

# Guidance Document on Pharmacy Interoperability

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## 1. SUMMARY

The purpose of this guidance document is to advise pharmacists and system vendors about pharmacy and health data interoperability within the pharmacy services sector. This document focuses on clinical interoperability for pharmacists or pharmacies to be able to receive and send patient clinical data between themselves and other health care providers, patients and their caregivers, health plans, and other relevant stakeholders. The document is designed to

- equip pharmacists with an understanding of the Office of the National Coordinator (ONC) for Health Information Technology's certification criteria currently used by hospital and physician electronic health records (EHR) and health information exchanges (HIE) through utilization of interoperable data standards;
- promote the adoption of these standards by pharmacy to share clinical service information which will be defined by EHR interoperable capability;
- describe existing standards for clinical information that support interoperability between providers and systems;
- describe how and why the inclusion of pharmacy clinical documentation systems or EHRs will support achieving a comprehensive view of the patient; and
- outline barriers to pharmacy interoperability and mitigation of these barriers.

### WHAT IS INTEROPERABILITY?

According to ONC and section 4003 of the 21st Century Cures Act, the term “interoperability,” with respect to health information technology (HIT), means such HIT that

- “enables the secure exchange of electronic health information with, and use of electronic health information from, other health information technology without special effort on the part of the user;
- “allows for complete access, exchange, and use of all electronically accessible health information for authorized use under applicable State or Federal law; and
- “reasonable and necessary activities that do not constitute information blocking.” Information blocking exceptions are identified in 45 CFR Part 171.<sup>1</sup>

## 2. INTRODUCTION

We have now passed the 20-year mark in our nation's quest for health care interoperability. ONC was created on April 27, 2004, by President George W. Bush through executive order, as a staff division of the Office of the Secretary, within the U.S. Department of Health and Human Services. ONC leads national health IT efforts and is responsible for coordinating nationwide efforts to implement and use advanced health information technology and the electronic exchange of health information.

In 2014, ONC published “[Connecting Health and Care for the Nation: A 10-Year Vision to Achieve an Interoperable Health IT Infrastructure](#),” which described a vision for the improvement of health information technology (health IT) interoperability. [A Shared Nationwide Interoperability Roadmap version 1.0 \(Roadmap\)](#), the second paper in the “Connecting Health and Care” for the Nation series, was published in 2015 and designed to guide stakeholder focus in the near- and long-term and to catalyze collaboration among public and private stakeholders to achieve the vision of interoperability.

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1. <https://www.healthit.gov/topic/interoperability> and <https://www.healthit.gov/topic/information-blocking>



*The continued demand for health care services, coupled with the expansion of clinical services pharmacists provide, has greatly accelerated the need for pharmacists and pharmacies to achieve data interoperability with other providers, health plans, and with patients and their caregivers.*

In December 2023, ONC and the [Recognized Coordinating Entity® \(RCE™\)](#) published the [Trusted Exchange Framework and Common Agreement \(TEFCA\)](#). TEFCA outlines a common set of principles, terms, and conditions that support the development of the Common Agreement for enabling the nationwide exchange of electronic health information (EHI) across disparate [health information networks](#) (HINs). TEFCA is designed to scale EHI exchange nationwide and ensure that HINs, health care providers, health plans, individuals, and many more stakeholders have secure access to their electronic health information when and where it is needed.

The overall goal of TEFCA is to establish a floor of universal interoperability across the country. This will enhance provider, payer, and consumer access to health information that supports better clinical decision-making, improved outcomes, and lower costs. TEFCA follows a “network of networks” structure that allows for multiple points of entry and is inclusive of different types of health care stakeholders and which networks should adhere to for the trusted exchange of electronic health information.

The RCE ([Sequoia Project](#)<sup>2</sup> serves as the RCE) administers the Common Agreement, governs network-to-network connections by Qualified Health Information Networks (QHINs), and is responsible for developing, implementing, and maintaining the Common Agreement component of TEFCA. The Common Agreement creates the baseline technical and legal requirements for HINs to share electronic health information and is part of the [21st Century Cures Act \(Cures Act\)](#). The Common Agreement’s single set of rules simplify connectivity to create a HIN for the benefit of patients and providers. Consistent policies and technical approaches will increase the overall exchange of health information.

These initiatives are intended to move the health care system into the digital age, toward better outcomes, better control, reduce costs, and improve patients’ access to their health data through data interoperability.

## THE VISION OF PHARMACIST CLINICAL SERVICES/PHARMACY INTEROPERABILITY

The continued demand for health care services, coupled with the expansion of clinical services pharmacists provide, has greatly accelerated the need for pharmacists and pharmacies to achieve data interoperability with other providers, health plans, and with patients and their caregivers.

In June 2023, ONC started addressing pharmacy interoperability issues by creating the Pharmacy Interoperability and Emerging Therapeutics Task Force within its Health Information Technology Advisory Committee (HITAC). The overarching charge of the task force was to “identify recommendations to support interoperability between pharmacy constituents, and the exchange of information necessary for medication management, patient safety and consumer engagement.”<sup>3</sup>

The creation of the Pharmacy Interoperability and Emerging Therapeutics Task Force further reinforces the strong national interest in engaging and transitioning pharmacies and pharmacists into the nationwide health care data interoperability effort.

2. The Sequoia Project currently has 82 members, representing all facets of the health care industry. Founders included: American Medical Association, Epic, Informatics Corporation of America, MedVirginia, Michigan Health Information Network, Mirth, New York eHealth Collaborative, Orion Health and the Work Group for Electronic Data Interchange.

3. Pharmacy Interoperability and Emerging Therapeutics Task Force 2023 <https://www.healthit.gov/hitac/committees/pharmacy-interoperability-and-emerging-therapeutics-task-force-2023>



*The goal of health information exchange is to facilitate access and retrieval of clinical data to provide safe, timely, efficient, effective, and equitable patient-centered care.*

*A standard or common data exchange framework and data sharing agreements between participating entities are necessary.*

### 3. DISCUSSION

This section explores what conditions or requirements are necessary or helpful in achieving pharmacy data interoperability; identifies barriers to achieving pharmacy data interoperability and strategies to consider in overcoming or mitigating those barriers; identifies the types of information to be shared between pharmacies and relevant entities and how pharmacies can best participate technically in data sharing with other entities; and identifies the framework and data standards that must be supported by pharmacies and their EHRs to move the pharmacy profession toward interoperability with the rest of the health care system.

#### DATA INTEROPERABILITY

“Data interoperability refers to the ways in which data is formatted that allow diverse datasets to be merged or aggregated in meaningful ways” and uses data standards to accomplish this.<sup>4</sup> Interoperability is the capability to electronically move clinical information among disparate health care information systems while maintaining the meaning of the information being exchanged.

The goal of health information exchange is to facilitate access and retrieval of clinical data to provide safe, timely, efficient, effective, and equitable patient-centered care. To facilitate both data interoperability and movement of data, the following components must be addressed and implemented by the participants.

#### FACILITATORS OF DATA INTEROPERABILITY

Standards provide a common language and a common set of expectations that enable clinical data interoperability between systems and/or devices. Standards permit clinicians, labs, hospitals and health systems, pharmacies, and patients to share data regardless of application. Standards exist for (1) transport, (e.g., electronic data interchange (EDI), Direct, Fast Healthcare Interoperability Resource (FHIR)), (2) content (e.g., National Council of Prescription Drug Programs (NCPDP) SCRIPT, Health Level Seven (HL7) Consolidated Clinical Document Architecture (C-CDA), HL7 V2), (3) vocabulary/terminology (e.g., National Drug Code (NDC), RxNorm, Systemized Nomenclature of Medicine – Clinical Terms (SNOMED CT), United States Core for Interoperability (USCDI)), (4) privacy (e.g. Health Insurance Portability and Accountability Act (HIPAA): biometric authentication and encryption), and (5) security (e.g. HIPAA: Simple Object Access Protocol).

A standard or common data exchange framework and data sharing agreements between participating entities are necessary. TEFCA outlines a common exchange framework and a set of principles, terms, and conditions to support the development of a Common Agreement that will assist in enabling the nationwide exchange of electronic health information across disparate health information networks.

State and private health information exchanges (HIEs) also facilitate interoperability. ONC provided state grants for state-based HIEs in March 2010. The State Health Information Exchange Cooperative Agreement Program awarded 56 grants to states, eligible territories, and qualified State Designated Entities.<sup>5</sup> Additional funding was provided to states in January 2011. The program aimed to enhance connectivity and enable patient-centric information flow across the health care system within and across states. It also focused on improving the quality and efficiency of care by advancing governance, policies, technical services, business operations, and financing mechanisms

4. “Data Interoperability,” National Library of Medicine, <https://www.nlm.gov/guides/data-glossary/data-interoperability#:~:text=Definition,or%20aggregated%20in%20meaningful%20ways>  
5. State Health Information Exchange, Office of the National Coordinator, <https://www.healthit.gov/topic/onc-hitech-programs/state-health-information-exchange>



*State-based HIEs offer pharmacies the opportunity to access patient medical data often necessary for prescribing or dispensing a medication*

*In order to be fully interoperable, pharmacies and pharmacists that perform these services are realizing that not only do they need to share and receive data through HL7 FHIR or other similar application program interfaces (APIs), they also need to access the state HIEs and hospital systems as do other providers and even patients on the patient's care team*

for HIEs over each state's four-year performance period. Since their creation, some states moved toward (1) including dispensed prescription or medication history data in their state HIEs and/or (2) allowing pharmacists or pharmacy personnel to access patient information in state HIEs. Currently, pharmacies have access to controlled substances data through state-based prescription monitoring program (PMP) and the National Association of Boards of Pharmacy's (NABP) PMP InterConnect, which "facilitates the transfer of PMP data" among states.<sup>6</sup> Pharmacists' access to state Prescription Drug Monitoring Programs (PDMP) data is universal. According to a report by the Bureau of Justice Assistance, there are 54 operational PDMPs in the United States.<sup>7</sup> All PDMPs, except California, Guam, and the Northern Mariana Islands, participate in electronic data sharing with other state PDMPs, particularly among their border states.<sup>8</sup> However, only 16 states had enabled interstate PDMP data sharing through HIEs.<sup>9</sup>

State-based HIEs offer pharmacies the opportunity to access patient medical data often necessary for prescribing or dispensing a medication. For example, when pharmacists prescribed and dispensed antiviral medication for Covid-19 patients, access to patient laboratory values was critical. Another example some pharmacies are able to access hospital discharge and laboratory information from their state-based HIE.

## BARRIERS TO PHARMACY DATA INTEROPERABILITY

### DIFFERENT DATA EXCHANGE STANDARDS BETWEEN PHARMACY AND MEDICAL PROVIDERS AND HEALTH PLANS

Historically, pharmacy data standards have been related to prescription benefit billing and payment. Those standards are developed and maintained by NCPDP. At the turn of the century, NCPDP began work on standards to support administrative and clinical activities such as electronic prescriptions, prior authorizations, and referrals for clinical services using NCPDP SCRIPT XML data standards. Although clinical in nature, their use cases were specific to pharmacy or pharmacists. The medical profession and institutional settings made similar progress with standards that were developed and maintained by HL7. The fact that different types of providers used standards developed through separate organizations (NCPDP and HL7) did not become problematic until doing so resulted in barriers to data interoperability.

### PHARMACIST PROVIDER STATUS AND SCOPE OF PRACTICE

Provider status is a payer policy concept that has been an interoperability barrier to pharmacists. Under current Medicare laws, pharmacists are not providers in the same sense as physicians. However state laws may allow or require commercial health plans and Medicaid programs to enroll pharmacists as plan providers. In order to be fully interoperable, pharmacies and pharmacists that perform these services realize that not only do they need to share and receive data through HL7 FHIR or other similar application program interfaces (APIs), they also need to access the state HIEs and hospital systems as do other providers and even patients on the patient's care team.

6. PMP InterConnect, National Association of Boards of Pharmacy, <https://nabp.pharmacy/members/programs-services/industry-information-networks/pmp-interconnect/>

7. "Interstate PDMP Access and Data Sharing Alignment," Prescription Drug Monitoring Program Training and Technical Assistance Center, January 2021. [https://www.pdmpassist.org/pdf/resources/Interstate\\_PDMP\\_Access\\_and\\_Data\\_Sharing\\_Alignment\\_20210125.pdf](https://www.pdmpassist.org/pdf/resources/Interstate_PDMP_Access_and_Data_Sharing_Alignment_20210125.pdf)

8. Ibid.

9. Ibid.





## EHR AND CLINICAL DOCUMENTATION SYSTEM RISKS AND INTEGRATION

Accessing patient medical data often requires storing that information in pharmacy patient records or profiles. Some pharmacies have developed clinical documentation systems that integrate with the pharmacy's dispensing management system or module, though development of such tools is uneven nationally.

Most health care information technology companies, including EHR vendors, allow very limited ability to write data into their systems from any external source. Often, this ability to write data is limited to viewing data. Data governance is another barrier. Vendors, providers, and health systems are wary about allowing write access to the EHR, which could affect the integrity of their data. Moreover, aggregation of data across multiple endpoints would likely require processes for reconciliation and de-duplication of the data.

Thus, when pharmacies are choosing their approach to interoperability with other providers, several features are important factors to be considered.

## SUPPORT FOR HL7 FHIR CERTIFIED APIs

HL7 FHIR includes specifications for an Application Programming Interface (API) based on established web standards. FHIR leverages modern web standards and focuses on the ability to implement interoperability solutions in various contexts, such as mobile apps, cloud communications, electronic health records (EHR)-based data sharing, and server communications in large health care provider settings.

FHIR APIs are built to facilitate seamless data exchange in health care systems. They allow different applications and systems to communicate and share health-related information. FHIR APIs enable interoperability by providing a standardized way to access and exchange health data. They support secure data transmission and access controls and incorporate terminology standards for consistent data representation.

## SUPPORT FOR STANDARDIZED TERMINOLOGY FOLLOWING USCDI SPECIFICATIONS

The United States Core Data for Interoperability ([USCDI](#)) is a standardized set of health data classes and constituent data elements for nationwide, interoperable health information exchange. Semantic standards for data exchange ensures data is accurately captured, accessed, exchanged and used, making it realistic for stakeholders to accomplish exchange. Core data sets are continuing to be expanded over time. Better alignment of data standards benefits all health care stakeholders.

## TOOLS ON THE PATH TO INTEROPERABILITY

### FHIR

Fast Health care Interoperability Resources ([FHIR](#)), pronounced "fire," provides a standard to exchange health care information electronically using open APIs. FHIR has a set of specifications that define how to represent and exchange health care data in a way that is interoperable and consistent. FHIR is based on programming languages, such as XML and JSON, and is designed to be easily used and implemented. Additionally, FHIR is modular and accommodates extensions so that it can be adapted to meet the specific needs of different health care organizations. Resources, or building blocks, in FHIR define the component data elements, constraints on data, and data



*FHIR is flexible and aims to standardize 80% of use cases in health care.*

*A fully enabled FHIR platform can address the complexities of information sharing of several profiles*

relationships that together make up an exchangeable patient record.

FHIR is flexible and aims to standardize 80% of use cases in health care. The approach has been to create a set of resources that satisfy the most common use cases. Resources are the basic building blocks in FHIR and span many concepts.

FHIR is particularly well-suited for medication management because it provides a standard way to represent information about the patient's medication lists, medication orders, and medication administration (e.g., Standardized Medication Profile FHIR IG). This makes it possible to exchange medication information between different health care providers, such as hospitals, pharmacies, and clinics.

A fully FHIR-enabled system can address the complexities of information sharing of several profiles that increase health care efficiency. Other innovative programs include electronic prior authorization (ePA), the Pharmacist eCare Plan (PeCP), and clinical decision support for chronic disease management and [opioid management](#).

FHIR standards and specifications are exchanged in an interoperable way using open APIs such as [SMART](#) on FHIR.

#### PHARMACIST eCARE PLAN

The PeCP is based on a longitudinal, patient-specific, dynamic plan that all HL7 care plans follow. It represents a patient's and pharmacist's prioritized concerns, goals, planned interventions, and incorporates medication-related information captured by all members of the health care team. It is a content standard, jointly developed by NCPDP and HL7, which allows pharmacists to demonstrate their impact on patient health and quality measures, and can lead to new opportunities for payment and recognition.

The PeCP standard allows pharmacists to document and share clinical care with other health care providers and payers. It is a way to demonstrate the value of pharmacy services and improve patient outcomes. Some of the things pharmacists need to know about the PeCP are:

- It uses technology that is already available in some pharmacy clinical documentation systems, such as SNOMED CT codes and FHIR.
- It can be implemented by any pharmacy that provides medication-related care, such as medication management, chronic care management, test-to-treat, or immunizations.
- It has a standardized data format that ensures quality and interoperability, meaning that the information can be easily exchanged and understood by different systems and providers.
- It integrates pharmacists and their medication-related care plans into patients' comprehensive care plans, which can include goals, interventions, outcomes, and follow-up actions.
- It has an option to design the care plan at a basic or advanced level, depending on the complexity of the patient's needs and the scope of the pharmacist's services.





## EXAMPLE OF VENDOR CHECKLIST SPECIFIC TO INTEROPERABILITY

In January of 2015, PHIT’s guidance document “[System Vendor Checklist for Pharmacist Clinical Documentation Workflow](#)” outlined a checklist for pharmacists to work with their system vendors in identifying clinical documentation workflow. Based on PHIT’s system vendor checklist, this table provides examples of questions a pharmacist should ask their system vendor.

Interoperability Functionality Questions	Yes/No	Comments
Is interoperability integrated into pharmacy system workflow?		
Does the system exchange using standardized terminology and code sets?		
Does the vendor’s definition of interoperability coincide with this document’s definition?		
Are data at rest, data storage, and data access defined?		
Is the system scalable (i.e., can their system take on extra work or information without affecting performance)?		
Is the system FHIR enabled to interface with Qualified Health Information Network (QHIN), HIE, and HIN?		
Is system access registries (e.g., IIS public health, PDMP) an automated process?		

*The PeCP standard allows pharmacists to document and share clinical care with other health care providers and payers.*

## 4. RECOMMENDATIONS

- Pharmacists should obtain access and participate in state-based health information exchanges if available in their state.
- Pharmacy system vendors should explore and develop a process where information obtained through the state HIE can be consumed and available in pharmacy systems’ patient files for reference.
- Pharmacy system vendors should also develop a pharmacy/pharmacist EHR.
- In the meantime, integrating clinical documentation systems interfaced with the pharmacy dispensing system is critical for pharmacists performing these services.<sup>10</sup>

## 5. CONCLUSION

The goal of health information exchange is to facilitate access to and retrieval of clinical data to provide safe, timely, efficient, effective, and equitable patient-centered care. ONC continues to oversee the development of standards and rules needed to support an interoperable health care system.

10. Final Report of the Health Information Technology Advisory Committee on Pharmacy Interoperability and Emerging Therapeutics,” Health Information Technology Advisory Committee. [https://www.healthit.gov/sites/default/files/page/2023-11/2023-11-09\\_PhiET\\_TF\\_2023\\_Recommendations\\_Transmittal\\_Letter\\_508.pdf](https://www.healthit.gov/sites/default/files/page/2023-11/2023-11-09_PhiET_TF_2023_Recommendations_Transmittal_Letter_508.pdf)



The pharmacist's role is evolving to include more frequent and extensive clinical encounters with the patient.

Different types of providers use national standards developed through separate standards development organizations (e.g., NCPDP for pharmacy standards, HL7 for clinical standards). Interoperability will improve by integrating clinical documentation and EHR systems with dispensing systems by supporting standardized terminology following USCDI specifications and by continued collaboration between HL7 and NCPDP, including the use of HL7 FHIR-based APIs.

State and private HIEs are also facilitators of interoperability. State based HIEs offer pharmacies the opportunity to access patient medical data often necessary when providing care, prescribing, or dispensing a medication. From a policy perspective, pharmacy licensed personnel should be provided with access to state HIEs, QHINs, and HINs in the same manner as are other providers.

Pharmacists and their system vendors need to thoroughly educate themselves in this evolving national landscape and begin to change their practices and systems to advance clinical involvement by pharmacists and greater interoperability with the rest of the nation's health care system.

*Pharmacists should obtain access and participate in state-based health information exchanges if available in their state.*

*To overcome systemic barriers and realize the vision of the pharmacist as an active member of the patient's care team, pharmacists, pharmacies, and their system vendors will need to make significant operational and technical changes.*

## 6. RESOURCES

COMMUNITY-BASED PHARMACY PATIENT CLINICAL RECORD RUBRIC [https://communitypharmacyfoundation.org/resources/grant\\_docs/CPFGrantDoc\\_58633.pdf](https://communitypharmacyfoundation.org/resources/grant_docs/CPFGrantDoc_58633.pdf)

PATIENT CLINICAL RECORD RUBRIC Coppock, Kristen, "Pharmacy eCare Plan Developed as a Valuable Tool," Pharmacy Times, January 16, 2019. <https://www.pharmacytimes.com/view/pharmacy-ecare-plan-developed-as-a-valuable-tool>

"Final Report of the Health Information Technology Advisory Committee on Pharmacy Interoperability and Emerging Therapeutics" [https://www.healthit.gov/sites/default/files/page/2023-11/2023-11-09\\_PhIET\\_TF\\_2023\\_Recommendations\\_Transmittal\\_Letter\\_508.pdf](https://www.healthit.gov/sites/default/files/page/2023-11/2023-11-09_PhIET_TF_2023_Recommendations_Transmittal_Letter_508.pdf)

HL7 FHIR [https://www.hl7.org/implement/standards/product\\_brief.cfm?product\\_id=491](https://www.hl7.org/implement/standards/product_brief.cfm?product_id=491)

HL7 CCDa [http://www.hl7.org/implement/standards/product\\_brief.cfm?product\\_id=492](http://www.hl7.org/implement/standards/product_brief.cfm?product_id=492)

[https://communitypharmacyfoundation.org/grants/grants\\_list\\_details.asp?grants\\_id=72056](https://communitypharmacyfoundation.org/grants/grants_list_details.asp?grants_id=72056)

<https://www.healthit.gov/topic/standards-version-advancement-process-svap>.

<https://www.healthit.gov/topic/certification-ehrs/certification-process>

<https://www.healthit.gov/curesrule/resources/information-blocking-faqs>

<https://www.healthit.gov/isa/uscdi-data-class/clinical-notes>

<https://www.healthit.gov/curesrule/resources/information-blocking-faqs>

<https://www.himss.org/resources/interoperability-healthcare>.

<https://www.himss.org/sites/hde/files/d7/FileDownloads/HIMSS%20Interoperability%20Definition%20FINAL.pdf#:~:text=In%20healthcare%2C%20interoperability%20is%20the%20ability%20of%20different,and%20use%20the%20information%20that%20has%20been%20exchanged.>

Integrating Pharmacists into Health Information Exchanges – Update Version [https://pharmacyhit.org/wp-content/uploads/WG3\\_04v15.pdf](https://pharmacyhit.org/wp-content/uploads/WG3_04v15.pdf)

Interoperability HealthIT.gov <https://www.healthit.gov/topic/interoperability>



ONC Certification Criteria <https://www.healthit.gov/topic/certification-ehrs/certification-criteria>

ONC Certification Requirements <https://www.healthit.gov/topic/certification-ehrs/certification-health-it>

“Pharmacist eCare Plan Initiative” <https://www.ecareplaninitiative.com/>

“Pharmacist eCare Plans: The Care Plan of the Future?” Pharmacy Healthcare Solutions, LLC. Available online: <https://phsirx.com/blog/pharmacist-ecare-plans-the-care-plan-of-the-future>

“Supporting pharmacy data interoperability: An imperative for patient access and outcomes.” <https://leavittpartners.com/wp-content/uploads/2023/04/Pharmacy-Data-Interoperability-04.03.23.pdf>

“The ONC Health IT Playbook” <https://www.healthit.gov/playbook/>

“What is FHIR?” Office of National Coordinator for Health IT. <https://www.healthit.gov/sites/default/files/2019-08/ONCFHIRFSWhatIsFHIR.pdf>

“What Pharmacist eCare Plan Really Can Do for You,” Drug Topics, August 1, 2021. Available online: <https://www.drugtopics.com/view/what-pharmacist-ecare-plan-really-can-do-for-you> Last accessed 1 November 2023.

## 7. GLOSSARY

API - Application Programming Interface is a specified set of defined methods that enable software components to communicate and exchange data.

**C-CDA** - Consolidated Clinical Document Architecture Consolidated CDA (C-CDA) is an US Realm HL7 XML-based markup standard of a library of CDA formatted documents. Examples of C-CDA:

HL7 CDA® R2 Implementation Guide: Consolidated CDA Templates for Clinical Notes R2.1 is a library of CDA templates, incorporating and harmonizing previous efforts from Health Level Seven (HL7), Integrating the Healthcare Enterprise (IHE), Health Information Technology Standards Panel (HITSP) and ASTM Continuity of Care (CCD). Clinical documents supported include: Care Plan including Home Health Plan of Care (HHPoC), Consultation Note, Continuity of Care Document (CCD), Diagnostic Imaging Reports (DIR), Discharge Summary, History and Physical (H&P), Operative Note, Procedure Note, Progress Note, Referral Note, Transfer Summary, Unstructured Document, and Patient Generated Document (US Realm Header).

**CDA®** - Clinical Document Architecture - HL7 Version 3 Clinical Document Architecture (CDA®) is a document markup standard that specifies the structure and semantics of clinical documents for the purpose of exchange between health care providers and patients. It defines a clinical document as having the following six characteristics: 1) persistence, 2) stewardship, 3) potential for authentication, 4) context, 5) wholeness, and 6) human readability. A CDA can contain any type of clinical content. Typical CDA documents would be a discharge summary, imaging report, admission and physical, pathology report, and more. The most popular use is for inter-enterprise information exchange, such as is envisioned for a HIE.

EDI - Electronic Data Interchange

EHI - Electronic Health Information

EHR - Electronic Health Record

ePA - electronic Prior Authorization



FHIR® - Fast Health care Interoperability Resources, FHIR is a standards framework created by HL7. It combines features of its previous standards, [HL7 V2](#) & [HL7 V3](#) (which includes CDA/C-CDA), while leveraging web standards and applying a tight focus on implementability. FHIR solutions are built from a set of modular data components called “resources.” These resources can easily be assembled into working systems that solve real world clinical and administrative problems. FHIR is suitable for use in a variety of contexts: mobile phone apps, cloud communications, EHR-based data sharing, server communication in large institutional health care providers, etc.

HIE - Health Information Exchange

HINs - Health Information Network

HIPAA - Health Insurance Portability and Accountability Act

HIT - Health Information Technology

HL7® - Health Level 7

IG - Implementation Guide

JSON - JavaScript Object Notation

NABP - National Association of Boards of Pharmacy

NABP PMP InterConnect® - Prescription Drug Monitoring Program

NCPDP - National Council for Prescription Drug Programs

NDC - National Drug Code

ONC - Office of the National Coordinator for Health IT

PeCP - Pharmacist electronic Care Plan

QHIN - Qualified Health Information Network

RCE® - Recognized Coordinating Entity® (RCETM)

SNOMED CT® - Systematized Nomenclature of Medicine Clinical Terms

TEFCA - Trusted Exchange Framework and Common Agreement

USCDI - United States Core for Data Interoperability

XML - Extensible Markup Language

## 8. ACKNOWLEDGMENTS

### AUTHORS

Shelly Spiro, executive director, PHIT

Bill Lockwood, representing APhA

David Butler, representing APhA

Jing Wu, representing ASCP

Chip Stubsten, representing ASHP

Hesham Mourad, representing ASHP



Shawn Matthew, representing ASHP

Cathy Graeff, representing NACDS

Darren Townsend, representing NACDS

Afton Wagner, representing NACDS

Scott Robertson, representing NCPDP

David Kosar, representing PHIT

Richard Parrish, representing USP

Sam Hodges, representing Wellcare

Marie Link, representing observer

Joel Montavon, observer

#### CONTRIBUTORS

Arnie Clayman, representing ASCP

Alexandria Hesketh, representing ASHP

Amey Hugg, representing ASHP

Joy Meier, representing ASHP

Sonya Zhan, representing ASHP

Paige Clark, representing Prescriptive

Joel Villahermosa, representing Tabula Rasa

Pam Schweitzer, observer