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Accelerating Data Exchange in Public Health

Insights from Public Health FHIR® Pilots

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Acknowledgements

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Introduction

Fast Healthcare Interoperability Resources (FHIR®) is a Health Level Seven (HL7®) standard for exchanging health information[1] in a manner that is flexible, secure, and scalable. The FHIR standard is comprised of modular components that represent categories of healthcare data (i.e., "resources") and application programming interfaces (APIs) that allow data exchange between two applications.[2, 3] As public health agencies explore FHIR adoption, documenting and sharing implementation insights is essential to guide and support others on the path to adoption.

This report provides an overview of a series of public health FHIR implementation pilots that took place between 2022 and 2025.

These pilots aimed to accelerate FHIR maturity within the public health community and enhance the exchange through FHIR-based solutions. Supported by federal agencies, national organizations, and technical support partners, these pilots explored and tested both unidirectional and bidirectional data flow across a range of critical public health data types, including birth and death records, surveillance data, and immunization and cancer registry information. In addition to providing information about pilot site activities and use cases, this report describes key successes, challenges, and lessons to inform and advance FHIR adoption among state and local public health agencies and their healthcare partners.
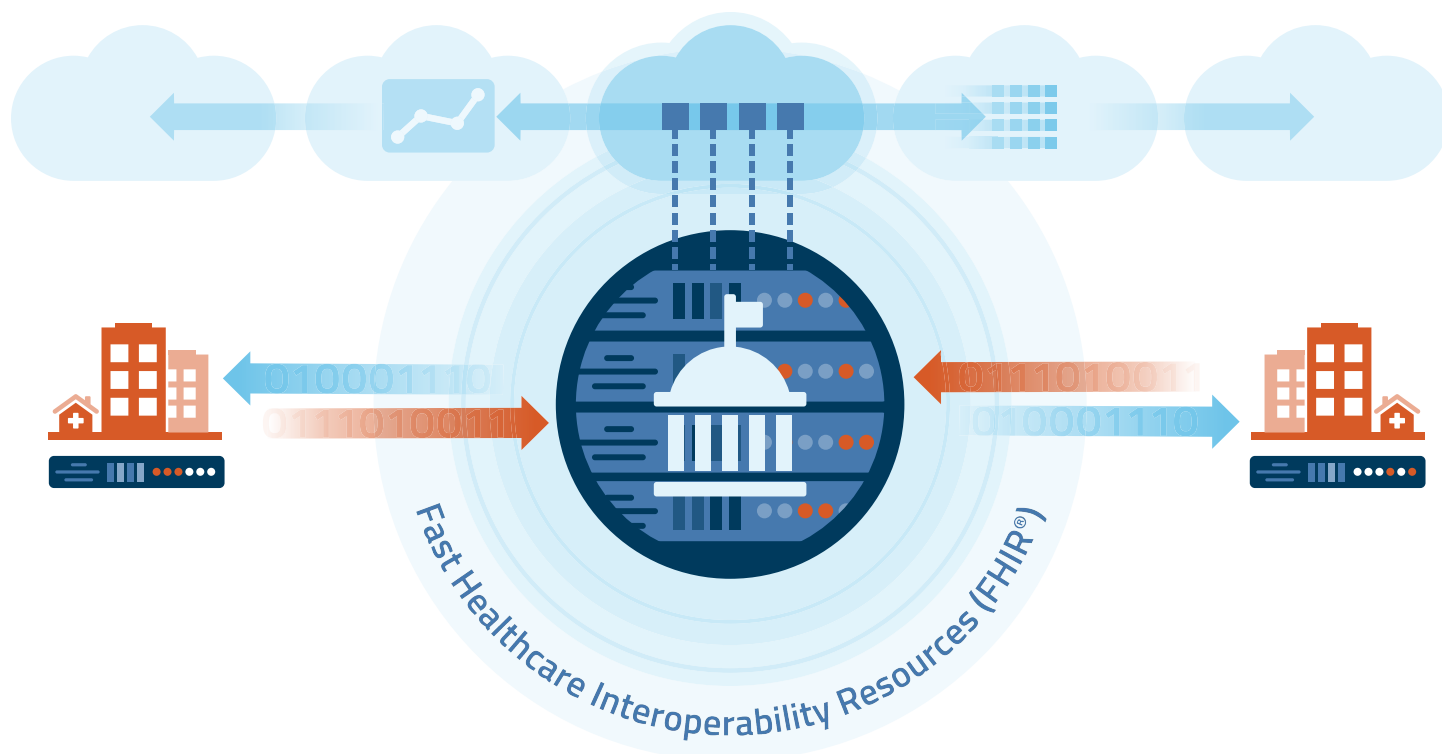
Why FHIR® Matters for Public Health

Public health agencies rely on timely, accurate, and interoperable data to effectively prevent, detect, and respond to health threats. However, many legacy data exchange systems remain fragmented and slow. The adoption of HL7® FHIR®—a modern, standardized approach for health data exchange—presents a critical opportunity to modernize and strengthen the public health data infrastructure.[4, 5]

Adopting FHIR for data exchange can equip public health agencies with a modern, interoperable framework to efficiently share information with healthcare providers, laboratories, and government agencies.[6, 7, 8] By embracing FHIR-based solutions, public health agencies can fully leverage health data to drive informed decision making, enhance responsiveness, and ultimately improve health outcomes at the population level.

Adoption of FHIR® for data exchange provides benefits for public health agencies
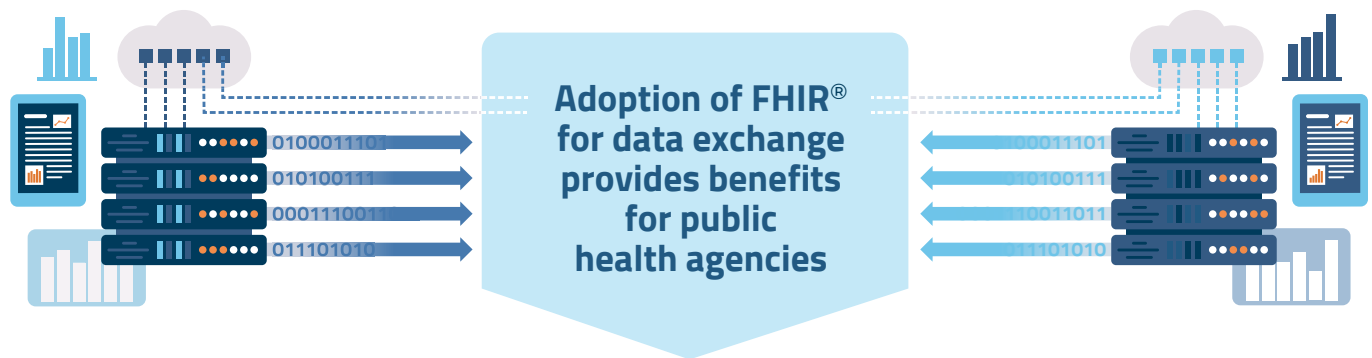
Break down data silos, by standardizing public health data. Standardization through FHIR enables seamless, interoperable data exchange across systems, giving public health leaders faster access to more complete data to inform decision-making.

Simplify implementation and support a wide range of business needs. The ability to extend and reuse FHIR resources as public health use cases evolve is critical for supporting scalable, adaptable approaches for data exchange.

Reduce redundant data entry, thereby lowering the burden for providers reporting to public health.

Facilitate ongoing maintenance through expanded access to relevant expertise. Because the FHIR standard is built on web-based standards, public health may draw from a larger pool of qualified experts with relevant technical skills over time to support their FHIR-based data exchange capabilities.

The public health FHIR pilots described in this report have been implemented within a growing ecosystem of public health FHIR initiatives that are contributing collectively to more modern public health data exchange. These pilots draw guidance from and contribute to national initiatives by offering real-world demonstrations and implementation insights to support broader FHIR adoption. Key initiatives focused on advancing public health FHIR-based interoperability are described below.

Public Health FHIR® Implementation Collaborative

Launched in 2022, the Public Health FHIR Implementation Collaborative (PHFIC) kick-started a community that focused on improving public health data exchange through use of the FHIR standard. Convened by Centers for Disease Control and Prevention (CDC), PHFIC brings together federal agencies, public health practitioners, technology partners, and national organizations to identify shared interoperability challenges, test FHIR-based solutions in real-world settings, and provide training and support for scaling up FHIR implementation activities.[9, 10]

PHFIC aims to demonstrate impact through pilot projects focused on FHIR-based data exchange within and across public health settings. To this end, PHFIC has advised three phases of public health FHIR pilot projects, described in the next section of this report. Through these pilots, PHFIC has identified lessons learned, advanced the development and testing of FHIR implementation guides, and developed public resources to support other health agencies in adopting FHIR, such as the Public Health FHIR Playbook, released in 2023.

Helios FHIR® Accelerator for Public Health

The Helios FHIR Accelerator for Public Health is a multi-sector alliance launched in 2021 by HL7® with support from the CDC and the Assistant Secretary for Technology Policy/Office of the National Coordinator for Health Information Technology (formerly ONC and hereafter ASTP). This FHIR accelerator aims to build nationwide capacity for public health use of standards-based data exchange, and is open to state, tribal, local, territorial public health agencies, federal agencies, and other public and private sector partners. Helios focuses on advancing three main priority areas: FHIR-based aggregate data exchange, bulk data exchange, and query and response exchange.[11, 12, 13]

CDC HL7® FHIR Community of Practice

The CDC's HL7 FHIR Community of Practice serves as a forum for state, tribal, local, and territorial public health partners to discuss interconnected public health FHIR initiatives across federal, state, and local levels, in addition to approaches for securely exchanging data between public health information systems. The Community of Practice meets monthly and has developed a FHIR Implementation Guidance Checklist[I] to support practitioners in adopting and using FHIR.[14, 15]

HL7® Public Health Work Group

The HL7 Public Health Work Group plays a central role in developing and maintaining interoperability standards that meet the needs of the public health community. The work group is interested in standards that support a variety of data exchange scenarios — ranging from contact tracing to occupational health and food safety — and is working on a variety of implementation guides[II] to advance a variety of public health FHIR-based use cases.[16, 17]

[I] Available in Appendix A of the Public Health FHIR Playbook.

[II] FHIR implementation guides (IGs) are comprised of the rules and support documentation for using FHIR resources to address discrete data exchange use cases.

Public Health FHIR® Pilots

Pilot projects play an important role in enabling public health agencies to test and evaluate the utility of FHIR-based workflows, and to identify areas for improvement. By starting small and scaling strategically, the public health community can identify practical insights to refine FHIR implementation guides and advance broader FHIR-based data exchange. This section includes information about the public health FHIR pilots supported by the CDC and national partner organizations, with PHFIC guidance.

Between 2022 and 2025, a series of public health FHIR pilots set out to **accelerate FHIR maturity and optimize public health data transmission using FHIR-based data exchange.** Pilots explored uni- and bi-directional data exchange for various data types, such as birth and death data, surveillance data, and cancer registry data.

Overview of Partners

A constellation of entities made these pilots possible, including:

Pilot sites comprised of state/local health departments and data exchange partners. Each pilot involved a data exchange pair, including:

→ Minnesota Department of Health and Hennepin County Public Health

→ Virginia Department of Health and Fairfax County Health Department

→ Washington State Department of Health and Public Health — Seattle & King County

→ Philadelphia Department of Public Health and HealthShare Exchange

PHFIC served as an advisory group for the FHIR pilots, providing guidance on implementation and testing, facilitating peer-to-peer learning, and supporting documentation of lessons learned and scalability considerations.

National partner organizations[III] recruited pilot sites, provided the sites with financial resources to support implementation, and facilitated connections between pilot sites and other entities tasked with supporting this work. National partner organizations included the Association of State and Territorial Health Officials (ASTHO), the Council for State and Territorial Epidemiologists (CSTE), and the National Association of County and City Health Officials (NACCHO).

Technical support partners provided guidance and consultation on project planning, FHIR® implementation and troubleshooting, and broader FHIR training geared toward public health agencies. Over the years, these technical partners included MITRE, Leap Orbit, and Georgia Tech Research Institute (GTRI).

CDC played a key role in setting overall strategy for FHIR implementation, mobilizing partners, and investing resources to support pilot sites.

Intended Outcomes

The pilot projects were designed to generate meaningful, implementation-informed outcomes that advance the use of FHIR in public health settings, including:[18]

→ **Improved capacity** for using FHIR tools and implementation guides (IGs).

→ **Increased knowledge** of best practices that inform scalability and adoption of FHIR tools and IGs for public health use cases.

→ **Increased adoption** of FHIR among state and local public health agencies and their healthcare partners to quickly and efficiently exchange data relevant to public health.

→ **Contributions to increased partner access to timely, high-quality public health data** to inform decision-making and research investments.

[III]During Phases 1 and 2 of the implementation projects, the national partner organizations served as the PHFIC Organizing Body, operating as a subgroup under PHFIC. As structure and oversight of the pilot initiative evolved, the formal role of the Organizing Body shifted, though participating national partners remained as key advisors to state and local FHIR implementation efforts.

A Phased Approach to Pilot Implementation

The public health FHIR® pilot projects progressed in phases, reflecting technical maturity and expanding scope of the use cases. The first phase focused on one-way data sharing from state to local health departments, progressing in the second phase to bi-directional exchange or incorporating new/more complex priority use cases. In the third phase, pilot sites were encouraged to align with priority areas articulated by the Helios FHIR Accelerator for Public Health and were invited to diversify data sharing partnerships beyond state and local public health connections to include health care facilities, providers, and other data partners. As the phases progressed, the pilots evolved in terms of participating sites, supporting technical partners, and national partner organizations who managed financial awards to the pilot sites.
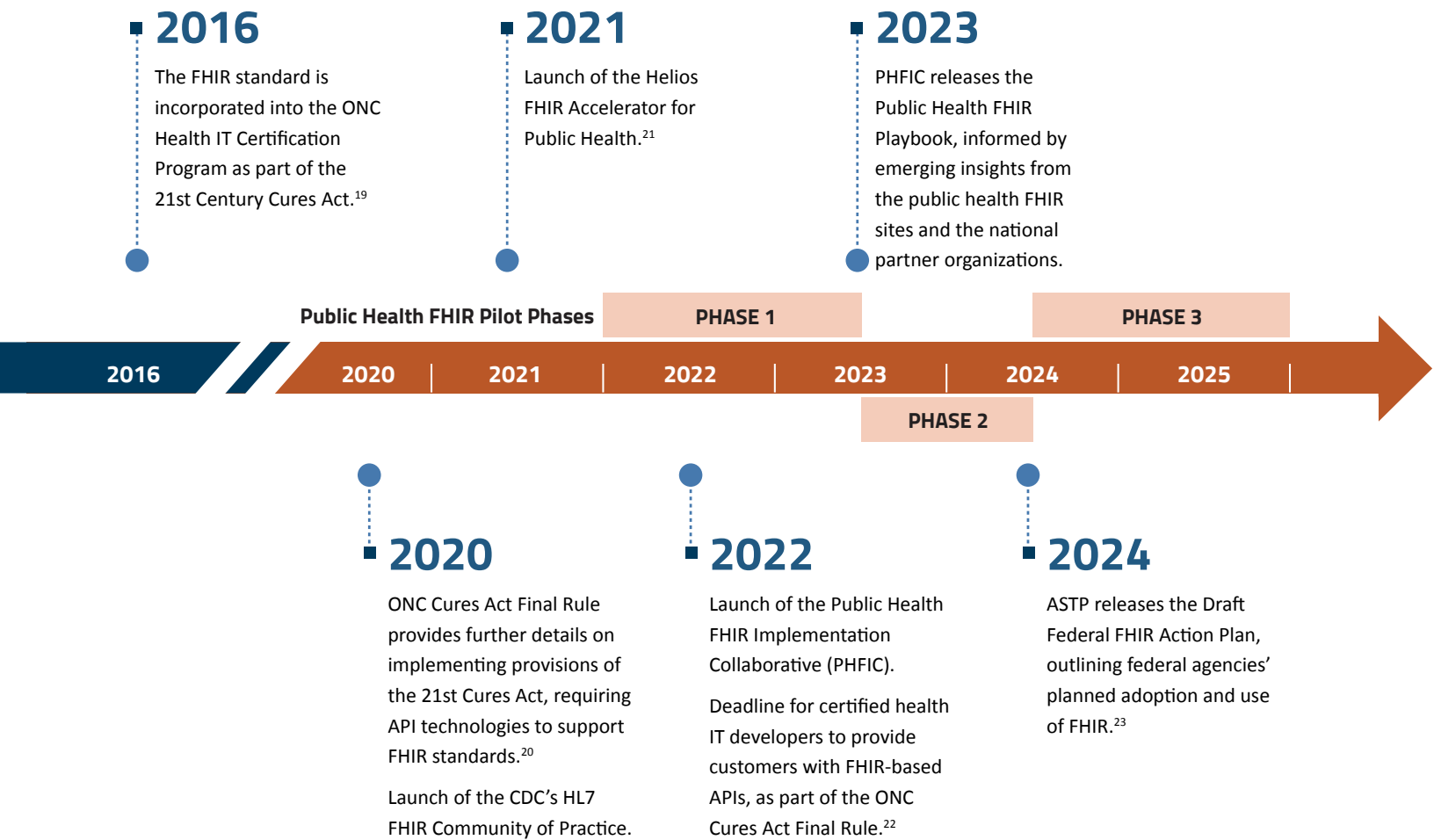
	Phase One Overview	**Phase Two Overview**	**Phase Three Overview**
Timeline	Sept. 2022 – June 2023	Sept. 2023 – July 2024[IV]	Oct. 2024 – July 2025
Focus	Establish partnerships to advance FHIR-based exchange between state and local health departments and pilot initial use cases. Leverage the newly established PHFIC for guidance, coordination, and shared learning.	Strengthen and build on Phase 1 infrastructure by expanding to bi-directional data exchange and/or integrating additional high-priority public health use cases.	Align pilot activities with Helios FHIR Accelerator for Public Health priorities and broaden participation by recruiting new pilot sites. Extend data sharing efforts beyond state and local partnerships to include other key data partners, such as healthcare organizations and health information exchanges.
Pilot Sites Involved	→ Minnesota Department of Health and Hennepin County Public Health → Virginia Department of Health and Fairfax County Health Department → Washington State Department of Health and Public Health — Seattle & King County	→ Minnesota Department of Health and Hennepin County Public Health → Virginia Department of Health and Fairfax County Health Department → Washington State Department of Health and Public Health — Seattle & King County	→ Virginia Department of Health and Fairfax County Health Department → Washington State Department of Health and Public Health — Seattle & King County → Philadelphia Department of Public Health — HealthShare Exchange
Technical Support Partner	MITRE	Leap Orbit	GTRI
National Partner Organizations (Issuing financial resources to pilot sites)	ASTHO, CSTE, and NACCHO	ASTHO, CSTE, and NACCHO	ASTHO, with local health department engagement support from NACCHO

[IV]Due to implementation and testing challenges, the periods of performance for some pilot sites were extended beyond the original project end date of July 31, 2024.

Public Health FHIR® Pilots in Context

The public health FHIR pilots rolled out in the context of several broader national initiatives and policy developments advancing FHIR implementation.

2016

The FHIR standard is incorporated into the ONC Health IT Certification Program as part of the 21st Century Cures Act.[19]

2021

Launch of the Helios FHIR Accelerator for Public Health.[21]

2023

PHFIC releases the Public Health FHIR Playbook, informed by emerging insights from the public health FHIR sites and the national partner organizations.

Public Health FHIR Pilot Phases | PHASE 1 | PHASE 3

2016 | 2020 | 2021 | 2022 | 2023 | 2024 | 2025

PHASE 2

2020

ONC Cures Act Final Rule provides further details on implementing provisions of the 21st Cures Act, requiring API technologies to support FHIR standards.[20]

Launch of the CDC's HL7 FHIR Community of Practice.

2022

Launch of the Public Health FHIR Implementation Collaborative (PHFIC).

Deadline for certified health IT developers to provide customers with FHIR-based APIs, as part of the ONC Cures Act Final Rule.[22]

2024

ASTP releases the Draft Federal FHIR Action Plan, outlining federal agencies' planned adoption and use of FHIR.[23]

Public Health FHIR® Pilot Sites and Use Cases

Since PHFIC launched in 2022, public health departments supported by the CDC and linked to this collaborative have piloted a range of FHIR-based data exchange projects. These pilot sites — participating across Phases 1, 2, and 3 — have explored use cases that demonstrate the value of FHIR in streamlining public health workflows, improving data quality and timeliness, and supporting improved coordination across state and local health departments, and data partners. This section provides high-level detail on the use cases pursued by pilot sites, in addition to the identified short-term impacts.
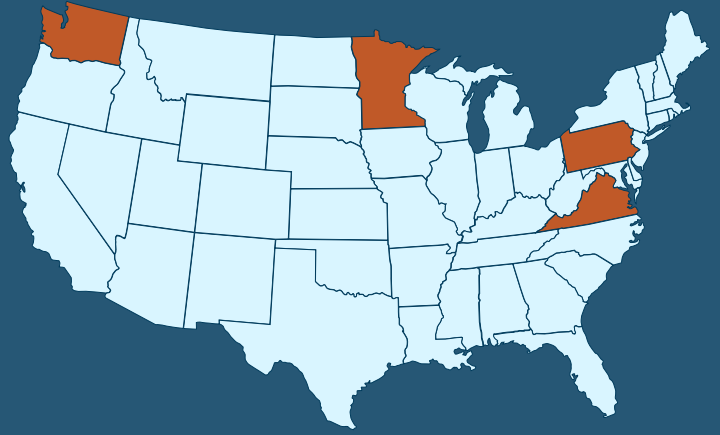
Minnesota Department of Health and Hennepin County Public Health[24, 25]

When recruited to participate in a FHIR implementation pilot, Hennepin County Public Health (HCPH) and Minnesota Department of Health (MDH) identified syphilis data sharing as a high priority use case, due to increasing rates in Hennepin County. Prior to the pilot, HCPH received monthly syphilis case data from MDH through a manual transmission process. This process was burdensome and hindered timely sharing of data to inform public health action.

As part of their public health FHIR pilot work, MDH and HCPH engaged in the following activities:

Phase 1

MDH and HCPH aligned on the shared goal of implementing FHIR-enabled sharing of **syphilis surveillance data** from the state to the county level. MDH was successful in establishing a FHIR API that enabled HCPH to query case surveillance data on-demand (one-way data sharing).

Phase 2

Data exchange expanded into **bi-directional** FHIR-based exchange of syphilis case surveillance data between MDH and HCPH, with HCPH regularly sending updated Epic case data from local public health clinics to MDH.

Impacts

Through this project, pilot site participants noted that their staff had gained valuable experience implementing FHIR, developed stronger relationships between the state and county health departments, and had attained better county-level access to syphilis data to inform their public health case investigations and follow-up activities. MDH and HCPH were also successful in replacing monthly manual syphilis case data-sharing protocols, reducing staff burden, and increasing timeliness of data availability.

While MDH and HCPH were unable to participate in Phase 3 of the pilots due to competing priorities, MDH is positioned to continue building their FHIR infrastructure through the Public Health Data Modernization Implementation Center Program.

Virginia Department of Health and Fairfax County Health Department [26, 27, 28]

Virginia Department of Health (VDH) and Fairfax County Health Department (FCHD) collaborated to share death record data, birth record data, and cancer registry data over the three phases of pilot implementation activities. Before pilot activities began, there was limited data sharing from VDH to FCHD. The two health departments use separate IT infrastructures and staff did not have prior FHIR experience. FHIR use cases have prioritized state-to-county level data sharing for priority datasets, and staff leveraged existing FHIR Implementation Guides (IGs) to facilitate their work.

As part of their public health FHIR pilot work, VDH and FCHD engaged in the following activities:

Phase 1

VDH and FCHD aligned on improving speed and efficiency of **death record data** exchange as their use case. Project goals focused around improving the accuracy, frequency, and reliability of death record data transmitted and reducing manual data management activities. VDH and FCHD successfully leveraged the Vital Records Death Reporting (VRDR) IG to establish one-way data transmission from VDH to FCHD.

Phase 2

VDH and FCHD introduced a second priority use case: FHIR-enabled sharing of **birth record data** from the state to the county level. The pilot sites leveraged the Birth and Fetal Death Reporting (BFDR) IG to support their work and established one-way neonatal data sharing from VDH to FCHD.

Phase 3

VDH and FCHD continued to expand their use cases, working to support one-way data sharing from VDH's **cancer registry** to FCHD, to help the county in developing local cancer surveillance, program evaluation (e.g., HPV and HBV vaccination), capturing the continuum of care for Hepatitis B & C, HIV, and other chronic conditions.

Impacts

This work improved quality, frequency, and reliability of data available to the county. The pilot project also helped to initiate foundational data management infrastructure, optimizing data exchange processes, which reduced manual data management and supported staff efficiencies. The pilots resulted in stronger state-county relationships and connections to the broader practice community (through interactions with other pilot sites). Finally, pilot sites also noted that expanding FHIR-based data sharing to include chronic disease datasets offers the opportunity to engage chronic disease programs in data modernization work which has previously centered primarily on infectious disease data.
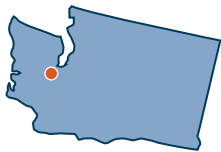
Washington State Department of Health and Public Health — Seattle & King County[29, 30, 31]

Washington State Department of Health (DOH) and Public Health – Seattle & King County (PHSKC) signed on as pilot sites to reduce data silos across programs within the DOH, between the state and local health jurisdictions, and between public health and health care systems. DOH and PHSKC participated in three phases of the health FHIR implementation pilots, beginning with one-way data sharing of death record data, followed by advancing to a bi-directional exchange, and finally integrating immunization data into the exchange.

Phase 1

DOH and PHSKC identified **death record data** as their first use case. They leveraged the Vital Records Death Reporting (VRDR) IG to enable one-way data sharing from DOH's vital records system to PHSKC's Medical Examiner's Office (KCMEO) case management system.

Phase 2

Next, DOH and PHSKC expanded their Phase 1 use case to include **bi-directional exchange** of **medicolegal death investigation (MDI) data**, enabling KCMEO's case management system to share data to the DOH vital records system. The VRDR and MDI IGs are being leveraged to support this work. Full data transfer has been delayed due to prolonged processes for DOH to procure a FHIR server and connect it to the state vital records system. However, pilot sites have made progress by building a user interface in KCMEO's case management system and sending test data to a FHIR server operated by the University of Washington that is configured similarly to the DOH model.

Phase 3

Aiming to reduce the burden associated with manually accessing individual **immunization records**, DOH and PHSKC are working to support bulk FHIR transmission of immunization data from the state immunization registry to the county. This effort aligns with activities of the Helios Bulk Data Priority Area.

Impacts

This work has positioned the pilot sites to replace manual data entry with bidirectional FHIR exchange of death investigation data and has offered DOH and PHSKC tangible examples of the demonstrable value of FHIR-based exchange. Listening and responding to the data needs articulated by their local partners has strengthened DOH's relationship with PHSKC.
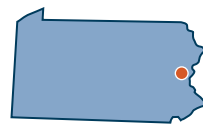
Philadelphia Department of Public Health and HealthShare Exchange

Philadelphia Department of Public Health (PDPH) and HealthShare Exchange (HSX) were engaged to participate in the third phase of FHIR pilots, as pilot projects were expanded beyond state-local data sharing partnerships. HSX is a health information exchange (HIE) serving providers in Pennsylvania, New Jersey, and Delaware.

As part of their public health FHIR pilot work, PDPH and HSX engaged in the following activities:

Phase 3

PDPH and HSX aligned on a shared goal of improving **immunization data** sharing through a unidirectional data download from HSX to the PDPH. The project aimed to improve immunization data completeness and timeliness while also understanding and addressing the data gap in the Philadelphia Immunization Information System (PhilaVax). This project leveraged the Helios Bulk FHIR Data Access approach to enable scalable data exchange.

Impacts

Phase 3 activities are underway at the time of this writing; emerging impacts include increased understanding of FHIR infrastructure interoperability capabilities and bulk FHIR data exchange processes that may advance immunization data exchange maturity at PDPH and HSX. The work has also helped identify potential challenges in establishing a FHIR façade at HSX and opportunities to mitigate those obstacles.

Lessons from the Field

Successes, Challenges, and Lessons Learned from the Public Health FHIR® Pilots

The following section summarizes successes, challenges, and lessons learned, with a focus on Phases 1 and 2 of the public health FHIR pilots. Findings are drawn from PHFIC summaries and pilot site presentations regarding their work.[32, 33, 34] While insights from Phase 3 are still emerging, observations from all three phases can help inform the future of public health FHIR innovation.

Successes: Phases 1–3

Key successes from the public health FHIR projects are as follows:

→ **More timely access to public health data.** The public health FHIR pilots enabled faster, more reliable data exchange pathways for state and local health departments, and their data exchange partners. In particular, the pilots improved county-level access to granular data from state systems, providing the counties with critical information to inform local public health interventions.

→ **Reduced manual work.** By optimizing data sharing tasks that were previously performed manually, the FHIR pilots freed up public health staff capacity and gained efficiencies.

→ **Established foundational capacity for FHIR®.** Staff participating in the pilots gained practical capabilities and expertise implementing FHIR projects, which can be applied to future modernization activities. Pilot sites are currently able to identify future potential applications of FHIR-based exchange, and are able to characterize the resources, staff, and skills needed to support future FHIR projects.

→ **Modernized public health technical infrastructure.** Participating sites upgraded their IT systems to accommodate FHIR, and initiated processes to expand their FHIR capabilities (e.g., assessment and procurement of a FHIR server). These upgrades, paired with continued efforts to strengthen the health department's FHIR infrastructure — through the Public Health Data Modernization Implementation Center Program, for example — will facilitate expanded FHIR adoption.

→ **Strengthened relationships and collaboration.** The public health FHIR pilots fostered stronger connections between state and local health departments, and between public health and other key data exchange partners (e.g., county medical examiner's office). Shared state and local priorities informed use cases, and state health departments felt that listening and responding to county-articulated data needs supported stronger relationships.

→ **Leveraged shared resources and learning.** Pilot sites noted that they benefited from connections with other pilot sites engaged in similar FHIR implementation activities. Shared tools, FHIR trainings, and open-source documentation supported their implementation efforts, and pilot sites were able to reinvest into shared resources by supporting FHIR IG refinements and contributions to the Public Health FHIR Playbook.

- More timely access to public health data
- Reduced manual work
- Established foundational capacity for FHIR®
- Modernized public health technical infrastructure
- Strengthened relationships and collaboration
- Leveraged shared resources and learning

Challenges: Phases 1-3

Implementation challenges from the public health FHIR pilots fell into the following categories:

→ **Knowledge and training.** Several pilot sites reported having limited or varying levels of FHIR knowledge and experience at the outset of their projects. Time and training are crucial to building a "FHIR savvy" public health workforce, and to upskill the project team.

→ **Staffing constraints and team dynamics.** Limited personnel bandwidth and staff turnover presented challenges. While technical support partners provided valuable implementation expertise, changes in technical support providers at times disrupted providing technical assistance. Pilot sites also noted that role clarification across project team members was sometimes needed, given the multiple parties involved in advancing the work.

→ **Competing priorities.** At times, competing priorities impacted staff availability to support the FHIR pilots. Pilot sites also noted that many health departments are not yet working on FHIR implementation and/or may be prioritizing other data modernization efforts. This dynamic may limit the availability of willing exchange partners, peer learning opportunities, and colleagues working on refining IGs and other implementation tools.

→ **Technical resources.** Lack of completed IGs and technical guidance for specific use cases — or competing guidance — presented implementation challenges. While collaborative testing and refinement is critical to the development of FHIR IGs, building the guidance from scratch can be challenging, especially in an environment with constraints in staff availability. Developing IGs can also be a multi-year process, spanning initiation of a pilot project, development of IG content, community feedback, publication of the IG, and continuous refinement.

→ **Timeline and budget constraints.** Available funding did not always cover total FHIR-associated implementation costs since annual funding cycles are not well aligned with the time and resources needed to plan and implement FHIR projects, or to produce contract deliverables. More flexibility in how funds could be allocated was requested. Available funding did not always cover total FHIR-associated implementation costs; more flexibility in how funds could be allocated was requested. Finally, the administrative burden of executing a smaller-dollar-value contract is often comparable to that of a larger one,

which at times made the FHIR pilot contracts less attractive to procurement offices.

→ **Legal and policy factors.** The legal approvals and agreements required to advance data-sharing projects delayed project timelines. Changes to data systems could instigate additional rounds of legal review. Additionally, unanticipated changes in procurement policies — such as restrictions on purchasing a FHIR server — significantly hindered one pilot site's ability to implement and test FHIR-based data exchange, leading to a delay in project completion by several months.

Knowledge and training

Staffing constraints and team dynamics

Competing priorities

Technical resources

Timeline and budget constraints

Legal and policy factors

Implementation Lessons: Phases 1–3

Key successes from the public health FHIR projects are as follows:

→ **Secure the buy-in of leadership and key partners, including programmatic staff within your agency.** Educate decision-makers about the benefits of FHIR to gain their support in setting priorities, securing resources, and sustaining momentum. For example, highlighting the time-saving benefits associated with reduced manual and double data entry may resonate with leadership. Establish metrics to demonstrate impact and value of the FHIR implementation work. When engaging data-sharing partners, obtain commitments around key tasks and timeframes required to make shared progress on the FHIR implementation.

→ **Relationships and regular communication are key.** Build relationships, ensure cross-team collaboration, and support communication (e.g., hold regular meetings with technical teams). Listen to your data sharing partners' priorities and use that knowledge to inform selection of meaningful use cases.

→ **Resource projects with the right people.** Assess staff and technology availability to engage in the project. When possible, support the continuity of team members within and across FHIR projects to increase learning and efficiencies over time, and bring in new team members (as appropriate) to learn from existing staff. Engage technical resources early in the project. Carefully assess the use of consultants and consider prioritizing their support to carry out specific technical tasks and to build in-house knowledge and capacity.

→ **Anticipate FHIR training needs.** Leverage available training, resources, and open-source tools to support staff. If delivering FHIR training, adjust delivery modalities to your audience's needs (e.g., virtual, just-in-time training).

→ **Plan your FHIR implementation efforts.** An agency-level FHIR roadmap[v] can help guide infrastructure development over time and support teams in prioritizing use cases. At the project level, an implementation plan with key milestones, deliverables, and timelines is important for guiding work and aligning team expectations.

→ **Anticipate end user impact and training needs.** FHIR-based solutions directly affect end users and their interaction with data systems. To ensure usability, integrate end user workflows and data needs into system design. Rather than replicating legacy processes, identify opportunities to improve efficiency. Anticipate workflow changes by planning training and developing supporting materials (e.g., tip sheets, SOPs, how-to guides) to facilitate adoption and operational continuity.

→ **Build a reusable FHIR-based infrastructure.** When implementing new technologies or approaches for a specific use case, it is important to consider their applicability to broader agency and public health functions. Establishing reusable FHIR-based infrastructure requires early and sustained planning, beginning with the initial implementation. Emphasis should be placed on scalable, standards-based solutions that can be adapted across multiple use cases to support long-term interoperability and efficiency.

→ **Establishing data governance and reviewing frameworks.** Implementing robust data governance and reviewing frameworks is essential for standardizing agency-wide practices, managing accountability, and enabling data-driven decision-making across an increasingly complex and scalable FHIR implementation landscape.

→ **Project management and documentation are important.** Identify a project manager to coordinate project activities, timelines, and deliverables. Clarify roles and responsibilities of project team members and document this information via charters and RACI matrices. Centralize team discussion channels and files, share meeting notes, and provide clear descriptions for stored files to support team members' access and use of project materials. At the conclusion of the project, consolidate key information that can serve as a future reference regarding the work completed and plans for ongoing maintenance or future upgrades.

→ **Initiate legal agreements early.** Contracts and data sharing agreements can take time to develop and approve. Start this work early and involve legal teams and other key partners to ensure key agreements are in place once partners are ready for implementation.

→ **Plan for testing and troubleshooting.** To help testing run more smoothly, identify testers early and ensure they have system access to avoid delays. Have team members meet regularly to troubleshoot and resolve issues together in real time.

→ **Expect a learning curve—projects will run more smoothly over time.** Initial projects require time to build familiarity with the FHIR standard and implementation processes (e.g., data mapping, translation, use of specific file formats, and initial setup of FHIR servers and infrastructure). Projects will become more efficient as technical knowledge and experience increase, and as the overall FHIR field advances (e.g., through community development of IGs and support resources).

→ **Leverage US Core FHIR IG profiles.** When a use case-specific FHIR IG does not exist, leverage profiles from the US Core FHIR IG where possible to align with FHIR implementations using certified Health IT products and minimize the work needed to develop local FHIR profiles. Document any gaps and provide feedback through USCDI and HL7 to optimize US Core.

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[v]See Washington State Department of Health's HL7 FHIR Infrastructure Roadmap and Five-year Implementation Plan for sample roadmap.

Conclusion and Future Directions

Advancing FHIR adoption in public health requires a strategic, multi-pronged approach that builds on existing progress while enabling scalable, sustainable implementation across jurisdictions. Between 2022 and 2025, public health FHIR pilots demonstrated the tangible benefits and real-world feasibility of implementing the FHIR standard to facilitate data exchange between state and local health agencies and their health care partners. Across all three phases of effort, pilot sites built critical foundational capacity, modernized technical infrastructure, and strengthened relationships across public health departments, data exchange vendors, and healthcare partners. These efforts collectively enhanced the timeliness, accuracy, and utility of public health data.

Public health FHIR pilot sites identified several successes, such as reducing manual data processes, improving access to priority data sets (e.g., vital, cancer, and immunization records), and the growing confidence of participating health agencies to implement and scale FHIR-based solutions. However, they also identified challenges, including resource limitations, staffing constraints, and the need for technical guidance and additional FHIR-based implementation tools. Lessons from the pilots highlighted the importance of early planning, cross-team collaboration, leadership engagement, and investment in FHIR-based training and documentation.

As public health data modernization efforts continue, the momentum from these pilots offers a path forward. Future directions should include:

Continued support for pilot sites FHIR implementation projects. Sustaining and expanding FHIR capabilities through ongoing pilot projects that explore and refine new use cases and IGs can provide replicable models and technical documentation that other jurisdictions can adopt and adapt. Additionally, materials developed by technical support partners could be translated into customizable templates and adaptable guidance for broader consumption. Pilots can serve as peer mentors and incubators for new use cases, further advancing the development and adoption of FHIR-based data standards. Health departments can also integrate FHIR implementation efforts into other initiatives, such as the Public Health Data Modernization Implementation Center Program, to ensure continued momentum.

Scaling FHIR across jurisdictions. Foster broader adoption by offering flexible, scalable project implementation planning and technical assistance that accommodates varying levels of readiness across jurisdictions. As implementation insights from pilot projects are translated into new settings, it is important to document strategies for tailoring implementation approaches to different jurisdictional contexts and operating environments.

Supporting new adopters. Tailored tools, trainings, and onboarding resources — like the Public Health FHIR Playbook and the 2025 HL7 FHIR Trainings for Public Health — will be critical to helping new jurisdictions adopt FHIR.

Strategic infrastructure planning. Public health agencies are increasingly interested in organization-wide strategies for FHIR implementation. Future initiatives should support strategic planning for sustainable FHIR infrastructure that align with national priorities such as the Public Health Data Strategy, and frameworks such as the Trusted Exchange Framework and Common Agreement (TEFCA). Ongoing collaboration with national initiatives (e.g., Helios, PHFIC, Public Health Data Modernization Implementation Centers, etc.) and healthcare partners will be critical to harmonizing public health FHIR efforts with broader interoperability goals.

FHIR's future in public health will rely on ongoing collaboration among federal agencies, State, Tribal, Local, and Territorial (STLT), data exchange vendors, and policymakers. With committed support and thoughtful execution, FHIR can transform public health data exchange to create a more connected, responsive, and data-driven system nationwide.

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