challenges for IISs, available federal funding streams that can support IIS modernization and potential policy, programmatic and technology changes state leaders may consider to strengthen and improve their immunization data infrastructure.

KEY FUNCTIONS AND CHALLENGES FOR STATE IMMUNIZATION INFORMATION SYSTEMS

IISs are confidential, population-level databases operating across all 50 states, territories and several large metropolitan areas that record all immunization doses administered by participating providers in a jurisdiction. In most jurisdictions, IISs have been operational for decades and provide services to public health officials, clinicians and other immunization stakeholders such as enabling access to consolidated individual immunization histories, community and population-level coverage rates to support disease surveillance and outbreak activities and other programmatic assistance like vaccine ordering and management as well as reminders to ensure on-time vaccinations. While the Centers for Disease Control and Prevention (CDC) maintains a set of functional standards for IISs, these systems are governed and maintained at the state and local levels, with some variation in function, capacity, data quality and regulations around sharing immunization information both within and outside of jurisdictions.

Table 1 illustrates the variety in IIS capabilities across jurisdictions prior to the COVID-19 pandemic. Due to limited resources, states have prioritized different functional standards according to their program needs, and many IISs have not achieved functional standardization. This has limited the ability of some IISs to efficiently respond to increases in demand during the COVID-19 vaccination effort.

Table 1: IIS Activities as of February 2020

Activity	Percent of Responding IIS Programs with Activity
Support patient look-up and vaccine tracking for mass vaccination	86.8
Use IIS to conduct emergency preparedness activities	77.4
Have decision-making authority over IIS functions	66.0
Provide Healthcare Effectiveness Data and Information Set (HEDIS) reports to health plans	64.2
Exchange data with Medicaid programs	45.3
Assess coverage by geographic region	41.5
Conduct centralized reminder/recall	37.7
Give public access to IIS portal	30.2
Exchange data with other states or regions	20.8

Source: 2019 AIM Annual Survey. The survey was administered from October 2019–February 2020 and 53 (83 percent) immunization programs responded.

With an estimated 10-fold increase in submissions and queries to IISs during the COVID-19 pandemic, need for investments in capacity and the ability to exchange information with federal and health care partners were highlighted by the public health emergency. Many states made initial improvements to their IISs during the pandemic. However, many states still have legacy systems that are laborious to maintain and may struggle to meet additional demands from the continued COVID-19 vaccination effort. IISs have also struggled with data quality and the volume of bi-directional queries with provider electronic health record (EHR) systems, contributing to reporting challenges during COVID-19 and impeding the timely exchange of information with health care providers.

AVAILABLE FEDERAL FUNDING STREAMS AND GUIDANCE THAT CAN SUPPORT IMMUNIZATION INFORMATION SYSTEM MODERNIZATION

A variety of existing and COVID supplemental federal funding sources are available for states to support vaccination activities, which may include expanding and strengthening IIS infrastructure (see Appendix A for a description of these funding streams). For example, supplemental Electronic Laboratory Capacity (ELC) funding is available for state departments of health to strengthen a range of COVID-19 testing and epidemiologic surveillance. The Coronavirus Response and Relief Supplemental Appropriations Act of 2021 (P.L. 116-260) provides support to state immunization programs to improve and leverage IISs to support efficient COVID-19 vaccination.

Guidance to state immunization programs from the CDC provides additional activities that states may consider for improving and modernizing IISs systems using these funds, including:

- Promoting and implementing email and text messaging reminder/recall activities;

- Monitoring and managing the COVID-19 vaccine supply to ensure the vaccine is broadly available and resources are deployed to underserved areas;

- Enhancing IIS vaccine ordering and inventory capabilities;

- Developing health information infrastructure and IIS upgrades to improve data quality and ensure robust reporting;

- Ensuring timely and accurate reporting of vaccine administration, demographic and other data to local health entities and other partners;

- Providing consumer access to immunization records including methods to securely document COVID-19 vaccination using a "digital vaccination card;" and

- Other improvements such as upgrading IIS to the latest version of the platform, supporting data exchange, enhancing IIS analytics and visualization capabilities, and moving to the cloud.

KEY PRIORITIES AND CONSIDERATIONS FOR IMMUNIZATION INFORMATION SYSTEM MODERNIZATION

Technical resources specific to IIS upgrades exist for state immunization programs. The CDC laid out strategic priorities for IISs in its IIS Strategic Plan and maintains a set of Core Functional Standards, which set out operational, data quality and technology needs. Additionally, the Public Health Informatics Institute (PHII) developed an IIS Functional Model framework that outlines core IIS functions and capabilities in collaboration with the CDC, the Public Health Informatics Institute and immunization jurisdictions. Core functions include the ability to support interoperability, forecast necessary doses, ensure data quality, provide public data access, manage participating organizations and facilities, manage patient immunization records and manage vaccine inventory.

As Governors and senior state leaders continue to make strategic decisions for strengthening public health infrastructure, they might consider the following policy, programmatic and technology changes to support vaccination efforts and preparedness against future outbreaks.

1 Strengthen and augment IIS technical capacity
Many states have either moved to cloud-based systems or developed parallel infrastructure, such as data lakes, that can augment existing IIS capacity and enable them to regularly communicate with authorized providers, health plans and health information exchanges (HIEs) about vaccination rates within patient populations.*

2 Invest in immunization workforce and provider capacity
An ample and well-trained IIS workforce is critical to maintaining high-performing IISs. In some cases, limited resources have contributed to difficulties with recruiting and maintaining highly trained individuals. Improving the quality of immunization data is at the center of many states' efforts to enhance equity in vaccine distribution and uptake. States can improve analytic expertise and capabilities to support public-facing dashboards and provide direction to programmatic efforts by blending and braiding various funding streams to prioritize a strong data workforce and analytic capabilities. Several states are also using federal funding to support provider enrollment and training on IISs.

3 Improve Standardization and Interoperability
The CDC's IIS functional standards provide detailed descriptions of the "operations, data quality and technology needed to support immunization programs, vaccination providers and other immunization stakeholders with their immunization goals." The American Immunization Registry Association further supports immunization programs by testing and measuring the capacity of each IIS to meet standards through their Measurement and Improvement Initiative. By prioritizing and calling on

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* For more information on how states can partner with health care providers to support targeted vaccination outreach, refer to *Improving Immunization Information Sharing to Support Targeted COVID-19 Outreach.*

immunization programs to meet these functional standards, Governors can address challenges that have hindered interoperability to date.

4 Support data quality improvement

Ensuring the completeness and quality of immunization data, particularly race and ethnicity data for administered vaccines, has presented an ongoing challenge for state leaders. States have adopted policy and programmatic strategies to improve these data, including incentives for providers and partnerships with HIEs or EHR consortiums to gather more complete race and ethnicity data, as well as standardizing data collection. In general, states have differing provider requirements to report vaccines administered into the IIS or whether participation in IISs is "opt in" or "opt out," which can affect the completeness of data within the system. Requirements may also be different for children and adults. States may assess IIS authorizing legislation or regulatory frameworks for opportunities to improve completeness and accuracy. Lastly, many IISs lack the capacity to address duplicate entries or amend incorrect information. Working with vendors to identify technical fixes, such as bulk patient matching, may be low hanging fruit for improving IIS data quality.

5 Facilitate Cross-Jurisdictional Data-Sharing

The ability of IISs to seamlessly share vaccination data across jurisdictions can improve visibility into vaccination rates and improve patient care for individuals who may move or travel between states. The CDC's Immunization Gateway (IZ Gateway) supports the exchange of immunization data between participating IISs, provider organizations and consumer applications. While the IZ Gateway has multiple components, its Share program allows information exchange across participating IIS jurisdictions. State leaders may assess whether connecting to the IZ Gateway Share component is permissible under current state regulations and consider facilitating policy changes and data use agreements to share IIS data across state lines, especially with neighboring states.

6 Support Consumer Access to Individual Immunization History

Enabling consumer access to vaccination histories has been a longstanding function of IISs. A number of colleges, universities and employers have announced plans to require proof of COVID-19 vaccination, making the ability of individuals to access digital immunization records especially important. Accordingly, many states are moving to facilitate consumer access to vaccination records through their IISs, with funding for these activities allowed under CDC funding guidance. For example, in June, California announced a Digital COVID-19 Vaccine Record that offers an option for individuals to securely access their immunization record from the state's IIS. Other states have developed portals, such as those facilitated by Docket or MyIR in Arizona, Louisiana, Maryland, Mississippi, North Dakota, Washington and West Virginia that allow individuals to access their immunization history and receive reminders for future vaccinations.

NEXT STEPS

The COVID-19 pandemic has renewed urgency for states to invest in public health infrastructure through newly available federal funding streams. With COVID-19 vaccine distribution efforts revealing the need for significant investment in IIS capacity and substantial federal funding available to support modernization efforts, states can consider upgrading their IISs to improve standardization and data quality, facilitate secure data exchange with authorized partners and support consumer access to vaccination records.

Despite new funding for COVID-19 response and recovery, there is also a need for federal guidance and leadership to address current fragmentation and variability in IISs that limit information exchange both within and between states. As federal and state leaders continue to develop plans for modernizing public health data systems, Governors can call on federal leaders to work with stakeholders across the immunization community to develop a vision and national policy framework for immunization data infrastructure that can identify current gaps and improve real-time data sharing between public health and health system partners.

APPENDIX

Table: Federal Funding Streams that may be Used to Support Immunization Infrastructure

Name/Agency	Important Dates	Funding	Description	Important Links
Funds to States, Localities and Tribes				
Coronavirus Relief Fund Agency: Treasury	Funds to be used for expenses through Dec. 31, 2021	$150 billion	Payments from the fund may cover costs that are necessary expenditures incurred due to the public health emergency with respect to COVID-19. **Eligible entities:** State, tribal and local governments	[Relief fund webpage](#) [Payments to states and eligible units of local government](#) [Coronavirus Relief Fund Guidance (January 15, 2021)](#) [Treasury's Coronavirus Relief Fund webpage](#)
Coronavirus State and Local Fiscal Recovery Funds Agency: Treasury	May cover costs incurred from March 3, 2021–December 31, 2024	$350 billion	Funding distributed to states and localities may be used to address a broad range of needs including: public health investments, negative economic impacts from the public health emergency, provision of government services, payment for essential workers and water, sewer and broadband infrastructure investments. **Eligible entities:** Funds will be distributed directly to each eligible state, territory, city, county or Tribal government.	[Webpage](#) [Interim Final Rule (comments DUE July 16, 2021)](#) [Fact Sheet](#) [FAQs](#) [Compliance and reporting](#)
Funding for Indian Health Services Agency: HHS/ IHS		$9.01 billion	General funding for IHS to prevent, prepare for, and respond to coronavirus. Funding may be used for: • Public health support • Electronic health record modernization • Telehealth and other technology upgrades • Purchased/referred care • Catastrophic health emergency fund • Urban Indian Organizations • Tribal Epidemiology Centers • Community Health Representatives • Other activities to protect the safety of patients and staff	[Guidance on HIS COVID-19 funding distribution](#) [Supplemental allocations through the ARP Act](#) [IHS' allocations of the $1 billion in CARES funding](#) [Statement on $1.8 billion in ARP Funding](#) [Fact sheet $4 billion in ARP funding for Indian Country](#)

Name/Agency	Important Dates	Funding	Description	Important Links
Dedicated funds for vaccine-specific activities				
COVID-19 Vaccination Program / Immunization Cooperative Agreements Agency: HHS/CDC		$200 million (September 2020) $3 billion (January 2021) $3.2 billion (April 2021) (Monies are allocated on a population-based formula)	Funding to plan for and implement COVID-19 vaccination services, including to ensure greater equity and access to COVID-19 vaccines by those disproportionately affected by COVID-19. **Eligible entities:** 64 jurisdictions through the existing Immunizations and Vaccines for Children cooperative agreement	COVID-19 Vaccination Program Operational Guidance ICA website CDC Awards $3 Billion to Expand COVID-19 Vaccine Programs (April 7, 2021) Administration announces $200 million from CDC to jurisdictions for COVID-19 vaccine preparedness (September 23, 2020) COVID-19 Vaccination Supplemental Funding Guidance (January 2021) COVID-19 Vaccination Supplement 4 (April 2021) Addendum to COVID-19 Vaccination Supplement 4 (May 2021)
Funds to support public health efforts and infrastructure				
Fiscal Year 2020 Emergency Management Performance Grant Program—COVID-19 Supplemental Agency: FEMA		$100 million	Assists states, territories, tribes and local governments with public health and emergency management activities supporting the prevention of, preparation for and response to COVID-19 public health emergency. Funding may be used for: • Mitigation activities (related to slowing the spread of COVID-19); • Integration of emergency management and public health operations. **Eligible entities:** State, local, tribal and territorial emergency management agencies.	Fiscal Year 2020 Emergency Management Performance Grant Program—COVID-19 Supplemental Notice of Funding Opportunity

Name/Agency	Important Dates	Funding	Description	Important Links
Epidemiology and Laboratory Capacity (ELC) cooperative agreement Agency: CDC		>$19 billion	Awards support testing, contract tracing, surveillance, containment and mitigation to monitor and suppress the spread of COVID-19. **Eligible entities:** Award recipients include 64 jurisdictions including all 50 states, the District of Columbia, five major cities and U.S. territories/islands.	[CDC announcement of $2.25 billion to address COVID-19](#) [2020 ELC Awards by Jurisdiction](#) [CDC Guidance](#)
Public Health Emergency Preparedness (PHEP) Cooperative Agreement Agency: CDC			Funding to support the National Response Framework and activities by health departments to build and strengthen their abilities to effectively respond to a range of public health threats, including infectious diseases, natural disasters and biological, chemical, nuclear and radiological events. **Eligible entities:** States, major metropolitan areas, territories	[National Response Framework](#) [PHEP website](#)
Indian Community Development Block Grant (ICDBG) Agency: HUD		$100 million	Grants may be used to conduct activities that aim to prevent, prepare for or respond to COVID-19. This includes activities, projects or programs that will reduce or mitigate the short-term, medium-term and also longer-term risks and vulnerabilities of Tribal communities to COVID-19 (e.g., activities that reduce overcrowding). This may include activities designed to develop processes and procedures to help keep people healthy, to reduce the risk of exposure to COVID-19 and to prevent or slow the spread of the disease. **Eligible entities:** Indian tribes and Tribal organizations	[Indian Community Development Block Grant Program](#) [HUD notice](#)

Name/Agency	Important Dates	Funding	Description	Important Links
Community Development Block Grant (CDBG) Programs Agency: HUD		Varies	Annual grants to develop viable urban communities by providing decent housing and a suitable living environment, and by expanding economic opportunities, principally for low- and moderate-income persons. Funds may be used for CDBG eligible activities that are used to prevent, prepare for and respond to COVID-19. These activities include: • Public service activities • Public improvements and facilities • Economic development activities • Funds may also be used to target needs in rural areas including broadband and economic development and recovery.	CDBG website CDBG rural response guide CDBG disaster recovery CDBG and CARES CDBG guidance
Funds to support health care or community providers or facilities				
Supplemental Funding for Health Centers Agency: HRSA	Awards issued: April 2020	$1.3 billion	One-time support to health centers for the detection of coronavirus and/or the prevention, diagnosis and treatment of COVID-19, including maintaining or increasing health center capacity and staffing levels. **Eligible entities:** Health Center program award recipients.	FY 2020 Health Center Coronavirus Aid, Relief, and Economic Security (CARES) Act Funding (H8D) Award Recipients

Name/Agency	Important Dates	Funding	Description	Important Links
Rural Health Care Services Outreach Program Agency: HRSA	Application deadline: December 18, 2020	$12.75 million	Community-based grant program to promote rural health care services by enhancing health care delivery to rural underserved populations in the local community or region. The overarching goals for the Outreach Program are to: • Expand the delivery of health care services to include new and enhanced services exclusively in rural communities; • Deliver health care services through a strong consortium, in which every consortium member organization is actively involved and engaged in the planning and delivery of services; • Utilize community engagement and evidence-based or innovative, evidence informed model(s) in the delivery of health care services; and • Improve population health and demonstrate health outcomes and sustainability. **Eligible entities:** Public or private, non-profit or for-profit entities that have demonstrated experience serving, or the capacity to serve, rural underserved populations.	[Rural Health Services Outreach Program](#) [Agency grant website](#)
Rural Health Network Development Program Agency: HRSA	Application deadline: November 25, 2020 Application deadline: January 28, 2022	$2 million (available in January 2022)	Funding to promote the development of integrated health care networks in order to: • Achieve efficiencies; • Expand access to, coordinate and improve the quality of basic health care services; and • Strengthen the rural health care system as a whole. **Eligible entities:** Public or private, non-profit or for-profit entities that must have demonstrated experience serving, or the capacity to serve, rural underserved populations.	[Rural Health Network Development Program](#)

Name/Agency	Important Dates	Funding	Description	Important Links
Community Facilities Direct Loan & Grant Program Agency: USDA			Grants or low-interest loans to develop essential community facilities (ECFs) in rural areas. ECFs may include health care facilities, public facilities (e.g., town halls, airport hangars), community support centers, public safety centers, educational centers and utilities. Funds may be used to purchase, construct and/or improve essential community facilities, purchase equipment and pay for related project expenses. **Eligible entities:** Public bodies, community-based non-profits, Federally-recognized Tribes. Priority is given to low-income communities or those with a population of <5,500.	Community Facilities Direct Loan & Grant Program
Rural Economic Development Loan Grant Program Agency: USDA			Funding for rural projects including facilities and equipment for medical care for rural residents distributed by local utility organizations. **Eligible entities:** Varied pending terms set by local utility organizations. Must be used for projects in rural areas (population <50,000)	Rural Economic Development Loan & Grant Program