

NC Health Information Exchange Connectivity Feasibility Study



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Executive Summary

The key to achieving North Carolina's vision of connected health care communities will be the need for continued support and engagement by the N.C. General Assembly, state agencies, health plans, health systems, and physician stakeholder groups through collaborative and meaningful dialogue and practical solutions to support a simplified and consolidated approach to data sharing in North Carolina.

In this spirit, this report offers three primary legislative recommendations, as outlined in greater detail below. The report addresses the six considerations required by the appropriations law, summarizes the analysis of a study completed by the Health Information Exchange Authority (HIEA), and concludes with specific recommendations, as follows:

1. The North Carolina Health Information Exchange Authority (NC HIEA), North Carolina Department of Health and Human Services (DHHS) and the State Health Plan for Teachers and State Employees (SHP) should continue working together to evaluate provider technology gaps to determine funding needs and identify connection shortfalls associated with funding issues.
2. The NC HIEA, DHHS and SHP recommend that these agencies be authorized to create and execute a prioritized implementation schedule by provider type that considers strategic/clinical and technical/administrative criteria.
3. The NC HIEA, DHHS and SHP recommend a delay in the encounter data requirement until one - three years after the conversion to Medicaid managed care.

Introduction

Section 11A.5.(h) of S.L. 2017-57 required the NC Department of Health and Human Services (DHHS), the NC Department of Information Technology (DIT), and the Division in the Department of State Treasurer that manages the State Health Plan for Teachers and State Employees (SHP) to conduct a joint study of the feasibility and appropriateness of requiring providers and entities other than hospitals, licensed physicians, physicians assistants, and nurse practitioners to submit demographic and clinical data through the HIE.¹ Additionally, the study must address the feasibility and appropriateness of requiring entities other than prepaid health plans (PHPs) and local management entities or managed care organizations (LME/MCOs) to submit encounter and/or claims data through the HIE by the current statutory deadline of June 1, 2019.²

The statute requires joint submission of a final report of findings and recommendations to the Joint Legislative Oversight Committee on Health and Human Services and the Joint Legislative Oversight Committee on Information Technology by April 1, 2018. DHHS, DIT, and SHP requested an extension to May 1, 2018, in a letter to committee chairs dated March 29, 2018. The agencies subsequently requested a second extension to June 1, 2018.

Under current law, hospitals, licensed physicians, physician assistants, and nurse practitioners that have an electronic health record (EHR) and accept Medicaid must begin submitting demographic and clinical data through NC HealthConnex by June 1, 2018.³ NC HealthConnex is a secure electronic network that facilitates conversations between health care providers, allowing them to access and share health-related information across the state.

To date, the NC HIEA, the state agency that manages NC HealthConnex, has signed 119 hospitals and more than 4,000 ambulatory facilities. Combined, these entities account for over 70 percent of providers who fall under the 2018 reporting requirements, according to the Provider Entity Resolution Project performed by the HIEA and SAS Institute. A projected 85 percent of hospitals and 90 percent of primary care practices will be live and sending data by the end of 2018.

All other Medicaid and state-funded health care providers must begin submitting demographic and clinical data by June 1, 2019.

¹ See N.C.S.L. 2017-57 Section 11A.5.(h). See also N.C.S.L. 2017-57 Section 11A.5.(b).

² *Id.*

³ N.C.G.S. § 90-414.4 as amended by N.C.S.L. 2017-57 Section 11A.5.(b).

Under current law, PHPs must begin submitting encounter and/or claims data, as appropriate, upon commencement of a contract with DHHS. LME/MCOs must begin submitting encounter and claims data by June 1, 2020.

This report examines the following six considerations as required by the appropriations law:

1. The availability of connection, exchange, and data submission standards established by the Office of the National Coordinator for Health Information Technology (ONC) within the U.S. Department of Health and Human Services (HHS).
2. The adoption of national standards for the connection, exchange, and data submission standards by provider type.
3. Cost estimates by provider type to connect and submit data to the HIE and any availability of federal or state funds to meet connection or submission requirements.
4. Data captured in the treatment of patients, segmented by provider type.
5. Activity of other states and payer plans with respect to the establishment of an HIE Network.
6. Alternatives to the connection and submission of demographic, clinical, encounter, and claims data through the HIE Network.⁴

⁴ *Id.*

Six Considerations

This section addresses the six considerations required by the appropriations law. Detailed information for each of the considerations is included in the Study Analysis section beginning on page 11, and recommendations can be found on page 29.

Consideration 1

The availability of connection, exchange, and data submission standards established by the Office of the National Coordinator for Health Information Technology (ONC) within the U.S. Department of Health and Human Services (HHS).

Standards do exist, with some being more mature than others. These standards vary by provider type and, in some cases, by Electronic Health Record (EHR) vendor. The variation of standards adds complexity to the connection process. NC HealthConnex is creating significant capabilities to handle the tremendous volume of data with these wide variations of data standards.

Consideration 2

The adoption of national standards for the connection, exchange, and data submission standards by provider type.

Data exchange standards established by ONC have been more widely adopted by health care systems and providers that have participated in the Meaningful Use (MU) Incentive Programs.

As part of the study, the DHHS Division of Medical Assistance (DMA) and Blue Cross Blue Shield of North Carolina (BCBSNC) surveyed health care providers in their networks in February 2018 to determine EHR maturity, among other things.

- The survey was made available to approximately 90,000 providers
- More than 2,200 providers responded
- Approximately 60 percent of respondents had EHR technology in place
- Approximately 6 percent of respondents planned to purchase EHR technology within the next 12 months
- Approximately 35 percent of the provider respondents do not have technology in place to meet the impending mandate

Consideration 3

Cost estimates by provider type to connect and submit data to the HIE and any availability of federal or state funds to meet connection or submission requirements.

A survey of EHR vendors conducted by the HIEA in December 2017 identified wide variation of costs in the marketplace for licensing/implementing EHR software as well as operations and maintenance. The connection/ integration to the HIE Network in some cases involves an additional cost.

- **Cost to implement EHR:**
 - 64 percent of the EHR vendor responses estimate one-time implementation costs up to \$50,000; 36 percent estimate implementation costs of more than \$50,000.
- **Operations and maintenance:**
 - 80 percent of respondents charge less than \$3,000 monthly; 20 percent charge \$5,000 or more monthly.
- **Cost to integrate data to HIE:**
 - 73 percent of respondents charge less than \$5,000 to send data to the HIE; 27 percent charge more than \$5,000 for integration.

Due to the complexities of the marketplace (e.g., certified, non-certified, niche specialty) and wide variation of pricing models for each company, the three state agencies found it difficult to provide an average range for these costs.

- A federal grant was awarded to DMA and the HIEA in July 2017 to provide funds to accelerate onboarding Medicaid providers to NC HealthConnex and to offset the provider side cost of EHR vendor integrations.
- The state recently established an EHR funding program for a segment of health care providers not included in the federal Meaningful Use program.

Consideration 4

Data captured in the treatment of patients, segmented by provider type.

As part of the February 2018 health care provider survey, respondents were asked to identify which data elements were routinely captured during encounters.

The survey responses substantiated observations by NC HealthConnex that providers routinely capture different data based on provider type and treatment relationship to patient. Of the providers who responded:

- Top data element categories
 - Demographics (date of birth – 88%; ethnicity – 48%; name – 91%; preferred language – 54%; race – 56%; sex – 81%)
 - Medications – 77%
 - Problems – 77%
 - Care plan – 64%
- Breakout by provider type
 - Behavioral health and social service provider – 30%
 - Do not collect clinical data – 17%
 - Allopathic and osteopathic physicians – 10%
 - Remaining provider categories – 43%

Consideration 5

Activity of other states and payer plans with respect to the establishment of an HIE Network.

While numerous HIEs around the country are entering into agreements to exchange data with payers, the HIEA obtained information on three other HIEs – Michigan, Ohio, and Kansas – that have or are beginning to work with payers in their states.

In Michigan, the payer community was among the first to participate in the Michigan health information network and provide incentives to providers for participating in HIE use cases.

Ohio’s statewide HIE is focusing on providing clinical notifications that transmit alerts through the exchange when a “covered life” presents at an Emergency Room (ER), distributing care summaries after discharge, and more efficient documentation for authorized care procedures.

The Kansas Health Information Network (KHIN) uses a Payer Incentive Program and focuses on quality measures and care gaps, risk adjustment programs, care management, and pay-for-performance payer problems for Blue Cross Blue Shield’s Anthem.

Generally, some states with mature HIEs are successfully engaging the health care community and payer plans in establishing value-added services for participants.

Consideration 6

Alternatives to the connection and submission of demographic, clinical, encounter, and claims data through the HIE Network

The HIEA is exploring several ways to meet the legislative mandate without placing undue hardships on health care provider communities. As discussed previously, many health care providers do not possess the health information technology infrastructure usually required to connect to an HIE.

The HIEA has researched alternative data connection methods for certain health care provider groups, which could inevitably ease the submission to and consumption of data from NC HealthConnex.

- **Connection/Submission Alternatives**

- **Direct messaging (DSM)** enables providers to manually send or receive clinical documents via encrypted, secure messaging. While there is value in allowing the Consolidated Clinical Document Architecture (C-CDA) to be sent as an attachment to the direct secure message, the HIEA does not recommend this for widespread use.
- **Hybrid approach** technology vendors provide connection services using a combination of approaches to bridge gaps in technical capabilities of some EHR vendors and/or providers. The HIEA recognizes great potential for these approaches and is working to evaluate potential partners that use technologies to emulate an end-user to extract C-CDAs.
- **Fast Healthcare Interoperability Resources (FHIR)** is a proposed interoperability standard developed by the health care IT standards body Health Level Seven International (HL7) describing data formats and elements (known as "resources") and an application programming interface (API) for exchanging EHRs. This standard is a viable option to overcome interoperability barriers.
- **DROPBOX** to allow batch file transmission and collection of data using a secure "dropbox."

- **Data Source Alternatives**

- **Claims data** options may exist within the NC prescription drug monitoring program (PDMP) and/or Controlled Substance Reporting System (CSRS) networks to use claims-related data to provide medication-related data from pharmacies. This alternative requires further exploration.
- **Continuity of Care Documents (CCD) encapsulation of claims data -** CCD encapsulation solutions vary in cost with implementation estimated at

\$450,000-\$600,000 and operations and maintenance of \$600,000-\$800,000 annually depending on the number of sources and configuration.

Study Analysis

1. The availability of connection, exchange, and data submission standards established by the Office of the National Coordinator for Health Information Technology (ONC) within the U.S. Department of Health and Human Services (HHS).

In the health care industry, interoperability refers to health care providers' abilities to meaningfully exchange health care data across care settings for better patient care.⁵ While exchange across the entire health care continuum has yet to be achieved, the federal government, through the MU program, has made significant strides in encouraging widespread adoption of certified health information technology by certain health care provider groups.

The Meaningful Use program, which includes the Medicare and Medicaid Electronic Health Record (EHR) Incentive Programs, is jointly administered by the HHS Centers for Medicare and Medicaid Services (CMS) and the Office of the National Coordinator for Health Information Technology (ONC). Using financial incentives, Meaningful Use promotes the exchange of clinical data by requiring eligible providers to adopt and use certified EHR technology in a "meaningful way" to improve quality, safety, efficiency and reduce health disparities.⁶ ONC is responsible for certification of EHR vendors' products to ensure they abide by interoperability standards, such as the use of Integrating the Healthcare Enterprise (IHE) profiles and MU data elements when communicating with other EHRs or Health Information Exchanges (HIEs). Adoption of certified EHRs helps eligible providers perform specific objectives to demonstrate meaningful use successfully. CMS outlines specific objectives that eligible professionals (EPs) and eligible hospitals (EHs) must achieve to qualify.⁷

The following sections outline the current connection types, transaction types, and the protocols and workflows for connection, exchange, and data submission standards:

- **Connection and Exchange Standards**

Connection technologies create a physical pathway through which two or more entities can exchange information in a secure manner. NC HealthConnex uses a combination of these connection approaches, including virtual private networks (VPNs), transport layer

⁵ Centers for Medicare and Medicaid Services (CMS) Incentive Programs, *available at* <https://www.cms.gov/Regulations-and-Guidance/Legislation/EHRIncentivePrograms/index.html>.

⁶ *ibid*

⁷ *ibid*

security (TLS), web services (like Simple Object Access Protocol), and secure file transport protocol (SFTP). Recently, the health information technology community has expressed interest in newer ONC-driven connection methods such as DSM and FHIR, which provides a simple and efficient way to discover and consume data across distributed systems. These technologies are readily available in the marketplace and are sufficient to support the standards established by ONC. See more on these methods as alternatives to connection on page 24.

- **Data Submission/Structure Standards**

NC HealthConnex supports and must continue to be able to support the exchange of health care data using any one, or a combination of, both newer and older transaction standards and protocols. These include HL7 data (in its various structures and versions), Continuity of Care Records (CCRs), CCDs, and C-CDAs.

Programs driven by ONC and the marketplace continue to improve existing transaction types and protocols such that if a certified EHR abides by the latest standards, the exchange of health care information can occur with a minimal amount of technical effort. For those participants who have sent health care data to NC HealthConnex, the ONC standards have proven sufficient to support the integrations associated with meeting the legislative mandate and the secure exchange of health care information.

2. The adoption of national standards for the connection, exchange, and data submission standards by provider type.

To promote the statewide adoption of NC HealthConnex and ease the burden of onboarding for the health care provider community, NC HealthConnex provides a standards-based interoperability solution capable of supporting multiple standard and non-standard connection and exchange methods. NC HealthConnex adheres to the interoperability specifications and data exchange standards established by the ONC. Aligning with these technical standards is critical to the success of NC HealthConnex, as it builds upon much of the health care systems' and providers' efforts over the past decade to acquire and meaningfully use EHRs across patient care settings. These activities are also closely aligned with the short-term and mid-range goals established in ONC's Nationwide Interoperability Roadmap of enabling basic send/receive/find/use functions of priority data domains to improve health care quality and outcomes, and

expanding data sources and users in the interoperable health information technology ecosystem to improve health and lower costs.⁸

To ease the burden for connecting health care providers and to leverage the federal investment in interoperability, the HIEA has adopted a data target standard that aligns with federal standards, including the Meaningful Use Data elements within the Clinical Summary MU2 Summary Type.⁹ The goal of this alignment is to enable efficient onboarding through standards-based integration methods for providers who have the technology. Based on the HIEA's experience to date, most EHs and EPs (*i.e.*, physicians) that participate in the Medicare and Medicaid EHR Incentive Programs have technology that abides by the data exchange standards.

While emphasis and use of ONC-driven standards has certainly expedited the state's ability to onboard participants, there is not a one-size-fits-all approach. The HIEA recognizes that different health care provider types have different uses for health information technology and capture clinical data in different ways in various care settings. This variance, coupled with clinician workflow, clinical preferences, and layers of interoperability solutions between participants and NC HealthConnex, means that the quality of data and the level of adoption of standards vary by many factors, including provider type.

On the national level, ONC is working with the health IT community to prioritize health IT challenges and harmonize standards, specifications, and implementation guidance to solve those problems. At the state level, NC HIEA and DHHS continue to meet with provider stakeholder groups to better understand the business needs and concerns of participants while demonstrating the future benefits of exchanging data.

- **Lack of standards for some provider types**

“According to the National Governors Association (NGA) road map report, “[w]hile data standards for exchange do exist, [...], there are no uniform national standards to which all health systems and providers must adhere to. The lack of national data standards allows Health IT vendors to develop systems and solutions according to their own design interests, which creates significant variability across systems and platforms.”¹⁰ Additionally, despite the increased use of electronic health records among certain

⁸ See ONC's National Interoperability Roadmap, *available at* <https://www.healthit.gov/topic/interoperability>.

⁹ CMS, “Eligible Professional Meaningful Use Core Measures,” (Nov. 2014), *available at* https://www.cms.gov/Regulations-and-Guidance/Legislation/EHRIncentivePrograms/downloads/Stage2_EPCore_8_ClinicalSummaries.pdf.

¹⁰ National Governors Association, “Getting the Right Information [...],” *at* 23.

provider groups, there are many health care providers who are ineligible for the Medicare and Medicaid EHR Incentive Programs, and therefore, are not required to adopt and use EHRs in their care settings.

Despite the lack of federal incentive payments for certain provider categories, many providers are using EHRs for value-based care. Challenges remain, however, as many of these providers have health information systems that are customized EHR-like solutions or case management solutions, which makes it difficult to model how clinical data is captured and how it is stored within each facility. In such cases, it is important the HIEA understands the clinical workflow and the method of modeling the data prior to the assembly of the consolidated clinical document.

The following sections will provide detailed information for what technology and clinical data exchange standards exist and are adopted by specific provider categories, if applicable.

- **Behavioral health providers**

It is important to note that “Behavioral Health Provider” is a broad term encompassing a variety of provider types and covers periodic, crisis/acute, long term services by licensed and non-licensed professionals. Given the national interest in improving the coordination of care between physical and behavioral health services, health care industry stakeholders on the national level are working to advance behavioral health IT infrastructure, use, and data exchange. Behavioral health providers, except for psychiatrists, are not eligible for the MU program; and thus, have not received federal funds to purchase EHRs. There will not be a one-size-fits-all model for connectivity, and use cases will vary. For example, ONC and the HHS Substance Abuse and Mental Health Services Administration (SAMHSA) have initiated several pilots to better understand what data elements would need to be included in a national standard and how behavioral health data is exchanged.

The HIEA established a behavioral health work group as a subcommittee of the Advisory Board to formulate an appropriate strategy to onboard behavioral health providers to NC HealthConnex and is extending the efforts discussed previously to develop a behavioral health data target for North Carolina. This group is also developing use cases to show the value of the integration of physical and behavioral health records.

- **Dental providers**

The American Dental Association (ADA) has been working for several years to develop standards for dental informatics through the ADA Standards Committee on Dental Informatics (SCDI). And while the value and need for integrating medical and dental records for improving patient continuity of care has been well documented since 2009¹¹, there has not been widespread adoption of the standards for exchange by the software vendors in the dental market.

In 2017, the HIEA created a dental work group, in partnership with the North Carolina Dental Society, comprised of dentists, state agency partners, and technical vendors to explore the technology requirements for connection to NC HealthConnex and discuss the value of exchange for whole patient care. Through this work group, HIEA is working with the EHR vendors who have dental products to determine whether they can meet the minimum requirements for connectivity.

Moreover, while there are defined use cases for the exchange of dental and physical health patient data, there are not many examples of this exchange occurring in other states.

- **Pharmacy service providers**

One of the challenges in connecting pharmacy participants concerns which data are relevant for sharing and who would share it. Health plans and their Pharmacy Benefit Managers (PBMs) collect structured claims data to reimburse pharmacies for dispensed medications. One option is for health plans and/or their PBMs to submit paid pharmacy claims data for which there are numerous standards available for consistent data sharing. Another option is for pharmacies (not plans/PBMs) themselves to share claims data. This option would resemble the approach used for the NC Controlled Substances Reporting System (CSRS), which extracts a subset of medication information directly from pharmacies in pre-specified formats. Since pharmacies use different point of sale systems, this approach requires additional analysis and stakeholder engagement, including the potential to consolidate the CSRS reporting requirements and potential new HIE reporting requirements so as to avoid adding additional and duplicative reporting burdens for pharmacies with two separate state agencies.

Moreover, a potential approach of consolidating data feeds from pharmacies with the CSRS data feed would require additional technical analysis as well as potential

¹¹ Journal of AHIMA, "Integrating Medical and Dental Records: A New Frontier in Health Information Management" (Oct. 2010), *available at* <http://library.ahima.org/doc?oid=102372#.Wyfq5NvwaUm>.

legislation. A range of ongoing internal efforts is underway to further clarify the vision and feasible options for the sharing of pharmacy data.

The National Council for Prescription Drug Programs (NCPDP) has created a Task Group to begin case development for a dispensed prescription reporting standard. Because NCPDP standards development is a consensus-building process and this would be a national standard to potentially be used by other HIEs, it is doubtful whether it can be developed, approved through the balloting process and deployed by June 2019.

Additionally, the HIEA is working with the N.C. Retail Merchants Association (NCRMA) and the pharmacy community to form a work group focused on finding a viable connection strategy for this community of providers. For all these reasons, we have identified pharmacy claims as being part of “Wave 2” outlined on page 30.

- **Long-term and skilled nursing facilities**

Long-term services and support providers (also known as “post-acute care” providers) play an integral role in delivering whole person care. Over the past decade, Medicare has implemented payment policies to hold acute and post-acute care providers accountable for patient outcomes.

In recent years, there has been an increased focus on standardized exchange of clinical data in the post-acute setting. Increased data sharing helps a patient’s clinical care team, including discharge planners, have access to reliable and timely information to ensure patients are placed in the most appropriate post-acute care setting for their clinical acuity needs.

Similar to national trends, long-term services and support providers in North Carolina (e.g., skilled nursing facilities and adult care homes) have been slow to adopt health information technology because they were not eligible to participate in Medicare and Medicaid EHR Incentive Programs. According to the ONC, 64 percent of skilled nursing facilities use electronic health records.¹² However, only 18 percent of skilled nursing facilities have taken the next step to integrate their EHR with a regional or state health information exchange.¹³

¹² Office of the National Coordinator for Health Information Technology, “Electronic Health Record Adoption and Interoperability among U.S. Skilled Nursing Facilities in 2016,” (Sept. 2017), *available at* <https://www.healthit.gov/sites/default/files/electronic-health-record-adoption-and-interoperability-among-u.s.-skilled-nursing-facilities-in-2016.pdf>.

¹³ McKnight’s Long-Term Care News, “Are you part of the 18%?” (April 2, 2018), *available at* <https://www.mcknights.com/marketplace/are-you-part-of-the-18/article/755188/>

- **Other providers**

Several other health care provider types may neither have electronic health records nor have a need to use an electronic health record. As a result, there would be significant costs for these provider groups to purchase health information technology to meet the state requirements of submitting clinical and demographic data. These types include:

- Community-based Long-Term Services and Support (LTSS) Providers including Personal Care Services, (PCS), Private Duty Nursing (PDN), and Hospice
- Intellectual and Developmental Disability (I/DD) Services and Supports such as Day Supports and Supported Living
- Community Alternatives Program (CAP) Waiver Service Providers (including CAP/DA, CAP/C, Innovations)
- Eye and Vision Services Providers
- Speech, Language, and Hearing Service Providers
- Occupational and Physical Therapists
- Durable Medical Equipment
- Non-Emergency Medical Transportation
- Ambulance (Emergency Transportation)

3. Cost estimates by provider type to connect and submit data to the HIE and any availability of federal or state funds to meet connection or submission requirements.

The HIEA is working with more than 100 EHR vendors to build integrations to NC HealthConnex. Recognizing there is no simple “plug-and-play option where providers can easily purchase technology and seamlessly connect to one another,” NC HealthConnex strives to leverage the significant health information technology investments made by health systems and providers and EHR vendors where they are, and makes every attempt to break down barriers to connectivity and interoperability.¹⁴ The HIEA has taken an enterprise approach to connectivity and data sharing, with the intent to expand functionality beyond patient record exchange with an eye toward other high-value integrations (i.e., access to public health registries, or controlled substance reporting). Key to the success of NC HealthConnex connectivity and interoperability with the EHR vendors is open communication and education among providers, facilities and EHR vendors.

¹⁴ NGA, “Getting the Right Information [...],” at 63.

- **Stakeholder Feedback Regarding Cost to Connect**

The NC HIEA has spent considerable time meeting with provider stakeholder groups, and a common refrain is that the cost to connect is a significant barrier. In fact, both the DHHS DMA and the NC HIEA have received feedback from providers that the cost barrier may be so much that the provider practice may choose to no longer participate in Medicaid or State Health Plan.

In December 2017, the state of North Carolina surveyed the NC HealthConnex EHR vendor community (distributed to 44 vendor contacts) to assess the costs associated with establishing a connection to NC HealthConnex. With a 48 percent overall response rate, 47 percent reported they serviced practices that included 1-49 providers, and 43 percent of respondents reported servicing practices in the 1-999 providers range.

It is important to note that the findings shared below speak to half of the effort to integrate EHRs to an HIE and do not reflect the amount of resources that are funded by the state of North Carolina to store the data from the EHR and collate with other data sources for the purposes of health information exchange.

- **Costs With Technology**

EHR vendors noted that actual HIE integration costs have a direct relationship to the practice needs, size, amount, and complexity of information to be shared, as well as applicable legal requirements. Baseline metrics collected in the survey found 73 percent of respondents charge less than \$5,000, and 27 percent charge more than \$5,000 per connection to send data to the HIE. Bidirectional integrations, whereby data is ingested by the provider's EHR, often come with an additional fee. Similarly, operations and maintenance costs for this same population found 80 percent charge less than \$3,000 monthly, with the remaining 20 percent charging \$5,000 or more.

- **Costs Without Technology**

Many practices or providers do not have an EHR system. To understand the financial impact to a provider or practice to implement an EHR, the survey found 64 percent of EHR vendor responses estimate implementation costs up to \$50,000, while 36 percent charge implementation costs of more than \$50,000. Actual cost would be directly related to offerings or modules provided. ONC recognizes the cost to vendors and to those eligible for MU have offered Health Information Technology for Economic and Clinical Health (HITECH) funding. The federal health IT investments made under MU

are designed as one-time payments to support infrastructure development; they do not support all IT costs that providers incur.

How Do IT Vendors Charge?

	Rolled into our core IT platform (i.e. EMR, RCM, PHM, Claims Administration) or No Charge	Separate add-on fee
Health information exchange	21%	41%
Direct messaging	21%	38%
HL7 Version 2 interfaces	19%	36%
Secure messaging	25%	34%
CCDA (Consolidated Clinical Document Architecture)	32%	24%
HL7 FHIR (Fast Healthcare Interoperability Resources)	12%	24%
Vendor-sponsored HIE (e.g. CommonWell Health Alliance, Carequality)	10%	22%

Source: eHealth Initiative

- **Availability of federal or state funds**

Recognizing integration cost as a barrier to connectivity, the HIEA and the DHHS DMA jointly submitted a funding request to CMS in April 2017. In accordance with 42 CFR § 495, Subpart D, CMS approved in July 2017 total expenditures for an advanced planning document in an amount not to exceed \$45,146,310 at 90 percent federal financial participation (\$40,631,679 federal share) for federal fiscal years 2017-2019. The federal funding will supplement staffing costs, provide training and education resource funds, and invest significant funds in integration costs. The table below projects the integration costs per provider types and the quantity that would be covered under this advanced planning document.

Table 1: Technical Integration Costs for Onboarding Facilities Serving Medicaid Patients to NC HealthConnex

	Estimated Quantity	One-Time Integration Cost*	Total Integration Costs
Hospitals & Health Systems-ADT and CCD	43	\$24,000	\$1,032,000
Independent Physician Practices & Other Ambulatory Facilities-ADT and CCD (Cloud)	1,640	\$5,000	\$8,200,000
Independent Physician Practices & Other Ambulatory Facilities-ADT and CCD (On-Premise)	717	\$20,000	\$14,340,000
Bidirectional NC Immunization Registry (per facility, any type)	800	\$8,000	\$6,400,000
Electronic Lab Reporting (per individual hospital facility)	74	\$6,000	\$444,000
Total			\$30,416,000

- **North Carolina opportunity**

As noted on page 14, behavioral health and I/DD providers (with the exception of psychiatrists) were not included in the federal MU programs. Understanding that the integration of both physical and behavioral health is critically important to improving whole patient care, the state will provide funding on a first-come, first-serve basis for providers who would like to participate in health information exchange but do not have the financial resources to invest in the technology. Specifically, the program will assist providers of behavioral health and substance use disorder services, and services and supports for individuals with intellectual and developmental disabilities with the purchase of EHR technology that support their unique service documentation needs. This program launched May 2 in a collaborative effort coordinated between the HIEA, DMA, and the DHHS Office of Rural Health. The outcomes of this pilot can help inform additional connectivity roll-out for these providers.

4. Data captured in the treatment of patients, segmented by provider type.

In an effort to better understand the technology and needs gaps amongst providers in North Carolina, the state asked DMA and BCBSNC for the SHP to distribute a five-question survey to providers in February 2018. The survey was made available to more than 90,000 health care providers (posted to the NCTracks Website and the Provider

Portal; distributed via email by BCBS of NC). More than 2,200 providers responded. *[Note: There is significant overlap of Medicaid and State Health Plan providers].*

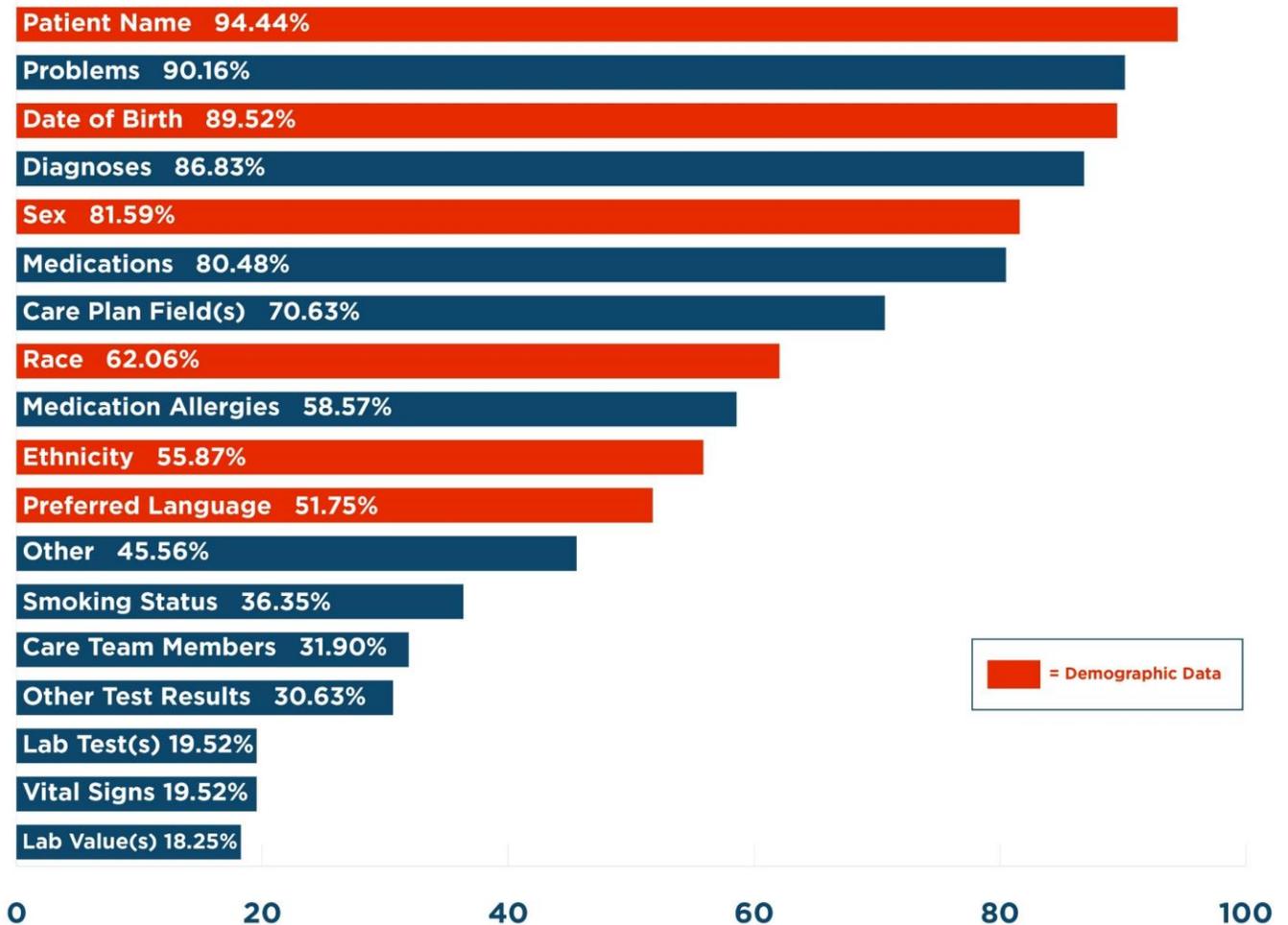
- **Type of data captured in an encounter**

The survey asked providers to identify which data elements were routinely captured during clinical encounters. An “other” category was provided for those providers who do not collect clinical data. Just under 30 percent of respondents identified in the Behavioral Health & Social Service Providers category, with Other Service Providers accounting for 17 percent, and Allopathic & Osteopathic Physicians accounting for another 10 percent. The remaining provider categories comprised the remaining 43 percent of responses.

The top data element categories captured were demographics; Medications, Problems and Care Plans. (See table on page 22.)

Additionally, 42 percent of respondents answered “Other” and provided comment to what they do routinely collect. Top ranking responses for the “Other” category include transportation and equipment needs, notes, and patient history.

Data Captured in the Treatment of Patients



- **Data target established**

The HIEA - in consultation with its Advisory Board - has adopted a data target standard that aligns with federal standards, including the Meaningful Use Data elements within the Clinical Summary MU2 Summary Type. This data target includes information such as Patient Demographics, Care Team Members, Care Plan Field(s), including Goals and Instructions, Problems, Medication Allergies, Medications, Laboratory Test(s), Laboratory Value(s)/Result(s), Smoking Status, and Vital Signs (height, weight, blood pressure (BP), body mass index (BMI)). Additionally, a robust data quality program is underway to assess volume, completeness, and accuracy of data submissions. In the second half of this year, the HIEA will launch a pilot program with 3-5 pilot participants and develop a policy to ensure that participants maintain a data quality baseline. By early 2019, the HIEA plans to integrate the Data Quality Program into operational workflow of onboarding and maintaining participant connections.

5. Activity of other states and payer plans with respect to the establishment of an HIE Network.

In recent years, payers have become increasingly faced with transitioning from a fee-for-service reimbursement model to a model that is more aligned with risk management. HIEs can play an integral role in creating transparency and proactively identifying patient risk.

In the state of Michigan, the payer community was the first set of stakeholders to participate in the inception of the Michigan Health Information Network Shared Services (MiHIN) in 2010 to administer the technical and business operations to ensure effective technology and data models were in place for the electronic exchange of health information. The model has matured during its first eight years and proven very successful in Michigan as the health plans incent the provider community as new use cases are vetted and adopted by the HIE network.

Ohio's state-wide HIE, called ClinicSync, identified three payer business problems that their HIE could solve: (1) clinical notifications that transmit alerts through the exchange when a "covered life" presents at an ER; (2) care summary distribution after patient discharge; and (3) more efficient documentation about what is authorized versus what care procedures actually take place during a patient stay.¹⁵

Other HIEs have identified payers as a foundational component to ensure high HIE data quality.

The Kansas Health Information Network (KHIN) has forged a strong partnership with Blue Cross Blue Shield's Anthem payer. KHIN has positioned its organization to solve the following payer problems for Anthem: quality measures and care gaps; risk adjustment programs; care management; and pay-for-performance.

Anthem has created a Payer Incentive Program to further ensure that the Kansan provider population is meaningfully using KHIN. This payer incentive program resulted in approximately \$230,000 in reimbursements to the provider population in 2017. Additionally, it has strengthened KHIN's underlying data quality, which has created a positive compounded effect in the reduction of medical record requests, improvements

¹⁵ Prestigiacomo, Jennifer. "Payers Integral in HIE Success, Experts Say." *Healthcare Informatics Magazine*, 6 Mar. 2012, <http://www.healthcare-informatics.com/article/payers-integral-hie-success-experts-say>.

to payer quality scores, more accurate member health profiles, and better value-based, population health, and predictive analytics.¹⁶

The HIEA has been actively involved in understanding the program design requirements for Medicaid Transformation for Day 1 and beyond. The HIEA plans to form a payer work group to bring all stakeholder groups together to vet use cases.

6. Alternatives to the connection and submission of demographic, clinical, encounter, and claims data through the HIE Network.

The HIEA is exploring several ways to balance the need to meet the legislative mandate without placing undue hardships on health care provider communities. As discussed above, many health care providers do not possess the health information technology infrastructure that is usually required to connect to an HIE. The costs to acquire and implement health information technology can be expensive and resource intensive (see consideration number 3).

The HIEA has researched alternative data connection methods for certain health care provider groups, which could inevitably ease the submission to and consumption of data from NC HealthConnex. These data connections alternatives include, but are not limited to:

- **Direct messaging**

Providers have access to DSM in their day-to-day activities and clinical workflows. Meaningful Use has encouraged the use of DSM for transitions of care, and MU-certified EHRs can produce a C-CDA. NC HealthConnex provides DSM at no cost. DSM can be directly integrated into EHRs, but usually requires manual steps to construct an outbound message to another provider (or HIE) and variability exists in how EHRs produce C-CDAs. The state sees value in using DSM to enable providers who see a very small population of state-funded patients, where the cost of integration with NC HealthConnex outweighs the burden of manual intervention in the sending or receiving of clinical documents via DSM.

¹⁶ McCrary, Laura, et al. "HIE Data: Value Proposition for Payers and Providers." HIMSS18: Education Sessions. HIMSS18, 6 Mar. 2018, Las Vegas, Nevada.

- **Hybrid approaches**

Through market research and vendor engagement, NC HealthConnex has discovered technology vendors that provide connection services using a combination of approaches to bridge gaps in technical capabilities of some EHR vendors and/or providers. Hybrid approaches reduce, if not remove overhead costs associated with supporting traditional connections where vendors may not be technically capable of or are unwilling to connect to NC HealthConnex. NC HIEA recognizes great potential for these approaches and is working to evaluate potential partners to emulate an end-user to extract C-CDAs.

- **Fast Healthcare Interoperability Resources**

FHIR is a draft standard created by the HL7 that uses data formats and APIs to facilitate medical data sharing. It is a secure way for health care applications to directly exchange data “resources” with each other via a common framework, using tools that are readily available to developers.

The health care market has received FHIR positively. However, the market requires more time and experience to mature the technology and better understand how to leverage within the medical data and clinical workflow. NC HealthConnex is working to establish a roadmap to use FHIR-based integrations and APIs to overcome interoperability barriers.

- **Use of a secure “dropbox”**

Some HIE infrastructure providers support the use of a secure dropbox for the inbound transport of clinical data to an HIE. This dropbox is represented as a simple widget on a clinician’s desktop and its use can be as simple and intuitive as dragging a file into a folder or directory. Though conceptually useful, much like direct messaging as a transport mechanism for C-CDAs, this approach relies on the manual extraction of C-CDAs from a MU-certified EHR. As such, dropbox use is envisioned for very specific situations where alternatives like direct connections or delivery of C-CDAs via DSM is not possible. NC HealthConnex views this approach as viable, but not preferred.

- **Batch files**

NC HIEA is actively evaluating support for batch extracts from custom EHRs via focused prototyping efforts, wherein a flat file is mapped to the NC HealthConnex data target. This method is labor intensive, but removes the need for the participant or EHR

to make the uplift to HL7 or C-CDAs in order to meet the legislative mandate. The purpose is to remove complications associated with modern interoperability and connection methods, but batch files create many challenges. Custom workflows, custom database structures, and varying skill levels make this process both time-consuming and meticulous. To date, though there has been some reasonable progress with the prototype efforts, NC HealthConnex does not foresee use of batch interfaces as a viable connection strategy moving forward. Therefore, NC HIEA recommends batch interfaces be considered only on a case-by-case basis.

- **Alternatives to clinical documents for some providers**

In some provider groupings, where there are existing networks which facilitate the capture and exchange of information, further collaboration and work is needed in identifying and developing alternative mechanisms for exchange. For example, the pharmacy community's use of the PDMP and/or CSRS network could provide an option for the availability and exchange of data without the need to incur additional technologies beyond integration of these services with NC HealthConnex.

The state recognizes some health care providers most likely will never adopt and use an electronic health record largely in part because the nature of their service delivery does not require one (e.g., durable medical equipment). However, all health care providers in North Carolina must submit claims data in a specific format, as required by federal HIPAA and state laws, to be reimbursed (referred to as CMS-837). Claims data is widely available and captures limited, high-level clinical information. Therefore, claims data has traditionally been the most available source of information. The challenges with claims data is latency and lack of clinical details (e.g., observations, lab values, provider notes).

As part of the feasibility study, the HIEA worked with DHHS to investigate the feasibility of using the encounter information contained in the claim for certain provider types and encapsulate this information into a CCD so that it would be available as a clinical event in NC HealthConnex. CCD encapsulation solutions can be implemented in several ways – batch push and on demand. These solutions vary in cost with implementation estimated at \$450,000-\$600,000 and annual operations and maintenance of \$600,000-\$800,000 depending on the number of sources and configuration. Several other states are working to encapsulate claims, including West Virginia, South Carolina, New Jersey, Wisconsin and Georgia.

Georgia provided additional detail on the work they are doing to encapsulate the claim to a CCD. The Georgia Health Information Network (GaHIN) has worked with its

technology vendor to build functionality to allow pharmacy, dental, and health claims data to be converted into clinical information shared alongside other information the HIE has on the patient. Initial feedback on the utility of the CCD encapsulated claims was low because they did not contain a lot of pertinent information for the clinician.

In some cases, pharmacy claims data is reported through a payer claims-based data reporting system. In Wisconsin, the state Medicaid Office provides pharmacy data extracts twice daily to the Wisconsin HIE for incorporation into medication history.

There are several limitations to the claims data, both in clinical content and timing, which adversely affect the overall quality of the incoming data. These limitations should be clearly understood, as they are only mitigated through supplemental connections.

Conclusion

The key to achieving North Carolina's vision of connected health care communities will be the need for continued support and engagement by the N.C. General Assembly, state agencies, health plans, health systems, and physician stakeholder groups through collaborative and meaningful dialogue and practical solutions to support a simplified and consolidated approach to data sharing in North Carolina.

As part of its preparation for future growth, the HIEA has formed a Use Case Work Group to support use case ideation and to help define the priorities for potential adoption of such use cases. "Defined use cases give providers a better understanding of the value of information sharing to their specific business unit from both a process and resource perspective and allow for greater control over the management of information exchange."¹⁷

In addition to the support of key stakeholders for continued commitment, it is imperative that the HIEA begin to break down the barriers outlined in this study and take a measured approach to continue to mature the infrastructure and onboard additional providers to NC HealthConnex.

It is for these reasons, our agencies jointly propose the following recommendations for consideration to the Joint Legislative Oversight Committees of Health and Human Services and Information Technology.

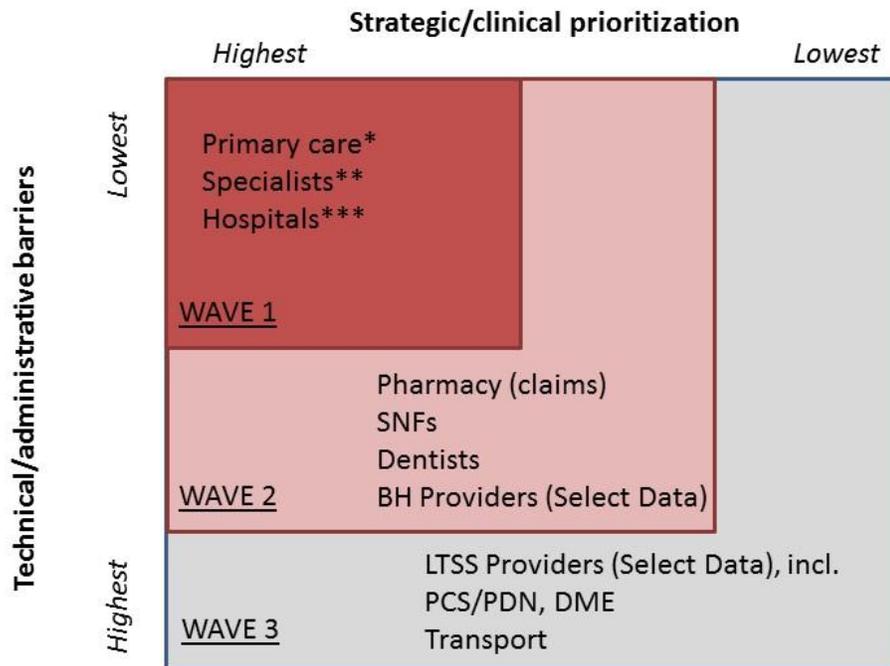
¹⁷ NGA, "Getting the Right Information [...]," at 34.

Recommendations

1. The NC HIEA, DHHS and SHP should continue working together to evaluate provider technology gaps to determine funding needs and identify connection shortfalls associated with funding issues.
2. The NC HIEA, DHHS and SHP recommend that these agencies be authorized to create and execute a prioritized implementation schedule by provider type that considers strategic/clinical and technical/administrative criteria.

Strategic/clinical and technical/administrative criteria. This would require legislative change. The implementation schedule will use the following draft high-level method to prioritize provider connections:

Prioritizing Provider Participation in the HIE



*Includes adult and pediatric PCPs (Family med, internists, FQHCs, Rural health clinics, local health departments, OBGYN)

**Includes allergy/immunology, anesthesiology, cardiology, dermatology, endocrinology, ENR/otolaryngology, gastroenterology, general surgery, hematology/oncology, nephrology, neurology, ophthalmology, orthopedic surgery, pain management, psychiatry, pulmonology, radiology, urology

***Includes medical and psychiatric (private and state-owned) hospitals, including Psychiatric Residential Treatment Facilities

Wave 1 (maintain current statutory timeline)– Health care organizations or providers with the highest strategic importance and lowest technical barriers of participation.

Wave 2 (delay until at least 2020 unless otherwise noted in legislation) – Health care organizations or providers with medium-to-high strategic importance that either have technical barriers of participation or present technical challenges to HIE Network participation.

- E.g., Behavioral health providers significantly lag in EHR adoption without a clear path to financing an EHR implementation.
- E.g., Pharmacy data has high strategic importance but technical barriers exist on how to use pharmacy claims data in conjunction with clinical data.

Wave 3 (delay indefinitely) – Health care organizations or providers with less strategic importance and high barriers to participation (e.g., LTSS providers, durable medical equipment, etc.).

- 3. The NC HIEA, DHHS and SHP recommend a delay in the encounter date requirement until one-three years after the conversion to Medicaid managed care.** The current statute requires that the HIE receive encounter data from health plans as of the date of Medicaid managed care go-live. However, there are several factors that support delaying the encounter data requirement, such as stabilization of managed care implementation, improvements in quality of encounter data associated with managed care transition, reduction of administrative burden for health plans transmitting the same data to multiple government entities, and the opportunity to identify coordination opportunities with DHHS in meeting this requirement.