State of North Carolina Department of Health and Human Services

Division of Health Benefits (NC Medicaid)

North Carolina State Medicaid

Health Information Technology Plan

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CMS Comments Addressed

The following is provided in response to the 2021 CMS approval letter.

CMS Comment	Description/Response/Clarification
Section D: The State's Audit Strategy CMS recommends the state's comprehensive audit strategy be saved and submitted as a separate, stand-alone document. The state's audit strategy will go through a separate review and approval process and it should NOT be made public with the rest of the SMHP.	The state has a separate, stand-alone audit strategy that has not been made public with the rest of the SMHP. The most recent audit strategy was approved through FFY 23 on June 30, 2021.

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NC Medicaid Health Information Technology Plan Overview

Executive Summary

This final State Medicaid Health Information Technology (HIT) Plan (SMHP) provides an overview of North Carolina HIT initiatives in 2021 and asseses the impact of Health Information Technology for Economic and Clinical Health (HITECH) as North Carolina looks to the future of health IT in our state.

Section A includes the final environmental scan and details North Carolina HIT initiatives across the state.

Section B details HIT initiatives including programs through the NC Area Health Education Centers (AHEC) and NC Office of Rural Health (ORH). This section also contains background on the state's goals in alignment with the NC Health Information Exchange Authority (NC HIEA), which operates the state-designated health information exchange (HIE), NC HealthConnex.

Section C describes programmatic and technological milestones and highlights from NC Department of Health and Human Services' (NC DHHS), Division of Health Benefits' (NC Medicaid) Medicaid Electronic Health Record (EHR) Incentive Program (the Program) authorized under Section 4201 of the American Recovery and Reinvestment Act of 2009 (ARRA). NC DHHS made an early and significant investment in this Program, distributing the first incentive payments to providers in March 2011.

Finally, Section D addresses the state's HIT Roadmap and includes HIT milestones and highlights from 2011-2022.

This final SMHP provides an overview of the activities that have led to the progress that North Carolina has made to provide a more efficient, more effective healthcare system and healthier population in our state. The SMHP has been an important component of how NC DHHS strives to achieve its mission, "In collaboration with our partners, DHHS provides essential services to improve the health, safety and well-being of all North Carolinians."

Role of Medicaid in State HIT and HIE Coordination

In response to the opportunities and requirements for developing and overseeing health IT activities in the state including the NC Medicaid EHR Incentive Program, North Carolina Medicaid has adopted a multi-level planning strategy that simultaneously addresses: (1) the internal needs of NC Medicaid; (2) coordination across North Carolina government agencies; and (3) cooperation with public-private efforts. This organizational structure is graphically depicted below in **Figure 1**.

Figure 1 - North Carolina HIT Organizational Structure

NC DHHS Medicaid Information Technology Architecture (MITA) and HIT Coordination Activities

The initiative to reform the state's Medicaid Program is in the plan development and implementation phases. Medicaid Managed Care transformation efforts and options includes Standard Plans, Tribal Option Planand Behavioral Health I/DD Tailored Plans. The MITA team is currently working on requirements and developing architecture for NC Medicaid's Managed Care launch.

The agency's goal is to continue to adopt and use national standards and increasingly share data to improve access to health care information for stakeholders. The agency will continue to promote collaboration and coordination of health care service delivery among all state agencies, statewide data sharing, and adoption of reusable business services. In five years, the agency wants to be further able to concentrate on its core competencies due to a lessened burden from administrative operations.

Interagency Coordination

Per the *Session Law (SL) 2009-0451* of the NC General Assembly, NC DHHS, in cooperation with the State Chief Information Officer (SCIO), coordinates HIT policies and programs within the state. NC DHHS' goal is to avoid duplication of efforts and to ensure that each entity undertaking HIT activities leverages its greatest expertise and technical capabilities in a manner that supports state and national goals.

This law also stipulates that NC DHHS shall establish and direct a HIT management structure that is efficient and transparent and that is compatible with the Office of the National Coordinator (ONC) governance mechanism. NC DHHS was further directed to provide reports on the status of HIT efforts to the Senate Appropriations Committee on Health and Human Services, the House of Representatives Appropriations Subcommittee on Health and Human Services, and the Fiscal Research Division, and establish an Office of Health Information Technology (OHIT). From

May 2013 until April 2014, NC OHIT was 100 percent vacant. An NC OHIT director was hired April 2014 and served through July 2016. NC OHIT was vacant from July 2016 through July 2017 when a new Director of Health Information Technology was hired.

North Carolina convened the state's healthcare leaders and HIT and HIE stakeholder communities through multiple forums from 2009-2010. Those efforts resulted in the decision to establish the NC HIE, a public-private partnership to govern statewide HIE services in North Carolina. Since this time, the statewide health information exchange has gone through two major governance transitions. In December 2012, North Carolina Community Care Networks' (N3CN) board decided to acquire the NC HIE as a subsidiary. In October 2015, the NC General Assembly passed NC Session Law 2015-241 Section 12A.5, as amended by NC Session Law 2015-264, which transferred the statewide HIE network from the Community Care of North Carolina (CCNC)/N3CN structure to a new state agency under the SCIO called the NC Health Information Exchange Authority (HIEA), effective February 29, 2016. The new legislation provides for significant state funding to the statewide HIE network, now called NC HealthConnex. NC Session Law 2017-57 requires hospitals, physicians, physician assistants, and nurse practitioners that have an EHR system and rendered services paid for with Medicaid or other State-funded health care funds be connected to the HIE and begin submitting demographic and clinical data by June 1, 2018.

All other providers of Medicaid and State-funded health care services must submit demographic and clinical data by June 1, 2019. LMEs/MCOs must submit encounter and claims data as appropriate by June 1, 2020. The deadline was further amended by NC Session Law 2018-41 to require dentists and ambulatory surgical centers to submit demographic and clinical data by June 1, 2021, and pharmacies to submit claims data by June 1, 2021. All health care providers who receive state funds (e.g., Medicaid, NC Health Choice, State Health Plan, etc.) for the provision of health care services must connect to NC HealthConnex to continue to receive payments for services provided, with the exception of voluntary provider groups outlined in House Bill 70 (N.C. Session Law 2019-23). In response to the COVID-19 pandemic, the COVID-19 Recovery Act (NCSL 2020-3) extended the deadlines for certain provider groups. More information on statewide HIE efforts and Medicaid coordination can be found in *Section A.6 Health Information Exchange* and *Section B.2 Advancing the Objectives of HIE.*

NC Session Law 2021-26 extends the NC HealthConnex connection deadline for most providers of Medicaid and State-funded health care services, and affiliated entities, until January 1, 2023 (previously October 1, 2021); extends the connection deadline for physicians who perform procedures at ambulatory surgical centers, dentists, psychiatrists, and the State Laboratory of Public Health until January 1, 2023 (previously June 1, 2021); and extends the connection deadline for pharmacies and State health care facilities operated under the Secretary of the Department of Health and Human Services (State psychiatric hospitals, developmental centers, alcohol and drug treatment centers, neuro-medical treatment centers, and residential programs) until January 1, 2023 (previously June 1, 2021).

NC Medicaid also collaborates with the NC AHEC to promote the acceleration of adoption and Promoting Interoperability of certified EHR technology (CEHRT) at the practice level.

A. North Carolina's "As-Is" HIT Landscape

A.1 Final Environmental Scan

For the final environmental scan, we used a multi-prong, multi-agency approach to present a more holistic view of how the health IT landscape in our state has been affected since HITECH was introduced 11 years ago.

We narrowed in on the current extent of EHR adoption with a breakdown by EHR type, provider type, including percentage of Medicare and Medicaid providers; how EHRs are being used today versus when they were first introduced; and finally, HIE connectivity and service utilization.

The quantitative data was pulled from our internal MIPS2 database and the Medicaid Truven data warehouse. This longitudinal data has been collected from thousands of Medicaid providers, making our findings much more generalizable than in previous environmental scans. For the MU objective data, we focused on early Stage 1 meaningful use (MU) submissions from Program Year 2013 and compared that to the Stage 3 MU data collected in Program Year 2021. We also used the data collected from previous environmental scans for baseline statistics.

In addition to numerical data, we gathered qualitative data by interviewing four former technical assistance partners from the NC AHEC who worked with more than 380 practices throughout North Carolina during the entirety of the NC Medicaid EHR Incentive Program. They saw first-hand how health IT has changed in North Carolina.

A.1.1 EHR Adoption

A.1.1.1 EHR Type

In the 2012, survey results showed that of the providers who responded, 13 percent had AllScripts, and split at 4 percent, providers reported having eClinicalWorks and Epic. Comparatively, out of the 1,504 2015 edition CEHRT reported through our North Carolina Medicaid Incentive Payment System (NC-MIPS) attestation portal, the breakdown of reported CEHRT by percentage were:

Epic	70.81%
Allscripts	11.44%
nextgen	4.26%
athena	3.92%
eclinicalworks	2.33%
EMR Direct	1.73%
greenway	1.46%
CureMD	1.20%
Others	2.86%

In more recent program years, we received attestations from individual providers and smaller groups, but most attestations were from providers that were affiliated with large healthcare organizations. Of the Program Year 2021 attestations, 25 percent of the paid attestations were submitted by Novant-affiliated providers and 20 percent were submitted by Duke-affiliated providers, which explains the overwhelming percentage of Epic systems being reported.

A.1.1.2 Provider Type

Across the unique Medicaid providers that reported using a 2015 CEHRT, 61 percent of them also saw Medicare patients. This is consistent with our 2010 and 2012 survey findings which showed of the Medicaid providers that responded, 68 percent saw Medicare patients.

Of the 6,181 unique eligible professionals (EP) that participated between 2011 and 2021, the percentage of eligible provider types were:

Physician	62.66%
Nurse Practitioner (NP)	23.48%
Dentist	10.44%
Certified Nurse Midwife (CNM)	2.49%
Physician Assistant (PA)	0.94%

Below is a visual of the representation of the provider types from 2011 through 2021.
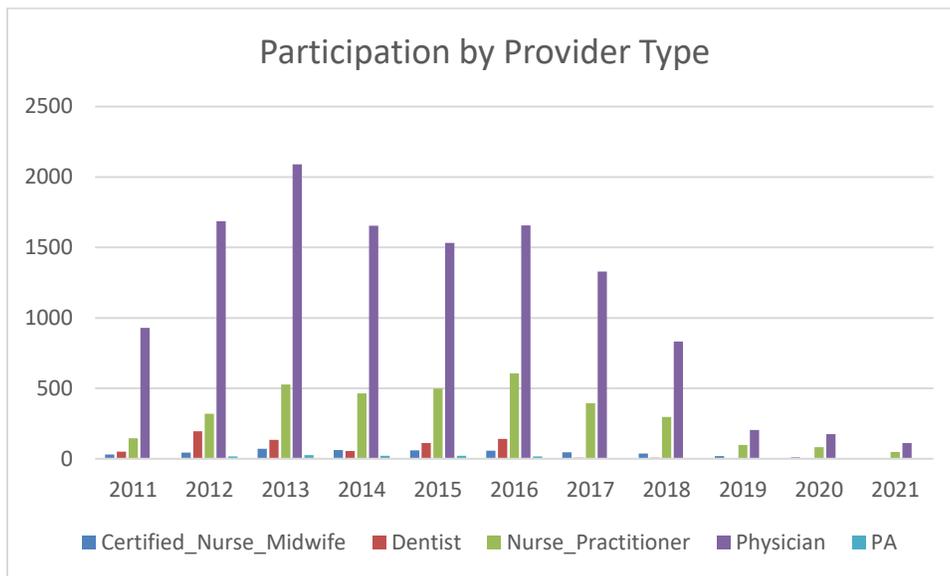
In Program Year 2012, we saw the highest number of dentists (195) submit successful attestations. In Program Year 2013 we saw the highest number of physicians (2,091), CNMs (70) and PAs (26) submit successful attestations. In Program Year 2016 had the higher number of NPs (606) submit successful attestations.

We saw the biggest decline in participation rates among all providers when MU became required in Program Year 2017. Below are the decline rates by provider type from Program Year 2016 to Program Year 2017.

Dentist	95%
PA	76.4%
Nurse Practitioner	34.8%
CNM	20.6%
Physician	19.7%

The NC AHEC said one reason for this decline was the inability for providers to meet certain MU objectives. One such objective was the patient education objective. They explained this objective was particularly challenging since it required the patient to engage with the technology, which was outside of the provider's control.

The decline in dentist participation was expected. When first released, dentists voiced their concerns that MU objectives were not crafted toward dental practices, making it difficult for them to participate after adopt, implement, upgrade (AIU) attestations were no longer accepted.

A.1.1.3 Use of EHRs

Before HITECH programs and initiatives, the NC AHEC coaches explained that EHR adoption was minimal across the state. One AHEC coach specified that when MU was first introduced, roughly 20 percent of the practices she was working with had an EHR but used their systems primarily for billing and still relied heavily on paper records.

In our 2010 survey, of the providers that responded, 21 percent did not have an EHR and 49 percent used part electronic and part paper health records in their practice. When asked why they weren't adopting EHRs, providers indicated lack of capital was a major barrier, but another reason was the lack of trust.

The NC AHEC coaches explained that NC providers did not trust that data would be protected, they didn't trust their data would be accurate, and they didn't trust that data would be safely retained in the EHR. As providers continued to use their EHRs, the level of trust increased. Providers began utilizing the tools available through the EHR, particularly around electronic prescribing, improving population health through clinical decision support tools, and patient communication and education.

EHR adoption increased steadily throughout the nation, as ONC's 2017 survey showed. According to the survey, "nearly 9 in 10 (86%) of office-based physicians had adopted any EHR." And North Carolina was no exception. In 2018, the state surveyed NC Health Information Exchange Authority's EHR vendor community and of those that responded, 80 percent of those vendors reported having an NC customer base between 1 and 500, with 90 percent of those vendors servicing practices ranging in size between 1-999 providers.

Electronic prescribing

Across the board, the NC AHEC indicated that electronic prescribing (e-prescribing) was one of the first tools that showed providers EHRs had the potential to be a resource, not a burden. Incentives to get providers to e-prescribe, in conjunction with companies like Surescripts providing medication history to providers, and pharmacies adopting the technology necessary to accept electronic prescriptions, have made e-prescribing a norm in today's practices, whereas faxed prescriptions dominated the landscape in 2010.

Our data shows that the e-prescribing objective had consistently high thresholds across providers. In Program Year 2013, of the 1,749 providers that attested to the eRx objective, the average threshold of permissible prescriptions written by the EP that were transmitted electronically using CEHRT was 87.7 percent. In Program Year 2021, of the 136 providers that attested to that objective, the average threshold was 97.7 percent.

Clinical Decision Support

One area where EHRs have made a big impact has been its proven ability to analyze data and facilitate healthcare decisions within a practice. The MU objective around clincical decision support (CDS) has remained one of the most attested to objectives among providers with the highest average threshold across program years. Our data shows CDS tools have been, and continue to be, part of the clinician's workstream.

In Program Year 2013, every single provider attested they had implemented at least one CDS. In Program Year 2021 all but one provider had attested that they had implemented five CDS interventions related to four or more clinical quality measures (CQMs) at a relevant point in patient care for the entire EHR reporting period. Providers are taking advantage of CDS tools to facilitate healthcare decisions and close gaps in patient care to enhance individual care and population health.

Communication with patients

With an average threshold of 82.79 percent, providing clinical summaries to patients had the lowest threshold for a Stage 1 MU objective among providers in Program Year 2013. Compare that to a similar Stage 3 objective, patient electronic access to health information, which saw an average threshold of 94 percent in Program Year 2021.

Patient portals and direct secure messaging have become an increasingly used feature of EHRs and HIEs over the years. A 2020 report from NC HIEA showed that monthly direct secure message (DSM) exchange in NC HealthConnex increased from 47,000 DSMs exchanged in 2018 to 416,000 DSMs exchanged in 2020. The NC AHEC said a possible reason for the increased use of communicating through patient portals and DSM was that providers found that means of communication arguably more accurate than a phone call or handwritten note.

Communicating through EHRs and patient portals does require a level of trust, both by the provider and the patient. Time and education have proven to break down some of the barriers that were present at the beginning of the program when EHR messaging services were unfamiliar and largely untested.

A.1.2 HIE Connectivity and Service Utilization

EHRs have been the catalyst for capturing semi-structured and standardized patient data across practices, but there is still variance among systems. In their 2021 roadmap, the NC HIEA specified that there are more than 150 disparate systems being used by North Carolina providers. NC HealthConnex is breaking down information silos and creating the mechanism for North Carolina providers to seamlessly exchange health information.

Through extensive outreach efforts and state mandates, there has been a surge in the number of Medicaid providers that are connected to NC HealthConnex. An estimated 22 percent of Medicaid providers were connected to NC HealthConnex in August 2020 and as of September 2021, 79 percent of the Medicaid population is not only connected, but actively exchanging data with NC HealthConnex.

With this increased participation, NC HealthConnex has seen tremendous growth in the data received and exchanged, with total patient records increasing 40 percent per year since 2017.

As more providers are onboarded and trained on the service offerings of NC HealthConnex, with the help of partners like the NC AHEC, the NC HIEA continues to experience a rise in the use of its services. For example, between 2018 and 2020, HIE Brokered Data Exchange saw the monthly traffic with eHealth Partners increase from zero documents sent and 345 documents received in 2018, to 868 documents sent and 214,683 documents received in 2020. NC*Notify, a relatively new service that alerts subscribers of significant insights into patients' health care activity across the care continuum, distributed 519,000+ alerts to subscribers in December 2020 and as of November 2021, distributed over 4M alerts per month to subscribers.

The NC AHEC coaches agreed that there are still hurdles to overcome, but ultimately providers want increased interoperability and believe health information exchange is the future of health IT in our state.

A.1.3 Final Thoughts

It should be noted that while EHR vendors have implemented helpful tools, the NC AHEC mentioned that EHR vendors aren't developing systems to necessarily meet all provider needs. Rather, they created systems to fit into the needs of regulatory reporting, so features have not been as well developed as they could be to meet the expanding needs of providers.

Overall, while there have been some growing pains as providers learned how best to use EHRs and HIEs, North Carolina providers and their care teams have pivoted and have learned how to use these technologies to better

serve their patients. EHRs provide data so providers can more holistically treat their patients, provide alerts for personalized care and the technology necessary for providers to quickly adapt to ever-changing healthcare needs.

There is more work to be done to advance the future of health IT in our state through systems like NC HealthConnex, but our data shows that health IT has woven its way into North Carolina practices over the past 11 years and has positively impacted how healthcare is delivered in our state.

A.2 Broadband Survey

On June 21, 2016, the NC Department of Information Technology's Broadband Infrastructure Office (BroadbandIO) released the NC State Broadband Plan. The BroadbandIO surveyed 3,500 local leaders and gathered feedback from more than a dozen stakeholder listening sessions and discussions with nearly 80 subject matter experts. The two common themes that emerged from their research were active and engaged communities and their partnerships with private sector internet service providers are the biggest factors in bridging existing digital divides. Therefore, the plan's recommendations encourage communities to be active participants in the development process. The plan also looks at ways to enable new health care technologies and provide the necessary tools to public safety responders to ensure North Carolinians' safety.

The most recent update of the NC State Broadband Plan, released in 2017, included seven recommendations specific to broadband and telehealth:
1) Better leverage the Healthcare Connect Fund
2) Create telehealth best practices for healthcare providers
3) Broadband to all healthcare facilities
4) Healthcare providers market low-cost options for broadband in patients' homes
5) Remote monitoring pilots
6) Medical reimbursements for broadband service
7) Develop public-private partnerships to increase infiltration of telehealth services into the healthcare system

For more information, the full plan (2017 updated version) is available at https://www.ncbroadband.gov/media/20/open.

Broadband Survey Dashboards

The North Carolina Broadband Survey Dashboards are designed to present information on broadband availability and adoption that has been gathered from households and businesses across the state through the North Carolina Broadband Survey.

The dashboards are updated daily with new data and include several resources: a map with location-based results, a dashboard for visualizing survey results, information on methodology, field descriptions and other documentation. Data is organized at the county level and does not contain specific address points.

The dashboards were created collaboratively by the Broadband Infrastructure Office, the N.C. Center for Geographic Information and Analysis and the Friday Institute for Educational Innovation at North Carolina State University.

For more information, visit https://www.ncbroadband.gov/broadband-nc/broadband-survey/broadband-survey-dashboards.

The [NC Broadband Map](#) is an open-source, interactive GIS (Geographic Information System) map that is intended to display where broadband is available as well as to identify unserved and underserved areas of the state, by census block or street segment. The map outlines what types of broadband technologies – including DSL, cable, mobile wireless, fixed wireless and fiber – are available to households statewide and which companies are offering these services. Users can query information by plugging in a street address or selecting a specific technology type.

To use the NC Broadband Map (updated most recently with 2019 FCC-reported data), visit https://www.ncbroadband.gov/map/.

In November 2020, the Broadband Infrastructure Office (BIO) and NC Office of Rural Health (ORH), were awarded a POWER Implementation grant of $1.1 million to address disparities in 29 Appalachian Regional Commission (ARC) designated counties. The goals of this grant project are:

1. To ensure all workers in North Carolina's coal-impacted communities have access to the healthcare they need to thrive and contribute to their community, workplace, and local economy, and
2. To increase broadband adoption, digital and health literacy, and computer ownership among workers at pilot sites in three target coal-impacted counties so these workers can continue to advance their technical skills and training, actively engage in their own wellness and their productivity in the workplace.

These goals are designed to address the primary needs found in a year-long feasibility study the project partners completed with support from an ARC POWER Technical Assistance award. The feasibility study goal was to identify the broadband and healthcare opportunities, challenges, and gaps in the NC ARC region and investigate where the implementation of telehealth services could bridge healthcare gaps. The study produced seven findings and recommendations being addressed with the implementation grant. ORH has teamed up with three pilot sites (county jail, substance use disorder patients in a MAT program, and currently employed or job seeking citizens of Macon County) to roll out telehealth (remote patient monitoring), develop a robust technical assistance model and support protocol.

The implementation project, currently underway, has produced a telehealth playbook and telehealth technical assistance training, and will produce a digital and health literacy program and curricula that is available to the health care sites of the SafetyNet. This grant will conclude November 2022.

A.3 Federally Qualified Health Centers and HIT/HIE

The North Carolina Community Health Center Association (NCCHCA) was formed in 1978 by the leadership of community health centers, NCCHCA is comprised of membership from 42 health center grantees (including one migrant voucher program and two Look-Alike organizations). NCCHCA is singularly focused on the success of health centers. NCCHCA also seeks support from foundations, corporations, and other private entities to increase the access of primary healthcare to all North Carolinians. In addition, NCCHCA helps communities to create new health centers or expand existing ones.

NCCHCA is the Health Resources and Services Administration (HRSA) funded state **Primary Care Association (PCA)**. The non-profit, consumer-governed Federally Qualified Health Centers (FQHCs) we represent provide integrated medical, dental, pharmacy, behavioral health, and enabling services to nearly one-half million patients in North Carolina. FQHCs receive federal assistance to provide sliding-fee services to assure no one is denied access to care. NCCHCA represents FQHCs to state and federal officials and provides training and

technical assistance on clinical, operational, financial, administrative, and governance issues.

NCCHCA also operates the **HRSA Health Center Controlled Network (HCCN)** program. Through the HCCN program, , we support community health centers across NC working together to use HIT to improve operational and clinical practices. The HCCN is comprised of 35 participating health centers and is currently in the third three-year funding cycle. The HCCN provides its members with training and technical assistance, data analytics and population management solutions, and Health Information Exchange connectivity to improve cost, quality, and outcomes of care. Participants have the opportunity to access a shared data analytics platform, receive support towards optimizing their health IT solutions and strengthening their data protection efforts, in addition to participating in peer learning opportunities.

NCCHCA is the sponsor and managing partner of **Carolina Medical Home Network (CMHN) -** which is a FQHC owned and led clinically integrated network that is comprised of 25 NC health centers collaborating to leverage their size, scope and coordinated performance improvement in third-party payer negotiations. CMHN is a delegated Advanced Medical Home Tier 3 care management provider utilizing a data and analytics HIT platform for care management and population health.

Additionally, NCCHCA has been an active stakeholder and advocate in the continued development of the state-designated HIE, NC HealthConnex, with a seat on the legislatively-appointed Advisory Board reserved for a representative of an FQHC. Currently, we have 22 FQHC organizations equaling a total of 155 facilities live and participating in the exchange and notification services as well as three additional FQHC organizations equaling a total of seventy-two facilities in the onboarding queue statewide.

NCCHCA's MISSION
To promote and support patient-governed community health care organizations and the populations they serve.

NCCHCA's VISION
Every North Carolina community will have access to a patient-centered, patient-governed, culturally competent health care home that integrates high quality medical, pharmacy, dental, vision, behavioral health, and enabling services without regard to a person's ability to pay.

CMHN's MISSION
To promote high-value care and health equity through personalized, coordinated delivery of data-driven healthcare services.

CMHN's VISION
To be a leading healthcare network creating value to all stakeholders through collaborative, person-centered, community healthcare.

For more information, visit https://www.ncchca.org/.

A.4 Veterans Administration and Indian Health Service EHR Program

Veterans Administration

In the early days of the HITECH Act, ONC requested that the North Carolina Healthcare Information & Communications Alliance, Inc. (NCHICA) implement the Nationwide Health Information Network (NwHIN) to serve as a compliant gateway for a mature Health Information Organization (HIO) in North Carolina. The Western North

Carolina Health Network (WNCHN) served as the HIO and the Asheville Veterans' Affairs (VA) Medical Center served as the primary partner in this project. The Asheville VA Medical Center provides care to approximately 100,000 veterans from Western North Carolina, upstate South Carolina and northern Georgia, with many of those individuals treated at WNCHN facilities.

The project was completed in September 2011, and the Asheville VA Medical Center became an early participant in the NwHIN, now called the nationwide eHealth Exchange.

NC HIE had a series of discussions with VA and *VistA* representatives in 2013-2014 and concluded that the best path for collaboration going forward would be via each organization's connection to the nationwide eHealth Exchange. The NC HIEA maintains this plan to facilitate exchange between NC's VA facilities and other public and private healthcare institutions via the link to eHealth Exchange. The VA's HIE, VHIE, went live with NC HealthConnex to exchange patient records via the eHealth Exchange in April 2018. As of April 2021, the NC HealthConnex is live, exchanging data with the joint federal HIE that includes health information from the VA and the DoD over the eHealth Exchange.

Table 1 below lists the hospitals and clinics operated by the VA in North Carolina as of May 2021. VA facilities use various versions of the VA-standard EHR system, *VistA.*

VA Medical Center	
Asheville:	[Asheville VA Medical Center](#)
Durham:	[Durham VA Medical Center](#)
Fayetteville:	[Fayetteville VA Medical Center](#)
Salisbury:	[Salisbury - W.G. (Bill) Hefner VA Medical Center](#)
Outpatient Clinic	
Fayetteville:	[Fayetteville Dialysis Clinic](#)
Fayetteville:	[Fayetteville Health Care Center](#)
Fayetteville:	[Fayetteville Rehabilitation Clinic](#)
Greenville:	[Greenville Health Care Center](#)
Hickory:	[Hickory CBOC](#)
Raleigh:	[Blind Rehabilitation Outpatient Clinic](#)
Raleigh:	[Brier Creek Dialysis Clinic](#)

Community Based Outpatient Clinic	
Charlotte:	Charlotte CBOC
Charlotte:	Charlotte Health Care Center
Durham:	Durham Clinic
Durham:	Hillandale Road Outpatient Clinics 1 & II
Elizabeth City:	Albemarle Primary OPC
Franklin:	Franklin CBOC
Goldsboro:	Goldsboro Community Based Outpatient Clinic
Hamlet:	Hamlet CBOC
Jacksonville:	Jacksonville CBOC
Kernersville:	Kernersville Health Care Center
Morehead City:	Morehead City CBOC
Pembroke:	Robeson County CBOC
Raleigh:	Raleigh CBOC
Raleigh:	Raleigh II CBOC
Raleigh:	Raleigh III CBOC
Raleigh:	Raleigh III Clinic
Rutherfordton:	Rutherford County CBOC
Sanford:	Sanford CBOC
Supply:	Brunswick County

Wilmington:	[Wilmington HCC](#)
Vet Center	
Charlotte:	[Charlotte Vet Center](#)
Fayetteville:	[Fayetteville Vet Center](#)
Greensboro:	[Greensboro Vet Center](#)
Greenville:	[Greenville, NC Vet Center](#)
Jacksonville:	[Jacksonville Vet Center](#)
Raleigh:	[Raleigh Vet Center](#)
Spindale	[Spindale Outstation](#)
VISN	
Durham:	[VISN 6: VA Mid-Atlantic Health Care Network](#)

Table 1 - [Hospitals and Clinics Operated by the Veterans Administration](#)

The Indian Health Services, Tribal Health Services, and the Cherokee Indian Hospital Authority

The Cherokee Indian Hospital Authority (CIHA) serves more than 14,000 members, including 4,458 Medicaid/ Children's Health Insurance Program (CHIP) enrolled members. The Hospital provides over 18,000 yearly primary care provider visits and accommodates more than 22,000 ER visits per year. They implemented an EHR system— the Resource Patient Management System (RPMS) system—in 1986. The Indian Health Services (HIS) graphical user interface (GUI) was implemented in 2004. The GUI provides the capability to process both administrative and clinical data and provides the IHS Office of IT support, thereby lowering costs and enhancing functionality.

As part of the 2014 CEHRT standard, IHS created a personal health record (PHR) that will assist patients in accessing some of their medical information via a web browser at home or on a mobile device. By using the PHR, patients can view, download, and transmit demographic information, medications, lab results, problems, vital signs, immunizations, and other visit-related information. For more information on the PHR, visit https://cherokeehospital.org/patients/patient-portal/.

Additionally, the CIHA's six facilities, including the hospital, advanced to live status with NC HealthConnex to exchange patient records with other participating health care providers statewide in June 2018. CIHA added a seventh facility in 2019 which is engaged in onboarding to NC HealthConnex. Along with patient records exchange, CIHA receives public health registry reports and real-time patient alerts through NC HealthConnex's NC*Notify service.

For more information on CIHA, visit http://cherokeehospital.org/.

A.5 Stakeholder Involvement

The resources available through ARRA represent not only an unprecedented opportunity to help forge these unique elements into a truly cooperative and aligned system of care but support a substantial body of stakeholders that can drive North Carolina to the needed HIE tipping point. A wide variety of stakeholders may not be direct recipients of ARRA funding, yet they contribute a vast amount of effort and funding so that the state can achieve higher levels of HIT use and will improve the exchange of health information.

Table 2 below lists the major North Carolina activity for which funding was provided through the ARRA legislation, totaling over $200 million.

Grant Funding Opportunity	Grant Lead Agency	Amount of Grant
State HIE Cooperative Agreement	NC HIE	$12.9 Million, $1.7 Million, Supplemental Challenge Grant
Medicaid MU Planning	NC Medicaid	$2.29 Million
Medicaid EHR Incentive Program Administration and incentive payments	NC Medicaid	$104.2 Million
North Carolina Area Health Education Centers (AHEC)'s Regional Extension Center (REC)	NC AHEC Program at the University of North Carolina at Chapel Hill (UNC-CH), with assistance from the Carolinas Center for Medical Excellence (CCME), the North Carolina Medical Society (NCMS), and Community Care of North Carolina (CCNC)	$13.6 million
HIT Workforce Community College Consortia Program (non-degree programs)	Pitt Community College	$21 million
Health IT Curriculum Development	Duke University Center for Health Informatics (DCHI)	$1.8 million
University-Based Training Program (UBT)	Duke University Medical Center and University of North Carolina	$2.1 million
Broadband – BTOP Round 1	MCNC and North Carolina Research and Education Network (NCREN)	$28.2 million

Grant Funding Opportunity	Grant Lead Agency	Amount of Grant
Broadband – BTOP Round 2	MCNC, City of Charlotte, Olive Hill Community Economic Development, WinstonNet, and Yadkin Valley Telephone Membership Corporation	$115 million
Comparative Effectiveness Research: Mental Health Data Integration Project	N3CN, UNC Sheps Center, and DHHS	$991,332

Table 2 - ARRA Funding in North Carolina

A.5.1 State HIE Cooperative Agreement

The State HIE Cooperative Agreement, originally awarded to the NC Health and Wellness Trust Fund Commission, was transferred to a 501(c)(3) organization on December 1, 2010. The 501(c)(3) was more commonly referred to as the NC Health Information Exchange (NC HIE). The NC HIE has since gone through two governance transitions; most recently, on February 29, 2016, the NC HIE was transferred from the Community Care of North Carolina (CCNC) / North Carolina Community Care Networks (N3CN) structure to a new state agency, the North Carolina Health Information Exchange Authority (NC HIEA). More information on the NC HIEA's new HIE guidelines, services, and stakeholder agreements can be found in Section A.6 Health Information Exchange and Section B.2 Advancing the Objectives of HIE.

A.5.2 NC Area Health Education Centers (Regional Extension Center): Practice Support

The NC AHEC Program at the University of North Carolina at Chapel Hill (UNC-CH) was awarded a grant on February 8, 2010 to perform the function of the NC Regional Extension Center (REC). Since this time, the NC AHEC Practice Support program has continued to provide provider-centric services to enable transformed healthcare service delivery and patient-centered care through HIT in NC. Although funding for the program's HIT initiatives transitioned from the ONC HITECH funding on February 6, 2015 to the NC HIT IAPD, the scope and intensity of provider engagement in the EHR Incentive Program and HIE remained constant. The NC AHEC program has continued to build capacity in coaching practices through transformation to prepare for new pay-for-value payment models and stands ready to quickly disseminate technical assistance to its base of 1,094 primary care and subspecialty practices. Since July 1, 2019, through a contract with NC HIEA, AHEC has provided trainings to over 200 organizations on the features and benefits of NC HealthConnex to connected providers. Trainings were conducted live onsite, virtually, and by recorded module. Recorded modules include the following:

- **Module 1**: *NC HealthConnex Overview*
- **Module 2**: *Unpacking the Welcome Packet*
- **Module 3**: *PAA (Participant Account Administrator) Role and Responsibilities*
- **Module 4**: *Clinical Portal Overview*
- **Module 5**: *Direct Secure Messaging Within the NC HealthConnex Clinical Portal*
- **Module 6**: *Patient Education*
- **Module 7**: *NC*Notify*

Since July 1, 2020, AHEC has assisted primary care practices accepting Medicaid to prepare for transition to Medicaid Managed Care. In 2019, AHEC collaborated with the NC Office of Rural Health to assist behavioral health providers in adopting EHRs for which the provider could receive an incentive payment. In response to the pandemic, AHEC assisted practices across the state with rapid adoption of telehealth.

On the national front, NC AHEC completed an (AHRQ) R18 grant to support the use of data in enabling practices to improve cardiovascular health and is currently working with AHRQ to assist practices with improving assessment and follow up for unhealthy drinking. The NC AHEC Program has worked with Alliant Health, the North Carolina Medical Society Foundation (NCMSF), the North Carolina Academy of Family Physicians (NCAFP), Community Care of North Carolina (CCNC), North Carolina Pediatric Society (NCPS), North Carolina Nurses Association (NCNA), North Carolina Academy of Physician Assistants (NCAPA), North Carolina Community Health Center Association (NCCHCA), and the NC Institute for Public Health (IPH) to strengthen the quality and reach of services while minimizing duplication of efforts.

Table 3 below displays the number of practices and providers enrolled in each of the nine AHEC regions across the state as of February 2022.

NC AHEC Practice Support		
Region	Practices	Providers
Area L	47	109
Charlotte	172	299
Eastern	122	254
Greensboro	93	181
Mountain	139	270
Northwest	121	278
South East	189	351
Southern Regional	115	211
Wake	96	94
Total	1094	2047

Table 3 - NC AHEC's Enrolled Practices/Providers

A.5.2.1 NC REC Technical Assistance Team

The NC AHEC Practice Support Coaches (PKA REC staff) provide direct, onsite and local support to primary care and specialty practices in their region. This support includes: assessing the practice; assisting in the selection of the most appropriate EHR system; guidance on system implementation; guidance on security and risk assessments; and guidance on system optimization through meeting Promoting Interoperability (PI) and CMS's Quality Payment Program MIPS program requirements.

The measurement of effectiveness and reach of the NC AHEC HIT efforts in supporting the Medicaid EHR Incentive Program are included in the following program deliverables:

1. Number of practices who receive technical assistance and successfully attest for an incentive payment.
2. Number of eligible professionals (EPs) who receive technical assistance for an incentive payment.

As of March 2021, the number of providers who have successfully met MU since REC inception is over 3,400 with about half of these specific to the Medicaid EHR Incentive Program.

NC AHEC completed a five year data analytics pilot to engage practices in optimizing the data reporting components of the MU and MIPS programs. The purpose of this pilot was to analyze cost data to make it understandable so the practice can use the information to improve cost and quality.Practices from across the state were encouraged to use their QPP MIPS and other cost utilization reports to identify areas for further improvement. Practices enrolled in this project worked with coaches on concrete aspects of care that affect cost and readiness for value-based payment environment. These include increasing Annual Medicare Wellness Visits, implementation and/or increasing use of chronic care management and transitional care management workflows, strengthening tracking process for lab and imaging testing and referrals, care coordination and improving access metrics. Others focused on risk stratification of their patients, empanelment and examining key performance indicators of financial health to identify gaps and areas for improvement. While family and internal medicine practices were the majority, PEP enrollment included several pediatric practices, and specialists including nephrology, ophthalmology, urgent care, health department, obstetrical care and a large safety net FQHC.

A.5.3 Pitt Community College

In March 2010, Pitt Community College was named one of five institutions across the country to lead a regional consortium of community colleges to train thousands of new HIT professionals. Pitt Community College morphed the Workforce Training Program into a Health Information Technology training program with curriculum that provides individuals with the knowledge and skills to process, analyze, abstract, compile, maintain, manage, and report health information. Since 2017, the HIT program is offered totally online with the exception of the professional practice experiences (PPE – also known as clinical practice), which are made available in the student's region through a joint effort facilitated by the student and the HIT faculty.

For more information, visit https://pittcc.edu/academics/academic-programs/health-sciences-division/health-information-technology/.

A.5.4 MCNC (formerly Microelectronics Center of North Carolina)

MCNC is a 501(c)(3) non-profit client-focused technology organization. Founded in 1980, MCNC owns and operates the North Carolina Research and Education Network (NCREN), one of America's longest-running regional research and education networks. With over 40 years of innovation, MCNC provides high-performance services for education, research, libraries, healthcare, public safety, and other community anchor institutions throughout North Carolina. NCREN is the fundamental broadband infrastructure for 850 of these institutions including all public K-20 education in North Carolina. As one of the nation's premier middle-mile fiber networks, MCNC leverages NCREN to customize Internet services and related applications for each client while supporting private service providers in bringing cost-efficient connectivity to rural and underserved communities in North Carolina.

MCNC provides network, cybersecurity, and technology services in all 100 counties, with 4,400 fiber optic backbone network infrastructure that meanders throughout the state, giving MCNC the ability, flexibility and the agility to create individualized solutions and services for its community.

Its more than 850 endpoints help to deliver protected broadband connections, cybersecurity, and technology services to millions of students and educators, world-renowned research facilities, government and public safety agencies, non-profit health care sites and other community anchor institutions (CAIs) throughout North Carolina.

MCNC's key partnerships and contracts include:
- The University of North Carolina System Office
  - Providing Internet, DDoS Protection, Cybersecurity, Video Conferencing, and Streaming services to all 17 UNC System Institutions
- North Carolina Department of Information Technology and Department of Public Instruction
  - Providing Internet, DDoS Protection, Cybersecurity, Web Content Filtering, and, Network and Security Consulting service to all 115 Public School Districts, 170 Charter Schools (and growing)
- State of North Carolina Community College System
  - Providing Internet, DDoS Protection, Cybersecurity, DNS Security Filtering, Network and Security Consulting, Desktop and Multi-point Video Conferencing, and Streaming services to all 58 Community Colleges
- North Carolina Telehealth Network Association
  - Opt-In Health Care Connect Fund currently serving 278 health care facilities statewide; MCNC provides the network, Internet Cybersecurity, DDoS Protection and other services.
- North Carolina State Highway Patrol & Public Safety
  - Providing Network Connectivity, Internet, Cybersecurity, DDoS Protection services to 20 "Command" Centers statewide

The advanced networking technologies and systems MCNC employs enable connected CAIs to communicate with their constituents more effectively to meet their specific organization's mission, vision, and goals.

Consequently, MCNC's backbone, NCREN, provides a strong network infrastructure for improving the delivery of health care to citizens by supporting the North Carolina Telehealth Network (NCTN).

In collaboration with the North Carolina Telehealth Network Association (NCTNA), MCNC operates the statewide North Carolina Telehealth Network (NCTN), which supplies the critical broadband infrastructure and cybersecurity services health care providers need to deliver health care services. This dedicated network for public and non-profit health care providers leverages the architecture of MCNC's fiber-optic network, NCREN, and North Carolina Department of Information Technology (NC DIT) to utilize leading-edge broadband technologies and network services that scale to connect customer locations to a resilient fiber backbone.

Key applications running over NCTN include Health Information Exchanges, Electronic Health Records (especially for remote hosting / SaaS models through an Application Service Provider), tele-education, and videoconferencing. Telehealth applications include but are not limited to live medical imaging, echocardiograms, telepsychiatry, orthopedics, intensive care monitoring, CT scans, and storage and forwarding capabilities for MRI radiographs.

To help the state's medical professionals in the non-profit health care arena better serve their constituents through a digital experience with the use of broadband technologies, MCNC provides a fully managed suite of network and cybersecurity services including 24x7x365 Network Operations Center (NOC) and client support. In collaboration with the NC DIT and other private telecom carriers, these services meet or exceed the requirements of the NCTN and help enable MCNC to play a key role in supporting North Carolina's health care broadband technologies transformation.

MCNC is well positioned to provide network infrastructure and cybersecurity services to North Carolina's public safety community. MCNC's collaborative and transparent approach uniquely situates MCNC to provide network

infrastructure and to initiate and participate in diverse conversations and innovations that will be necessary to successfully implement an efficient, powerful, and secure public safety network across the state.

With the expanding use of advanced technology for the delivery of health care and public safety, MCNC recognizes privacy and cyber threats are significant in these areas and must be addressed proactively. To that end, MCNC has developed, Vital Cyber (mcnc.org/vitalcyber), a cybersecurity portfolio that better protects clients from the damaging effects of cyber-attacks.

MCNC has purposefully built a number of internal solutions to strengthen the organization's overall cybersecurity posture. Through a formalized risk management program, these efforts will strengthen vulnerability management with stronger authentication, end-point protection, security monitoring, data encryption, security awareness, and education.

In 2012, MCNC achieved SOC 2 Type I certification. In 2018, MCNC achieved the industry-leading SOC Type II status – and has kept this level of certification since, including the most recent certification in early 2021. SOC 2 Type II level is much more comprehensive and designed for advanced IT service providers as systems are evaluated for a minimum of six months to a year. Organizations that undergo this independent review and achieve this level of certification must meet very stringent requirements that prove its entire system is designed to keep its customers' sensitive data secure.

Accountancy firm Assure Professional performed the rigorous audit of MCNC's organizational security controls and processes. The SOC 2 Type II standard not only defines what controls should be in place, but also verifies that MCNC is appropriately managing security risks and is a trusted partner serious about cybersecurity, data protection, and effective operations.

As modern health care depends more and more on robust, protected high-speed broadband connectivity and cybersecurity to provide better access to diagnose, care, and research the next discovery of cures, MCNC will continue to offer solutions and enhancements that benefit the needs of the health care community and enrich all of the community it serves for years to come.

Corporate Background

Created by then Gov. James B. Hunt, Jr. and the N.C. General Assembly in 1980, MCNC is a private non-profit that builds, owns, and operates the North Carolina Research and Education Network (NCREN) and customizes network, cybersecurity, technology services, and consulting services for its clients.

For over 40 years, a growing number of research, education, non-profit health care, and other community anchor institutions have connected to MCNC's network, NCREN, to utilize this leading-edge broadband highway. Today, the network, NCREN, serves the broadband infrastructure and cybersecurity needs of more than 850 of these institutions including all K-20 public education in North Carolina. The expansion of the network and its capabilities provides MCNC the ability to customize network, cybersecurity, and technology services and applications for each of these connectors in an unprecedented way as MCNC looks to further enable private-sector providers to bring cost-effective broadband infrastructure to rural and underserved areas of North Carolina. MCNC's business and partnering strategy gives North Carolina a competitive advantage in economic development and is driving the new interconnected economy in North Carolina.

For more information, visit https://www.mcnc.org/what-we-do/connecting-north-carolina and https://www.mcnc.org/who-we-serve/healthcare-institutions.

A.5.5 NC Institute of Medicine

The [North Carolina Institute of Medicine](#) (NCIOM) is an independent, quasi-state agency that was chartered by the North Carolina General Assembly in 1983 to provide balanced, nonpartisan information on issues of relevance to the health of North Carolina's population.

The NCIOM convenes task forces, or working groups, of knowledgeable and interested individuals to study complex health issues facing the state to develop workable solutions to address these issues.

The [NCIOM Task Force on Health Care Analytics](#) was convened at the request of the Division of Health Benefits (DHB) at NC DHHS. The Task Force defined and prioritized specific quality improvement measures of health and health care to be used by DHB to drive improvement in population health in North Carolina. The measures encompass physical and behavioral health/ IDD and consider public health and social determinants.

The measures are organized according to the quadruple aim and utilize standardized measurement data, are readily definable and outcomes based, and leverage existing federal and state measures where practical. The task force built on the previous work performed by the NC Medicaid, NC Division of MH/DD/SAS, and others to define and prioritize the measures. It is anticipated that the measures will evolve based on experience and published evidence and will need to be reviewed and updated on a regular basis.

The task force met monthly December 2016 through May 2017. To view the final report, visit http://nciom.org/wp-content/uploads/2017/10/HCA-FINAL-REPORT-2.pdf.

A.5.6 Non-ARRA Funding – The North Carolina Children's Health Insurance Program Reauthorization Act Grant

In February 2010, CMS awarded 10 grants to states to establish and evaluate a national quality system for children's healthcare, which encompasses care provided through the Medicaid program and the Children's Health Insurance Program (CHIP). This grant was funded by the Children's Health Insurance Program Reauthorization Act of 2009 (CHIPRA). The demonstration grant program ran through 2015.

North Carolina, via NC Medicaid and ORH, was awarded $9.2 million to work on three of the five categories of the CHIPRA Quality Demonstration Grant; A, C and D. North Carolina worked with pediatric and family practices within CCNC to build on a strong public-private partnership that has documented successes in quality improvement, efficiency and cost-effectiveness of care for more than 14 years. ORH received this funding from October 1, 2010 through December 21, 2015.

A.5.7 NC Office of Rural Health (ORH)

The NC ORH supports equitable access to health in rural and underserved communities. To achieve its mission, ORH works collaboratively to provide funding, training, and technical assistance for high quality, innovative, accessible, cost effective services that support the maintenance and growth of the State's safety net and rural communities. Since its inception in 1973, ORH has opened 86 community-owned, non-profit Rural Health Centers (RHCs) across the state. As of June 2021, ORH supports:

- 15 state-designated RHCs sites
- 32 Critical Access and Small Rural Hospitals
- 13 Farmworker Health Program grantees, and

- More than 173 other non-profit primary care safety-net organizations with community health grant and/or medication assistance funding and CMS rural health clinics with technical assistance and/or funding
- In State Fiscal Year 2021 (SFY 2021-0) ORH also placed over 80 medical, psychiatric, and/or dental providers in communities throughout the state; and
- Provided oversight for 56 Statewide Telepsychiatry Program (NC-STeP) sites.

North Carolina Office of Rural Health
Service Points and Coverage Map
SFY 2021
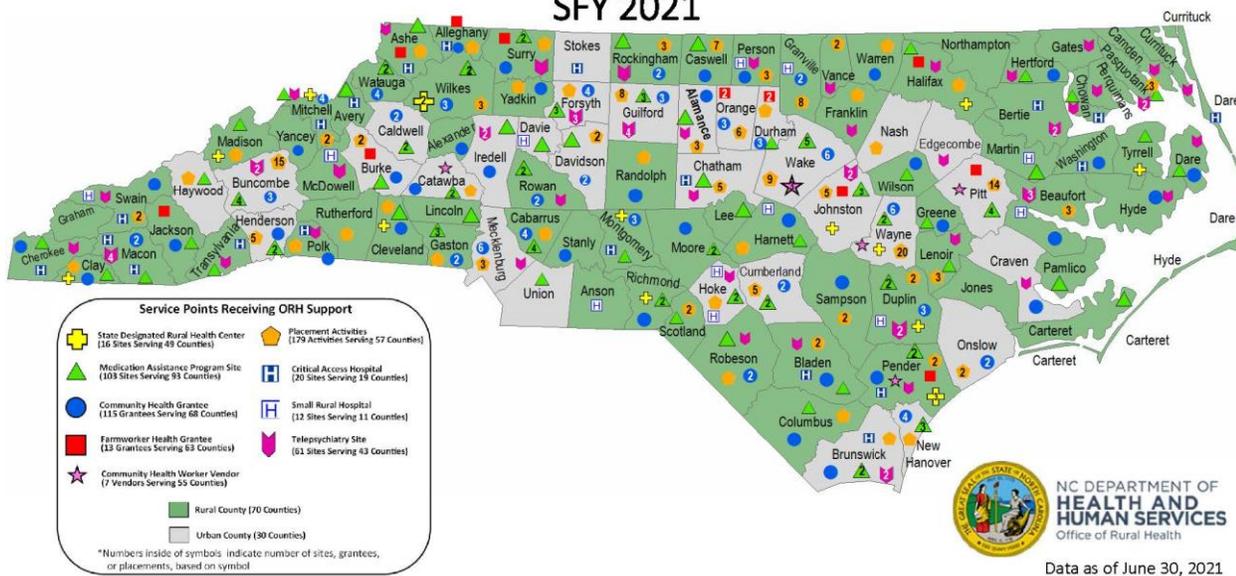
State and federal funding, along with the ORH HIT Program technical assistance, enable communities to provide health care services to uninsured and underinsured North Carolinians and agricultural workers. Twenty Critical Access Hospitals receive funding to encourage the development of innovative approaches to improve care while lowering costs. Additionally, qualifying patients may take advantage of drug companies' free and low-cost drug programs through ORH's statewide Medication Assistance Program.

The provision of cost-efficient health care is increasingly tied to the ability to share timely and complete information among health care providers. In 2015, the NC General Assembly (NC GA) voted to change the direction of the NC HIE and directed NC DIT to establish a new HIE network that would be operated by a new state agency called the NC HIEA. Healthcare providers that receive state funds for the provision of health care must sign a participation agreement with the NC HIEA to submit and access patient data.

NC HealthConnex is a major component of data needed for whole person care and population health. It is critical that safety net providers establish a participation agreement with the NC HIEA and connect to the HIE to continue their eligibility for state funding and to follow the state mandate to connect. Safety net providers utilization of the HIE also aids in reducing health care costs by cutting down on duplicate tests and procedures that may have already been performed by another provider. NC Medicaid and the ORH HIT Team are working together with the NC HIEA to connect NC's safety net providers to NC HealthConnex. Increasingly, these efforts are focused on

health care providers seeking to connect for the first time and providers that need EHR technology to get connected.

North Carolina has become a national leader in safety net HIE connectivity. Since SFY 2018, the ORH HIT Team has led several initiatives related to EHR adoption and HIE connectivity while initiating several funding opportunities which support connectivity.

The ORH HIT Program has the following Projects for SFY 2021:

ORH Health Information Technology (HIT) Program
HIT Team Projects
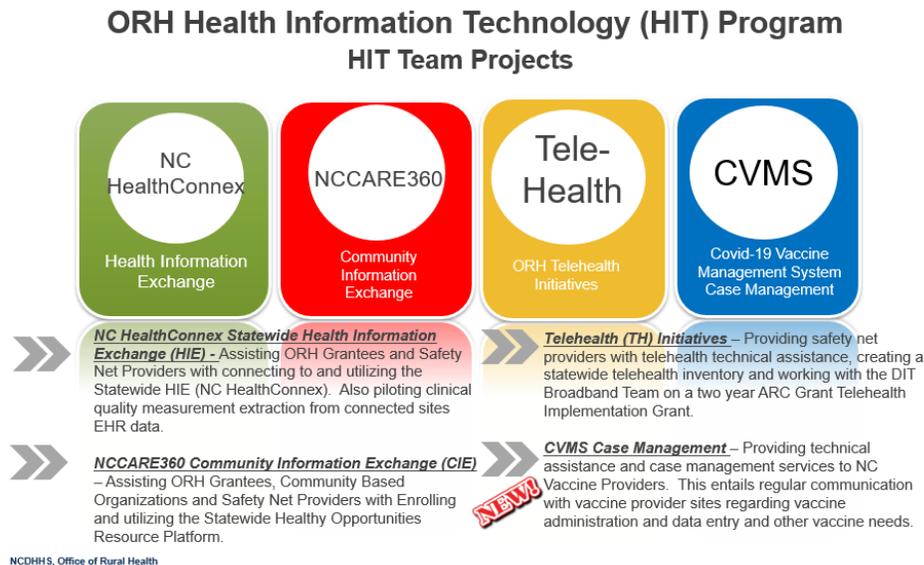
- **NC HealthConnex** - Overall, 99 percent of ORH grantee sites have an Electronic Health Record, 100 percent of ORH grantee sites have a signed HIEA Participation Agreement, and 88 percent have successfully connected to NC HealthConnex. Based on the high HIE connectivity metrics, the team is now focused on HIE value added service adoption. In SFY 2021, 84 percent of ORH grantees were utilizing one of the added value services. This number is expected to grow year over year with the continued support of the HIT team across the SafetyNet.
- **NCCARE360** – The HIT team works with the ORH grantees to ensure they have an understanding of how NCCARE360 works and why it is important to their community. In SFY 2021, ninety-one percent of the ORH grantees the HIT supports were in the process of connecting to NCCARE360. Another NCCARE360 initiative of the HIT team in SFY 21 was to aid in COVID-19 efforts. The HIT Team partnered with ORH's Analytics and Innovations (A&I) Team to support the COVID-19 CHW initiative. This initiative included seven vendors, which supported twenty-three organizations providing isolation and support services to individuals with COVID-related needs across 55 counties. CHWs were required to use NCCARE360 to record and report referrals. However, many of the organizations and individuals were unfamiliar with this platform. While NCCARE360 staff provided basic registration and onboarding, the HIT team worked one-on-one with vendors, Community Based Organizations, and individual CHWs to explain how to enter information, navigate the NCCARE360 platform, extract reports, and gauge progress. The HIT Team worked with the CHW vendors intensively for a little over three months. As the project progressed, the vendors began to struggle with open cases and referrals due to education and the platform's ability to process information. The HIT team began meeting weekly with the CHW vendors to focus work towards closing open cases, especially cases over 1 month old. The intensive technical assistance included data

reports, data analysis, and education on the operation of the platform. Once this intensive technical assistance was paused as the project transitioned, the open cases data increased again proving the HIT team methods.

- **Telehealth** – The telehealth initiatives at ORH are robust. The team works with the SafetyNet providers and Community Paramedicine teams statewide. The team uses outreach and surveys to check in on sites who are using telehealth or have an interest in starting a program. In SFY 2021, 77 percent of ORH grantees implemented a telehealth program most likely due to the pandemic.
- **CVMS-** When COVID-19 vaccines became available in NC, the HIT Team joined several other DHHS team members to provide case management support to Federally Qualified Health Centers, CMS Certified Rural Health Clinics, State Designated Rural Health Centers, Primary Care Providers, and several other vaccine provider groups. In total, the HIT Team assisted 193 providers with their weekly vaccine allocations. The team answered questions, addressed concerns, facilitated vaccine transfers, and ensured providers understood their roles and responsibilities as vaccine providers.   this effort began in February 2021, ORH HIT assisted vaccine providers with approximately 81,000 first dose allocations and identifying where transfers may be needed to ensure first dose vaccine utilization within the vaccine week. The ORH Team (Rural Health Operations and HIT teams) makes up about 29 percent (7/24) of the total DHHS vaccine case management team.
- **RHCs and HIT Projects** - ORH assists underserved rural communities to provide accessible primary medical services for all persons regardless of their ability to pay. To receive financial support, state designated Rural Health Centers (RHCs) must participate in a Medical Access Plan to provide health coverage to low-income (less than 200 percent of poverty), uninsured residents. The ORH HIT Team provides technical assistance to RHCs with Health IT systems and support with connecting to the NC HIE, NC HealthConnex. As of June 2021, 100 percent of the state designated RHCs have an EHR, 100 percent have a signed participation agreement with the HIEA, 92 percent are connected to NC HealthConnex, sending and retrieving patient data. The ORH HIT Team also provides technical assistance with enrolling providers in the statewide coordinated care platform for social determinants of health called NCCARE360, telehealth, and most recently Covid-19 vaccine case management.
- **CHGs and HIT Projects** - ORH's Community Health Grants improve access to health care services for NC's vulnerable (Medicare, Medicaid, underinsured and uninsured) residents through a Request for Application process, wherein non-profit primary care safety-net organizations such as Rural Health Centers, Community Health Centers, local non-profit health centers, free clinics, public health departments, and school-based health centers may apply for funding. The ORH HIT Team also provides Community Health grantees with Health IT technical assistance and getting connected to NC HealthConnex. As of June 2021, 100 percent of Community Health Grant sites have an Electronic Health Record, 100 percent have signed a participation agreement with the HIEA, and 90percent are connected to NC HealthConnex. The ORH HIT Team also provides technical assistance to community health grantees with enrolling in the statewide coordinated care platform for social determinants of health called NCCARE360, telehealth, and most recently Covid-19 vaccine case management.

A.5.8 Other Stakeholder Activities

Academic medical centers, such as Duke University Health System, Vidant Health, University of North Carolina Health System, Wake Forest University Health Sciences, and other major hospital systems such as Atrium Health (formerly Carolinas Healthcare System), Mission Health Systems, Moses H. Cone Memorial Hospital, and WakeMed Health have invested in improving the capabilities of their integrated delivery networks (IDNs). They have created or are enhancing the medical coordination and quality monitoring functionality of their IDN systems' environments. This includes more data sharing, integration and communications capabilities of the main hospital

systems with EHR capabilities of affiliated and non-affiliated medical practices within their respective medical trading areas. In many cases this communication uses a peer-to-peer communication methodology.

A.5.8.1 North Carolina Healthcare Association (NCHA)

Public Health Syndromic Surveillance
The North Carolina Hospital Emergency Surveillance System (NCHESS) is a state-mandated program begun in 2004 as a public-private partnership between NCHA and the NC Division of Public Health. The mandate requires hospitals with 24/7 emergency departments (ED) to submit 23 data elements at least twice per day for syndromic surveillance purposes. The mandatory program is sometimes referred to as NCHESS-EDDI (Emergency Department Data Initiative) and there are currently 125 EDs participating in this portion of the program that account for approximately 4.7 million ED visits per year in North Carolina.

In addition to the mandatory NCHESS-EDDI program, NCHESS operates a voluntary program called NCHESS-IMC (Investigative Monitoring capability) that provides NCDPH epidemiologists with the capability for real-time surveillance of ED and inpatients for advanced public health surveillance. In addition to the 23 ED data elements, NCHESS-IMC also surveils Admit-Discharge-Transfer (ADT), vitals, labs, and microbiology data for inpatient, observation, and ED beds in addition to health-system owned Urgent Care Centers.

The NCHESS platform was certified to meet Promoting Interoperability Syndromic Surveillance requirements in 2017 to enable real-time, whole-hospital surveillance for all hospitals at no additional cost to the state. The primary benefits for participating in the NCHESS program for hospitals, NCDPH, and communities includes:
- Reduces burden on hospital staff during public health investigations by reducing call-backs and the need for chart abstractions and record review by hospital staff
- The only pathway for hospitals to meet the Promoting Interoperability Syndromic Surveillance objective
- More timely and effective public health intervention through early event detection and enhanced surveillance capabilities

The NCHESS system dramatically decreases the amount of time spent by hospital staff for each public health investigation, reducing staff time from 30-60 minutes per episode to five minutes or less (and often no time at all). The NCHESS system also enables hospitals to voluntarily participate in NCHA-sponsored initiatives that promote better and more efficient care.

NCHESS is the designated pathway for eligible hospitals to meet the Promoting Interoperability Syndromic Surveillance objective as part of the Medicare and Medicaid EHR Incentive Programs and provides hospital-wide syndromic surveillance using 2015 Edition Promoting Interoperability technology certified for 170.315 (f)(2) public health surveillance by the Drummond Group. The name of the certified product is "CareEvolution, Inc HIEBus," and the CHPL product number is 15.04.04.1200.HIEB.15.00.1.171127.

For more information, visit http://epi.publichealth.nc.gov/cd/meaningful_use/syndromic.html.

North Carolina Healthcare Foundation - AccessHealth NC and Equity Data Analysis & Quality Improvement

AccessHealth
AccessHealth NC consists of 18 community-based networks of care across the state providing access to coordinated primary and specialty healthcare services for the low-income, uninsured. Networks, funded in part by The Duke Endowment, are composed of a broad range of healthcare providers and other health-related

resources working in collaboration to leverage resources and align services. These provider networks provide medical homes and ensure timely, affordable, high-quality healthcare services for underserved North Carolinians, ensuring that these patients get the right care in the right place and at the right time. Network partners include hospitals, free clinics, certified rural health clinics, community health centers, physicians, medication providers, behavioral health providers, local health departments and many others. AccessHealth networks have been operating across NC for a number of years and have been branded locally by their community. The NC Healthcare Foundation provides technical assistance and collaborative learning opportunities to 18 networks across NC. An additional 12 networks are supported by the South Carolina Hospital Association in SC. Via patient matching done by NCHA staff; data programs maintained by NCHA are used to identify care trends across care settings.

Equity Data Analysis & Quality Improvement

NCHA released a statement in 2020 identifying racism as a public health crisis. Our Board has charged our membership and staff to initiate efforts to begin to address this important issue. NCHA has organized our efforts around data, education and innovation. Within the data realm, in 2021 NCHA collected information on how hospitals in North Carolina collect race, ethnicity and language (REAL) data, the processes used to quality check that data for accuracy and completeness, how the data is stratified, and analysis used in strategic discussions; how it is used to address gaps in care, developing strategy, and clinical care innovations and improvements. NCHA intends to help standardize and improve REAL data collection as well as spread innovative practices in an effort to evaluate and close disparities in care

NCHA has also engaged national and state partners to enhance coordination and help drive forward conversations around delivering equitable care across North Carolina.

Hospital Data and Health IT Collaboration

NCHA collaborates on additional hospital data- and health IT-related projects with a wide range of stakeholders every year. The point of these collaborations is to enable efficient use of existing technologies and develop new opportunities to improve the quality of patient care and lower the overall cost of care. By combining consumer and social determinate data with existing claims and clinical data, we can enhance predictive analytics and risk adjustment capabilities for work on pressing issues such as cancer research, opioid crisis management, behavioral health and substance abuse care coordination, enhanced motor vehicle crash reporting improvements, trauma registry, and controlled substance reporting.

A.5.8.2 North Carolina Healthcare Information and Communications Alliance, Inc.

The North Carolina Healthcare Information and Communications Alliance, Inc. (NCHICA) was established by Executive Order #54 of the Governor of the State of North Carolina in 1994. A 501(c)(3) nonprofit corporation, NCHICA's mission until its closure in 2020 was to accelerate the transformation of the US healthcare system through the effective use of information technology, informatics, and analytics.

A.5.8.3 NC Emergency Medical Services

The North Carolina Office of Emergency Medical Services (NC OEMS) is the state regulatory agency for Emergency Medical Services. Emergency Medical Services functions at the local level through 100 county-based EMS systems and Cherokee Tribal EMS. These 101 EMS systems coordinate the service and care provided by the 460 EMS agencies and 40,000 EMS professionals functioning in NC. More than 2 Million EMS events occur in NC each year.

NC EMS regulations require an electronic patient care report to be completed on each EMS patient contact. This information is collected within the NC EMS Data System, Continuum, which is operated by ESO Solutions. EMS

agencies are required by 10A NCAC 13P to complete an electronic patient care report and submit it into the system within 24 hours of the event. EMS agencies can meet this electronic data submission requirement by using the free Electronic Health Record (EHR), Web-based data entry tool or through a commercial EMS data system which has been certified as a National EMS Information System (NEMSIS) Gold-Compliant vendor. The Continuum system is based on the National EMS Data System standard adopted by all 56 US states and territories.

The NC EMS Data System has been exploring how EMS patient care reports could be provided to hospitals electronically, in an automated fashion, in exchange for more timely hospital outcome information. Partnership with NC Detect has allowed the NC OEMS to investigate EMS patient outcome data from some limited hospitals, to which NC OEMS hopes to expand in the future. NCOEMS continues to maintain and enhance all data systems pertaining to medical record collection and regulatory data. These data systems are all integrated under one application, Continuum, which is utilized by all EMS agencies and personnel.

The NC OEMS has been active in the use of EMS prehospital data to assist with response to the opiate crisis currently in NC. Various other state agencies utilize EMS data to help track patients and locations where efforts must be strategically targeted to best combat this growing problem. In addition to the opioid items, expansion of Community Paramedic programs in NC has grown significantly across the state. These programs seek to provide patients alternative treatment options, linking the right patient, with the right care, at a lower overall cost to the healthcare system, all while maintaining the highest level of patient satisfaction. EMS data is also being utilized to assist in the response to the COVID-19 event, working in conjunction with Public Health to look at surveillance data.

The NC OEMS has served a large role in the DHHS response to the COVID-19 pandemic, through the Healthcare Preparedness Program (HPP). HPP serves as a partner to all of healthcare and works to coordinate Emergency Medical Services, Emergency Management, Hospitals, and Public Health in their planning and response efforts. Medical surge efforts and hospital data collection for COVID-19 response have been coordinated through HPP as part of the DHHS Incident Management Team.

NC OEMS plans to continue to expand the data collection and monitoring aspects of Continuum, focusing on improving data quality, patient outcomes, and provider performance.

For more information on NC OEMS, visit https://www.ncems.org/.

A.5.8.4 State-operated Healthcare Facilities

The Division of State Operated Healthcare Facilities (DSOHF) oversees and manages 14 state-operated healthcare facilities that treat adults and children with mental illness, developmental disabilities, substance use disorders, and neuro-medical needs.

All of the DSOHF facilities have significant interaction with local medical providers and facilities. Additionally, with the exception of the Neuro-Medical Treatment Centers, the DSOHF facilities also have extensive interaction community providers including MCOs, and IDD or behavioral health services. The ability to share information within legal bounds, including 42 CFR for the Alcohol and Drug Abuse Treatment Centers, is important to continuity of care for the people we serve.

Currently, the only DSOHF facility that has an EHR is Central Regional Hospital, which has installed VistA from the VA system and made the necessary modifications for it to work within our current system. Central Regional Hospital is live and sending CCDs to NC HealthConnex. DSOHF has started the process of implementing an EHR at the 3 State-Operated Psychiatric Hospitals as directed in S.L. 2021-180. Planning for expansion to the other facility types will also be considered.

A.5.8.5 State Chief Information Officer

James A. Weaver is state chief information officer (SCIO) and secretary for the NC Department of Information Technology. The SCIO has two primary areas of responsibility for information technology within the state. The first area is the establishment of statewide policy and technical direction. The second is to oversee the delivery of technology services for state agencies and other subscribers.

As a policy leader, the SCIO has participated in the statewide meetings of the Health Technology Consortium and its predecessor, the Governor's Task Force on Health and Information Technology. The SCIO also provided staff to act as subject matter experts for both groups. NC DIT remains engaged in the HIT planning and policy establishment processes for the state of North Carolina.

In addition to the policy role, the SCIO also has an operational role. NC DIT provides both mainframe and server-based hosting for state agencies and local governments; operates two large data centers, one in Raleigh and one in Forest City, NC; and provides application development services and a statewide voice and data network.

Since 2016, OSC and NC DIT have had direct oversight over the new NC HIEA, creating opportunities for furthering synergies between statewide health information exchange and other state data systems.

For more information on NC DIT, visit https://it.nc.gov/.

A.6 Health Information Exchange

A.6.1 NC HIEA/NC HealthConnex

Historical Background:

Coordinated planning for statewide HIE in North Carolina began in early 2009, when the North Carolina HIT Strategic Planning Task Force (HIT Task Force) was established to forge a new vision of how health and healthcare can be improved by enhancing the use of health IT.

On behalf of Governor Bev Perdue, the Director of the Office of Economic Recovery and Investment (OERI) charged the HIT Task Force to engage stakeholders to develop a set of strategic guidelines by which North Carolina could apply for, and most effectively use, resources made available through ARRA. The HIT Task Force was composed of 17 members; however, more than 65 subject matter experts, staff, and members of the public were invited to participate in the seven open meetings that were held from April through June 2009.

At that time, North Carolina's state government examined the mechanisms and legal issues associated with assuring that the state retains appropriate oversight authority with respect to the statewide HIE. While essential to maintain the integrity of the multi-stakeholder collaborative process in setting policy for the statewide HIE, it is also the case that the state has a non-delegable role as the steward of State assets and the protector of the public interest that must be preserved. As a result, specific provisions in the NC HIE's original Articles of Incorporation and bylaws may not be altered, amended, or appealed without the governor's prior approval.

As noted above, the state of North Carolina has participated in the decision-making process around the statewide HIE network since its inception. Originally, with the NC HIE organization as an independent non-profit, former DHHS Secretary Lanier Cansler acted as Chair of the NC HIE Board. Additionally, the North Carolina State HIT Coordinator, SCIO, and North Carolina's Medicaid Director acted as ex-officio members of the NC HIE Board. From early 2013 until early 2016, under CCNC leadership, the NC HIE Board of Directors was dissolved and replaced by five members of CCNC's Board of Directors, who represented physicians, hospital organizations, pharmacy and long-term care -interests, and, by virtue of the CCNC organization, the interests of Medicaid and the state-insured population. Since early 2016, under the NC HIEA, state leaders from both health and human services and

information technology agencies, as well as representatives of provider organizations, sit on the legislatively-appointed NC HIEA Advisory Board to provide input into the NC HIEA's direction and operations.

The state also plays a significant role in supporting the coordination of HIE efforts. In June 2010, NC DHHS Secretary Cansler established the North Carolina Office of Health Information Technology (OHIT). OHIT coordinates HIT efforts across state government and other key stakeholders across the state and ensures consistency with federal policy and initiatives.

Finally, through its provision, payment, and monitoring of health care and population health, North Carolina state government collects and distributes a wide range of administrative and clinical health information. Accordingly, state agencies have worked with the statewide HIE, through its different governance structures, to develop cost-effective strategies to share resources and make their systems available through the statewide HIE network.

Current State:

The North Carolina General Assembly, the Department of Health and Human Services, and the North Carolina Health Information Exchange Authority (NC HIEA) are working to enhance medical decision-making and coordination of care, increase health system efficiencies and control costs, and improve quality and outcomes through the provision of secure, standards-based, state-level health information exchange with a statewide HIE Network, now known as NC HealthConnex.

Use of NC HealthConnex allows providers to view their patients' longitudinal health record in near real-time, consolidates data reporting requirements across the state to ease administrative burden and create efficiencies by eliminating duplicative data integrations, and provides participants with analytic insights for high risk patient populations. In addition to providing a bidirectional document exchange, NC HealthConnex offers value-added services that include a clinical notification service based on ADTs and CCDs, specialized registries for population health/public health and Meaningful Use, and a robust data quality program. NC HealthConnex is bidirectionally integrated with the NC Immunization Registry for improved delivery of immunization reporting through EHRs and receives automated daily lab feeds from several NC hospital lab systems to satisfy NC DPH and Meaningful Use requirements. As of May 2021, the NC HIEA is integrated with the NC Controlled Substance Reporting System (the State's Prescription Drug Monitoring Program system) via an application programming interface (API) to allow for single sign-on via NC HealthConnex to enable HIE participating providers to meet the statutory requirements of the STOP Act (NCSL 2017-74) and combat the opioid epidemic in North Carolina. The Division of Public Health (DPH) and the NC HIEA are collaborating on a Stroke Registry, funded by the Paul Coverdell National Acute Stroke Program grant from the Centers for Disease Control and Prevention (CDC). This project will utilize hospital stroke patient demographic and clinical data received by NC HealthConnex to identify patients at risk of stroke, facilitate DPH-led improvements in the quality and continuum of stroke care, and facilitate the identification and elimination of disparities in stroke care. As of 2021, the NC HIEA and the Stroke Registry Workgroup has completed a comprehensive review of the 155 hospital data elements and 33 associated code groups. The project is planned to be completed in June 2022.

In 2022, the HIEA also plans to connect the NC Office of Emergency Medical Services (OEMS) to NC HealthConnex to incorporate pre-hospital data into the Stroke Registry. Currently there are twenty-six EMS facilities to NC HealthConnex with an additional 140-plus facilities engaged.

NC HealthConnex is supporting the public health response in partnership with DPH as well as working on behalf of its participant and stakeholder communities to provide access to COVID-19 data from NC DHHS. NC DHHS receives vaccine administration and lab data from hospitals and health systems, and also dozens of retail pharmacies then send the data to the NC COVID-19 Vaccine Management System (CVMS). NC HealthConnex

enhances the vaccine data by matching against its master patient index and provides interim reporting of aggregate vaccine numbers to NC DHHS. In addition, NC COVID-19 labs are sent back to NC EDDS with the near real-time NC HIEA resulting Data Lab feed and COVID-19 labs from DPH are shared in outbound NC HealthConnex services such as the clinical portal, bi-directional and NC *Notify to health care providers. Finally, NC HealthConnex has expanded NC DETECT data sources to ensure more complete coverage of the state to address the need for early event detection and timely statewide, public health disease surveillance in NC.

Milestones Since Inception:

The series of milestones noted in the timeline below show the progress of HIE from 2009 to 2019, spanning organization of stakeholders and development of the initial strategic and operational plans, to the operational and growing HIE network of 2019.

June 24, 2009: The HIT Task Force released Improving Health and Healthcare in North Carolina by leveraging federal health IT stimulus funds that outlined recommendations around the critical components of a successful health IT infrastructure and operations for a statewide HIE.

July 16, 2009: Governor Perdue signed Executive Order 19, charging the North Carolina Health and Wellness Trust Fund (HWTF) Commission with the responsibility for coordinating North Carolina's HIT efforts and creating the North Carolina HIT Collaborative to make recommendations to the Commission regarding the development of the "NC HIE Action Plan."

September 11, 2009: HWTF submitted a Letter of Intent to seek Cooperative Agreement funds on behalf of North Carolina.

October 16, 2009: HWTF submitted Cooperative Agreement Application and "NC HIE Strategic Plan."

December 9, 2009: NC HIT Collaborative Privacy Workgroup released Briefing Paper: Developing a Statewide Consent Policy for Electronic HIE in North Carolina which addressed issues and making recommendations for next steps.

February 12, 2010: HWTF received Notice of Grant Award from ONC to fund HIE planning and implementation activities through 2014 and notification of approval of North Carolina State HIE Strategic Plan Version 1.

April 2010: A public-private partnership model to govern statewide HIE in North Carolina was recommended and approved; the NC HIE not-for-profit organization is incorporated.

May 14, 2010: The first board meeting of the new nonprofit, public-private partnership governance entity for NC HIE is held. The NC HIE Board of Directors is comprised of 21 CEO-level executives plus ex officio members from the state. The Board is co-chaired by NC DHHS Secretary Lanier Cansler and past CEO and Chairman of Glaxo, Inc., former CEO of Massachusetts General Hospital and healthcare advocate, Dr. Charlie Sanders.

Late May 2010: The NC HIE appointed multi-stakeholder Workgroups (Finance Workgroup, Legal and Policy Workgroup, Clinical and Technical Operations Workgroup, and Governance Workgroup) and drafts Workgroup Charters.

June 2010: NC HIE Workgroups began developing consensus-based recommendations to inform the Statewide HIE Operational Plan and to update the Statewide HIE Strategic Plan.

August 31, 2010: The NC HIE and HWTF submitted an updated Statewide HIE Strategic Plan and Operational Plan to ONC.

November 29, 2010: ONC approved North Carolina's Statewide HIE Strategic Plan and Operational Plan.

December 1, 2010: ONC transferred the Cooperative Agreement from HWTF to NC HIE.

December 22, 2010: Governor Perdue issued an Executive Order appointing the NC HIE as the State Designated Entity. Management and oversight of the State HIE Cooperative Agreement was transferred from HWTF to NC HIE. The process began within ONC to transfer the Cooperative Agreement to the NC HIE.

December 2010: HWTF in partnership with NC HIE and North Carolina Community Care Network submitted a completed application for the Challenge Grant.

January 27, 2011: ONC awarded HWTF a $1.7 million Challenge Grant to deploy medication management services.

First Quarter 2011: The NC HIE workgroups continued to meet focusing on the following: The Governance Workgroup's focus shifted to their primary tasks in this phase: 1) who will participate in the Statewide HIE; 2) rules and policies for participation; and 3) enforcement and oversight. The Finance Workgroup began focusing on developing the work plan for the ongoing sustainability effort. The Clinical and Technical Operations Workgroup began their efforts by focusing on these tasks: 1) refining the requirements for core and value-added services; 2) providing input on request for proposals; and 3) helping facilitate deployment and integration of HIE services into the health system. The Legal and Policy Workgroup focused on drafting consensus legislation that would facilitate an opt-out consent model for the exchange of patient information. April 1, 2011: ONC transferred the Cooperative Agreement to the NC HIE effective December 1, 2010.

April 25, 2011: The NC HIE released the request for proposal (RFP) for the technology service vendor to partner with the NC HIE in providing the technical services to execute the plan developed by the consensus of the wide array of healthcare interests in North Carolina. Over 30 vendors completed Letters of Interest with 17 vendor or vendor teams submitting formal proposals.

June 27, 2011: Senate Bill 375 – Facilitate Statewide Health Information Exchange passed both the House and Senate. It was signed into law by the Governor on June 27, 2011. The bill is designed to facilitate and regulate the disclosure of protected health information through the voluntary, NC Health Information Exchange (NCHIE) network. http://www.ncga.state.nc.us/Sessions/2011/Bills/Senate/PDF/S375v0.pdf

July 27, 2011: The NC HIE filed its application for tax exempt status.

August 2, 2011: After the highly structured review of the technology service proposals, the NC HIE and the Capgemini/Orion Health consortium executed a Master Development Services Agreement and related Statement of Work. NC HIE and the Capgemini consortium are working together to deploy the HIE infrastructure and on-board participants first quarter 2012.

August 9, 2011: ONC transferred the Challenge Grant to the NC HIE.

September 28, 2011: Blue Cross and Blue Shield of North Carolina (BCBSNC), in collaboration with the North Carolina Health Information Exchange (NC HIE) and Allscripts, launched the North Carolina Program to Advance Technology for Health (NC PATH)—a program created to place North Carolina at the forefront of healthcare reform. NC PATH will equip physicians with Allscripts EHR software and support and connect healthcare providers across the state through NC HIE. Designed to meet the needs of both physicians and patients, NC PATH will move North Carolina into a new era of quality healthcare. The NC HIE will manage the program administration and facilitation as well as support all members of the healthcare community in North Carolina regardless of their EHR technology. BCBSNC is donating the cost for the implementation of an Allscripts EHR as follows: For in-network providers, BCBSNC will cover 85 percent of the software cost, support and maintenance costs and the NC HIE connectivity and membership fee for a period of five years. The provider is responsible for the remaining 15 percent. For free clinics, BCBSNC will cover 100 percent of the software cost, support and maintenance costs and NC HIE connectivity and membership fee costs for a period of five years.

March 1, 2012: NC HIE network goes live and connects a dozen independent primary care providers through the NC PATH partnership.

March 16, 2012: N3CN becomes the first Qualified Organization (QO) and will serve as an organizing entity to connect providers and hospitals with NC HIE.

March 31, 2012: North Carolina Community Health Center Association announces plans to connect safety net providers to NC HIE.

May 1, 2012: Solstas Labs and NC HIE partner to provide labs through NC HIE.

May 3, 2012: NC HIE received 501(c)(3) status.

July 30, 2012: NC HIE launches Direct Secure Messaging.

August 31, 2012: NC HIE completes NwHIN conformance testing.

September 7, 2012: LabCorp and NC HIE partner to provide labs through NC HIE.

October 8, 2012: NC HIE board of directors approved a merger proposal from N3CN.

December 10, 2012: N3CN board of directors approved the merger with NC HIE.

December 12, 2012: Halifax Regional Medical Center is the first hospital to go live on the NC HIE network.

February 1, 2013: The merger of CCNC and NC HIE is finalized. NC HIE becomes a subsidiary of CCNC and appoints Michael Jongkind of CCNC as interim CEO. A new board of directors composed of existing CCNC board members is established.2013-2014: Few records on milestones while under CCNC governance were transferred to the NC HIEA. However, during 2013-2014, the NC HIE went from zero to 30+ hospitals contracted to participate by October 2014, including the UNC Health Care System, which accounted for eight hospitals and over 600 ambulatory facilities. In summer 2014, the first hospitals went live with NC HIE's HISP/Direct Secure Messaging service, integrated directly into their Epic and Meditech EHR systems.

April 2015: NC DHHS performed an assessment of the state of the HIE under CCNC, and due to concerns about sustainability, recommended the HIE be brought under state governance.

September 2015: The North Carolina Health Information Exchange Authority (NC HIEA) was created in Session Law 2015-241 s. 12A.4 and 12A.5 in September 2015 to oversee and administer North Carolina's HIE. The legislation also mandates connection/participation/data contribution by health care providers in North Carolina that receive Medicaid and other state funds for provision of health care services.

February 2016: The NC HIE was transferred from the Community Care of North Carolina (CCNC) / North Carolina Community Care Networks (N3CN) structure to the new state agency, the North Carolina Health Information Exchange Authority (NC HIEA).

In its first 36 months under State governance (April 2016-March 2019), the NC HIEA built capacity, a brand, and infrastructure, while rapidly connecting provider EHRs at care sites statewide to enable exchange. Major accomplishments include:

- Built capacity to a team of 13;
- Partnered with SAS Institute to build and support technical connections[1];

- Rebranded the statewide HIE from "NC HIE" to "NC HealthConnex;"
- Upgraded and modernized the HIE platform to the industry-leading Intersystems HealthShare;
- Applied for and was awarded federal financial participation funds under the Health Information Technology for Economic and Clinical Health Act (HITECH) in partnership with NC Medicaid to support data connections and operations for the Medicaid provider community;
- Launched initial education and outreach efforts, including:
  - Spoke at 165+ conferences and events to 5,000+ health care providers,
  - Established three stakeholder work groups focused on specific provider segments and use cases (behavioral health, dental, use case work group), and
  - Sent frequent communications through payer and provider advocacy partners;
- Built significant technical capacity and infrastructure, including:
  - A statewide direct secure messaging (DSM) provider directory,
  - Clinical event notifications,
  - Automated reporting of immunizations and laboratory results to State public health systems,
  - A Diabetes Registry, and
  - Connection to the nationwide eHealth Exchange, which enables query exchange of patient health records with border state and interstate HIEs, including the joint federal HIE for the Department of Veterans Affairs/Department of Defense, to support patient care during disaster response and travel;
- Connected 5,500+ facilities, including 110 acute care hospitals; and
- Developed the NC HIEA Roadmap 2021 to detail strategies and key initiatives for the next 36 months.

Over the past 36 months (April 2019-March 2022), the NC HIEA has continued to build connections to electronic systems that contain patient data, while expanding its focus on value-added services, data quality, and public health support. Major accomplishments include:

- Increased staff to 22;
- Applied for and was awarded federal financial participation funds under the HITECH Act in partnership with NC Medicaid to support data connections and operations for the Medicaid provider community and enhance notification service and data quality efforts to support Medicaid Transformation;
- Enhanced the clinical notification service, NC*Notify,[2] to include a self-service panel loader; auto-attribution; multiple notification delivery methods; and clinical intelligence alerts that include dental alerts, COVID-19 test results, chronic care management, pre-diabetes, diabetes, and care team changes available to its 570+ live organizations. As of November 2021, NC*Notify distributes over 4M alerts per month to subscribers;
- Connected to the Patient-Centered Data Home™—a national network of HIEs that proactively alerts health care providers when their patients have a health event (e.g., an emergency department visit) away from home;
- Enabled Fast Health Interoperability Resources (FHIR), an emerging national standard for rapid health data exchange and access by providers, patients and payers;

- Engaged in sustained, targeted outreach initiatives including presentations to practice/provider groups, monthly "How to Connect" webinars, quarterly "Teletown Hall" training webinars, and messages distributed through partner organizations;
- Deployed 30+ NC Area Health Education Centers (NC AHEC) technical specialists across nine regional offices to assist practices with HIE training and workflow integration on site, and created seven on-demand video training modules for the NC HealthConnex Clinical Portal and value-added services;
- Received national awards, including the 2019 Strategic Health Information Exchange Collaborative's Community Partnership Achievement Award for Hurricane Florence response, the 2019 State Scoop State Leadership of the Year Award, and honorable mention as a Finalist for the 2020 National Association of State Chief Information Officers award in the category of Digital Services: Government to Business;
- Completed connections totaling 7,000-plus facilities, including 140 hospitals and representing more than 58,000 contributing providers, 14M unique patients, and more than 20 border/interstate HIEs; and
- Deepened the partnership with NC DHHS in support of critical Medicaid Transformation and public health initiatives as discussed in Section A.6.2 Strengthening Partnership with NC DHHS below.

In 2022-2025, the NC HIEA plans to (i) continue building out statewide and supporting connectivity with available resources, including to EHRs, other data and claims systems maintained by health care entities, additional State systems at the direction of NC DHHS and other agencies (e.g., corrections facilities), and other state HIEs; (ii) prepare for and implement a new enforcement structure, if directed by the General Assembly; and (iii) develop and enhance services within the following strategic areas:

- Build upon a strong HIE foundation to support data quality and emerging data standards championed by the Office of the National Coordinator for Health IT (ONC) and the Centers for Medicare & Medicaid Services (CMS);
- Broaden exchange capabilities to promote data democratization[3] for participating provider organizations and innovation to support patient-centric whole person care;
- Cultivate economic value and financial stability by providing a health data utility to support value-based care; and
- Support population and public health priorities through surveillance and analytics as a service.

More information on specific initiatives will soon be available in the NC HIEA's Roadmap 2025, targeted for May 2022.

A.6.2 Strengthening Partnership with NC DHHS

As the NC HIEA has matured, it has strengthened its partnership with the North Carolina Department of Health and Human Services, particularly in support of Medicaid Transformation efforts and public health surveillance during the pandemic. With access to near real-time clinical data from across the North Carolina health care

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Accessed: 1/16/2022

ecosystem, both the NC HIEA and NC DHHS recognize the opportunity to positively impact patient outcomes and to introduce efficiencies into value-based care and public health monitoring.

For the NC DHHS Division of Public Health (NC DPH), the NC HIEA assists with various electronic reporting and surveillance initiatives, including:

- Automated electronic reporting from provider EHRs to the NC Immunization Registry (NCIR);
- Automated electronic reporting of laboratory results from hospital EHRs to populate the NC Electronic Disease Surveillance System (NC EDSS);
- Automated reporting of covid test results from seven reference labs to the NC EDSS;
- Receipt of statewide covid testing results from NCCOVID within NC HealthConnex for enhanced patient care and State reporting services;
- Provision of additional clinical data on COVID-19/Influenza-Like Illness (ILI) to the State's NC DETECT syndromic surveillance system; and
- Built and supports a NC Diabetes Registry, with a NC Stroke Registry in development for 2022.

Additionally, during the pandemic DHHS and the NC HIEA partnered as they developed a COVID vaccine management system (CVMS). NC HealthConnex offers connectivity to the CVMS as well as patient matching services across sources to enhance vaccine data by utilizing the NC HealthConnex master patient index. To reduce double data entry, NC HealthConnex has continued to help with integrating health care providers' EHRs and pharmacy management systems with the CVMS database. This data exchange reduces the need for manual entry of vaccine administration data directly into CVMS.

- CVMS COVID Vaccination Counts to date:
  - Total vaccinations through HIE Direct Integration (includes NCIR) 2,147,499
  - Total vaccinations through Pharmacy integration 5,393,797
  - Total vaccinations processed 7,541,296 (total vaccinations including all ages Dose 1, Dose 2, Dose 3, Dose 4, etc.)

For the NC DHHS Division of Health Benefits (NC DHB), the NC HIEA assists with providing specific clinical and demographic Medicaid beneficiary data for quality reporting and programs, including:

- Built and supports a COVID-19 dashboard that tracks in near real-time COVID-19 tests and diagnoses, as well as reported symptoms and indicators that could signify potential COVID-19 cases.[4] The dashboard allows for viewing and manipulation of these indicators with their demographic attributes geographically to allow NC DHB to closely track, and better manage, disease progression in the Medicaid population;
- Provides an annual extract of clinical data elements needed to run hybrid quality measures (Diabetes, Hypertension, BMI measures, and Depression Screening supported in 2021), with discussions to expand the data set in future years;
- Partnered with Medicaid and Prepaid Health Plans (PHPs) to identify 20 clinical data elements representing the highest-priority data set required for monthly performance measurement to support value-based care, with plans to deliver those data extracts monthly beginning in March 2022 and expand the data set in future years;

- Provides contact information found within HIE data as requested for Medicaid providers to assist with various outreach and communication efforts;
- Delivered geographic visualizations in partnership with the NC Department of Information Technology (NC DIT) Geographic Information System (GIS) team to help NC DHB better understand network adequacy to determine (i) where exceptions may need to be granted to PHPs required to meet access standards or (ii) where PHPs may need to expand their networks to include available providers in areas where the standard should be able to be met;
- Is in process of incrementally implementing the National Committee for Quality Assurance (NCQA)'s Data Aggregator Validation (DAV) Program, with a pilot planned to kick off in June 2022, which allows clinical measures produced from HIE data to be NCQA-certified; and
- Is in process of implementing a provider data quality incentive program in partnership with NC AHEC that pays incentives to providers for meeting data completeness and quality benchmarks to ensure that the data submitted from EHRs to NC HealthConnex meets standards that enable interpretation and analysis by other providers, payers, and NC Medicaid.

For the NC DHHS Division of Mental Health, Developmental Disabilities, and Substance Abuse (NC DMH), NC HealthConnex supports integrated access to the NC Controlled Substance Reporting System. Per the Strengthen Opioid Misuse Prevention (STOP) Act of 2017 (NCSL 2017-74), health care providers in North Carolina who prescribe controlled substances must access a patient report from the CSRS to verify a patient's prescription-fill history of controlled substances prior to writing prescriptions for targeted controlled substances. The STOP Act also required an integration between the state's prescription drug monitoring program, called the Controlled Substance Monitoring System (CSRS), and the HIE, NC HealthConnex. The NC HIEA partnered with the N.C. Department of Health and Human Services Division of Mental Health to build a single sign-on leveraging an Application Programming Interface (API) from the NC HealthConnex clinical portal to the state's prescription-drug monitoring program, Controlled Substances Reporting System. This integration allows the end user already accessing the longitudinal NC HealthConnex clinical portal to view the CSRS report, along with the risk scores, without leaving the HIE portal. NC HealthConnex participants who have completed the access request process will begin onboarding in August 2020.

And for the NC DHHS enterprise, the NC HIEA uses demographic information from NC HealthConnex to match patients across NC DHHS systems to provide insight into an individual's needs and care across platforms.

The infrastructure, functionality, and data exist today to expand upon these capabilities to support additional NC DHHS programs and initiatives using dashboards, clinical intelligence, and notifications. For example, extending electronic syndromic surveillance of infectious diseases to acute and ambulatory care settings statewide is a low cost, high value proposition. Expanding automated electronic reporting of and access to state public health systems via NC HealthConnex would also present enormous efficiencies to both providers and public health officials.

NC HealthConnex Supports Federal CMS & ONC Requirements 2021:

Conditions of Participation (CoP) for Hospital Electronic Notifications

The Centers for Medicare and Medicaid Services (CMS) requires that all hospitals meet its conditions of participation for electronic notifications. Hospitals must ensure that they make reasonable efforts to send electronic notifications to primary care providers, skilled nursing facilities and other health care facilities at the request of either the provider or patient.

NC*Notify, the state-designated health information exchange's subscription-based notification service, offers the ability to meet the requirements of this rule.

- See technical details on CoP requirements for ADT fields.
- See checklist for CoP compliance.

Information Blocking

The NC HIEA is committed to interoperability and information sharing, and has incorporated the 21st Century Cures Act information blocking regulations into its policies.

NC HealthConnex participants can find the Request for Release of Electronic Protected Health Information form here. All updated policies, including the NC HIEA Privacy and Security Policy and User Access Policy, which can be found here.

From time to time, the NC HIEA may receive requests for Electronic Health Information (as defined in 45 C.F.R. § 171.102) ("EHI") or other medical records from an (i) individual, (ii) and individual's personal representative, or (iii) and individual or entity that is not connected to NC HealthConnex that purports to act on an individual's behalf. On such occasions the NC HIEA shall comply with G.S. § 90-414.6 and not fulfill the individual's request.

MIPS & Bi-Directional Measure

The NC HIEA collaborated with NC AHEC to educate NC HealthConnex participants about the newly-added measure (December 2020) to the Promoting Interoperability program. Training materials, building technical capability (for those who may not currently have it) and workflows to support participant engagement in bi-directional exchange via NC HealthConnex for all patients seen by the eligible clinician and for any patient record stored or maintained in their EHR were established. NC HealthConnex conducted a TeleTown Hall webinar in May 2021.

A "Connected Participants" data table and corresponding map, as shown below, are available on the NC HIEA website.
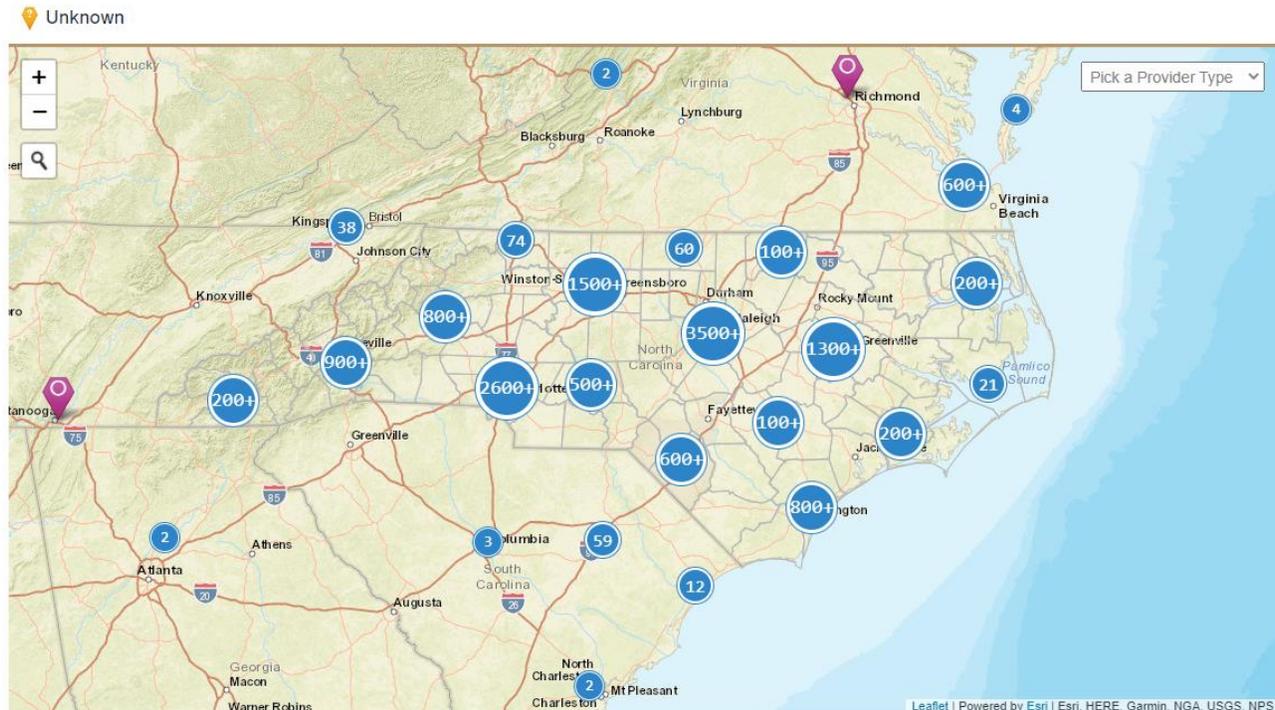
A.6.3 Other HIE Initiatives in North Carolina

Coastal Connect Health Information Exchange (CCHIE)

CCHIE was established in 2009 by provider stakeholders: Dosher Memorial, New Hanover Regional Medical Center, Pender Memorial, Southeastern Health, and Wilmington Health. In 2017, Onslow Memorial joined CCHIE as a stakeholder hospital. The HIE technology (Health Catalyst, formerly Medicity) was deployed in 2011, creating the secure data sharing network for unaffiliated providers in southeastern North Carolina. The exchange supports patient-centric care transition between providers, reduces redundant testing, realizes efficiencies in workflow and improves patient outcomes. CCHIE is governed by a multidisciplinary board composed of representatives from stakeholder hospitals, community practices, the state Medicaid management entity, and a community representative. CCHIE's sustainability model is supported by its founding stakeholders as well as ambulatory provider participation fees.

Over 2.4 million patients are indexed on the HIE's Community Health Record tool which allows HIE participants query-retrieve access to care documents from over 301 data-contributing sites, which represent acute, ambulatory, diagnostic, public health, and post-acute facilities. Data shared include lab results, pathology results, radiology results, discharge summaries and other departmental/transcription-like reports, encounter information, demographics and CCDs. CCHIE's initial footprint of 11 counties has expanded across the state and to South Carolina through HIE to HIE connections and eHealth Exchange connection with Vidant Health, Duke Health, UNC Health Care, NC HealthConnex, DaVita Dialysis Centers, SCHIEx (South Carolina HIE), Department of Defense, Veterans' Affairs, Mission Health and Atrium Health. For patients indexed on CCHIE, care summaries can be queried-retrieved from these data connections for the improvement of care transition. Other services provided by CCHIE are real-time ADT encounter notifications, results delivery, and order-results exchange.

CCHIE Data Consumers
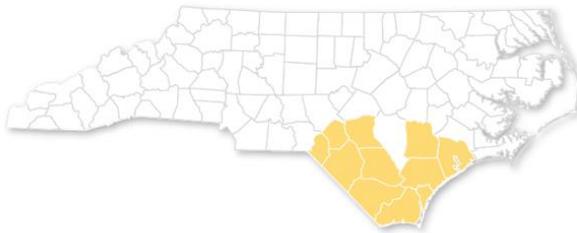
CCHIE Data Contributors and Data Connections

CCHIE participants have confirmed their value to accessing to patient information at the point of care as improving the experience for both patients and clinicians. For more information, please visit www.coastalconnect.org.

Mission Health Connect

History
For almost a decade (2006 – 2014), Mission Health System participated in WNC Data Link. WNC Data Link was a pioneer in the Health Information Network / Exchange arena with a primary focus upon regional connectivity and population health. In 2014 with the growing regulatory demands related to Meaningful Use WNC Data Link chose to sunset and Mission Health Connect was established. In February 2019, Mission Health System became the NC Division (NCDV) of HealthCare Corporation of America (HCA).

Drawing from over a decade of interoperability experience, Mission Health Connect serves as the Regional HIE for western North Carolina. Regional HIE designation allows external participating entities the option to automatically be in compliance with state law connection requirements to NC HealthConnex, unless they prefer to directly connect to the state. Striving to improve the overall health and wellbeing of the regional and state-wide population, Mission Health Connect allows health care information to be electronically shared bi-directionally between different facility and provider medical record systems - while maintaining privacy, security and accuracy of shared protected health information (PHI).

Current State
Mission Health Connect contains over 1.4 million unique patients from within the expansive network of the HCA NCDV, formerly known as Mission Health System and other contributing participants. The HCA NCDV is comprised of 6 hospitals and 120 ambulatory practices that service the far western 18 counties of North Carolina. Direct integrated connections with NC HealthConnex and several other North Carolina HIEs now extend connectivity across entire state. Atrium Health CareConnect, Adventist Health System (Fletcher, NC), Coastal Connect HIE and UNC Healthcare are key connecting partners within the state.
National key connecting partners include Veterans Administration and DaVita Dialysis. Mission Health Connect continues to expand our interoperability nationally with integration with eHealth Exchange, CommonWell and CareQuality networks.

For more information, please visit https://MissionHealth.org/HIE.

Atrium Health CareConnect

Atrium Health CareConnect is a health information exchange (HIE) that provides a secure method to share patient information between providers at participating facilities. CareConnect provides two methods of providing information to outside organizations (those other than Atrium Health):

      1) CareConnect's HIE web-based portal
      2) bi-directional exchanges set up between Atrium Health and other interested organizations

CareConnect has been in existence since 2011. Today, the portal is used and accessed by over 275 non-Atrium partner organizations. CareConnect is also connected to 30 external organizations where those organizations can access information stored in our HIE's repository including Atrium Health clinical and demographic information. A list of partner connections and users' organizations on our website:
https://www.atriumhealthcareconnect.org/-/media/carolinas-care-connect/participatingpartners.pdf

A.7 MMIS and Current HIT/HIE Relations with MITA Assessment

NCTracks and a new reporting and analytics solution include a data warehouse, decision support, business intelligence and fraud and abuse detection functionality. In 2010, it was stated in the original SMHP that part of the challenge for the HIT/HIE Project would be the ability to make modifications to NCTracks to support the HIT/HIE environment. DHHS is also coordinating its efforts with the planned MITA transition which will result from the implementation of NCTracks.

A.7.1 Coordination of HIT Plan with MITA Transition Plans

DHHS' goal is to coordinate its HIT Plan efforts with the MITA transition plans for the Medicaid Enterprise Solution (MES) Procurement Project. DHHS recognizes the synergistic connection between the HIT Plan and the MITA "to be" assessment, which will consider the state's goals for HIT when determining the future vision for the Medicaid Enterprise Systems.

The current status of MITA is to provide a better understanding of the role it is expected to play in the broader national dialogue regarding HIT and HIE. The comprehensive report of the MITA 3.0 State Self- Assessment was submitted to CMS in 2021.

The new system, NC MIMS, will evolve from the traditional MMIS concept to a modern, modular structure for the MES. This includes the integration of modular COTS solutions and SaaS, service-oriented environments, and the leveraging of cloud computing, where possible, to facilitate interoperability and better alignment to the MITA 3.0 Framework.

The NC MIMS system will be characterized by the integration of modularized SaaS and COTS solutions, which are highly decoupled, connected through a service-oriented software solution that will be rules based, and will provide alignment with the MITA 3.0 Framework.

A.8 Medicaid, HIE, REC and Health and Human Services HIT Coordination

Per the SL 2009-0451 of the NC General Assembly, NC DHHS, in conjunction with the SCIO and the NC Office of Economic Recovery and Investment, shall coordinate HIT policies and programs within North Carolina. The Department's goal in coordinating state HIT policies and programs shall be to avoid duplication of efforts and to ensure that each state agency and other public entity, as well as the private entity undertaking HIT activities associated with ARRA, leverage its greatest expertise and technical capabilities in a manner that supports state

and national goals. This law also directs that NC DHHS shall establish and direct a HIT management structure that is efficient and transparent and that is compatible with the ONC governance mechanism.

Prior to this session bill, the Secretary of the NC DHHS formed the state HIT Steering Committee (previously HIT workgroup) referenced above, to coordinate the department's work around HIT/E. This included coordination among the several key ARRA funding programs, the State Medicaid HIT Plan, Section 3201 Funding, the HIE, Section 3013 Funding and the REC, Section 3012 Funding.

In response to SL 2009-0451, DHHS created the Office of Health Information Technology (OHIT). Positions included the OHIT director, a privacy and security officer, a technical director, administrative assistant, and a full-time program manager. The OHIT is responsible for monitoring and coordinating activities of all other state agencies and non-governmental organizations engaged with HIT and HIE activities, either of a planning, research or operational nature. From May 2013 until April 2014, the OHIT was 100 percent vacant. A new director served as the only OHIT employee from April 2014 through July 2016, then the OHIT was vacant until a new Director of Health Information Technology was hired in July 2017. The Deputy Chief Technology Officer is the OHIT director and also directs the Cloud Center of Innovation, Catalyst Group, Enterprise Architecture, the Division of State Operated Healthcare Facilities (DSOHF), and the Division of Mental Health, Developmental Disabilities and Substance Abuse (DMH) and works closely with the NC HIEA, state hospitals, and other partners to align IT activities to deliver even higher efficiencies and standards of service.

A.9 NC Medicaid's HIT relationship with the NC AHEC

The NC AHEC Program previously served as the NC REC and supported over 7,000 primary care and sub-specialty providers in their pursuit of meaningful use of an electronic health record system. This exceeds the program's original goal of 3,465 providers set at the start of the program. By deploying highly skilled staff through their nine regional centers, NC AHEC supported primary care and specialty care physicians with robust practice assessments, workflow redesign, selection and implementation and the appropriate use of EHRs to achieve MU and promote interoperability of the technology and improve health outcomes throughout the state.

NC AHEC has expanded its consulting workforce of EHR-experienced professionals to serve the nine regions of the state defined in its original grant application to the Office of the National Coordinator for HIT. The continuation of these services will better enable NC AHEC to help practices implement technology and/or use their previously existing technology, thereby, meeting the federal standards of Promoting Interoperability. The NC AHEC program has continued to build capacity in coaching practices through transformation to prepare for new pay-for-value payment models and stands ready to quickly disseminate technical assistance to its base of 1,094 primary care and subspecialty practices.

NC AHEC maintains an in-house database to track and monitor the progress of the providers associated with the services it provides. This database allows for the assignment of caseloads to the on-site technical staff, monitoring of deliverables for contracts and an overall database of providers.

NC Medicaid and NC AHEC collaborate to share information. Regularly scheduled meetings between NC Medicaid and NC AHEC are planned to leverage outreach and educational opportunities. NC Medicaid and NC AHEC share information on trends, risks and issues, health information exchange, and training and outreach schedules.

A.10 Current Innovations – Affecting the Future Direction of EHRs

NC Medicaid is actively participating in the statewide effort to support the utilization of CEHRT through its work with NC AHEC, its relationship with the NC HIEA, and by leveraging physician participation in the CCNC medical home model.

A.10.1 Community Care of North Carolina Program & North Carolina Community Care Networks, Inc.

Community Care of North Carolina is described in the State Plan of North Carolina as the enhanced Primary Care Case Management program for the State to manage the PCCM Medicaid Direct Population.

North Carolina Community Care Networks, Inc. (N3CN) is the private non-profit organization through which the State contracts to oversee the PCCM Program for the Medicaid Direct population which includes ensuring the Community Care of North Carolina affiliated Medicaid Direct providers meet program goals and performance measures.

N3CN ensures there is a sufficient panel of primary care providers to serve enrolled populations with initiatives agreed upon by DHB and N3CN. N3CN establishes uniform processes to carry out these initiatives.

N3CN uses its Data Platform to carry out some of the requirements outlined in State Plan and Contract#30-2021-061-DHB, between DHB and N3CN.

The Data Platform has healthcare claims data provided by Medicaid, as well as health information about program participants obtained directly from healthcare providers and care managers and/ or the primary care medical record. Additional data sources include: Surescripts pharmacy data pharmacy management system vendors such as PioneerRx, Genoa, and QS/1, among others, laboratory results from LabCorp and Solstas, and three-times daily hospital admission/discharge/transfer data from over 100 NC hospitals. Information is accessed by the Care Managers, Practice Support staff, and providers to identify patients in need of care coordination; to facilitate disease management, population management, and pharmacy management initiatives; to enable communication of key health information across settings of care; to monitor cost and utilization outcomes; and to monitor quality of care and provide performance feedback at the patient, practice, and network level.

Informatics Center Functions and Front-End Applications:

CCNC VirtualHealth (VH)- HELIOS Platform:

The CCNC VirtualHealth (VH)- HELIOS Platform enables care management staff and support to document and view the Medicaid recipient records throughout members' continuum of care, while receiving care management services. VH provides a standardized framework for the care management workflow and documentation, while incorporating tools for member assessments, goal setting, and health coaching. VH enables users to view members' progress through the care continuum and various episodes of care. VH platform includes three portals – Care Management (CM), Provider and Administrative portals.

The VH application is populated by data feeds sourced from CCNC's data warehouse. This allows for greater flexibility and the opportunity to exchange information across CCNC's applications, (such as analytic dashboards), while populating key risk stratification and claims information, such as prescription fills. Care management tools are incorporated into the VH system, such as health risk screenings, program-level, comprehensive needs assessments, medication management, care plans, and secure messaging to allow care managers to communicate member health information securely to providers involved in the members' care. Automation of referrals and program-specific tasking are leveraged to ensure evidence-based standards and key program components are met. Complex care management services also offer health coaching and integration of patient education tools (Healthwise). Staff have a mobile app (for care management staff to use on home visits or when internet connectivity is limited) available.. As of January 2022, approximately 1,200 care management and care coordination staff members use this care management platform statewide.

CCNC VH Provider Portal:

The VH Provider Portal was created to improve the care provided to the members served. It is intended to give clinicians a more comprehensive view of their members' medical/care management history and to foster better care coordination between members' care team participants.

Through the Provider Portal, members of the care team may view member information including but not limited to:

- Visit history (including inpatient, emergency department, and office visits),
- Medication list including those prescribed by other providers,
- Other providers or care management staff members of the members' care team,
- Comprehensive needs assessments, care plans, and medication reviews,
- Information on how to make a referral to the CCNC care management team, and
- Secure messaging to CCNC team including care managers and pharmacists.

As of January 2022, approximately 650 providers use this provider portal platform statewide.

Analytics and Reporting

CareImpact, CCNC's analytics and reporting platform utilizes Tableau software to convey data through web-based dashboards that enable filtering and trending, as well as drilling down to patient-level data. CareImpact conveys important information to CCNC staff and primary care medical homes for ensuring appropriate identification and care of the Medicaid population, including:

- Population health data via monthly member demographics, conditions, costs and utilization (Inpatient and ED usage).
- Risk Stratification layered with historic performance to assess Impactability, the likelihood of a care manager's intervention impacting the individual member and their health outcomes. The impact models actually assess the average 6-month savings likely to be yielded through care management for each member. By prioritizing outreach based on a member's impactability, care managers can apply its limited resources to the patients it can impact most.
  - o Transitional Care Priority identifies those admissions with the highest likelihood of impact for care managers to engage, accompanied with Outpatient Follow Up recommendations and an assessment of how highly to prioritize a home visit
  - o Priority identifies those patients not yet in the hospital who are struggling with their conditions and likely to be impacted by a care management intervention
- Operational dashboards that focus on the quality of the care management services delivered to patients by CCNC care managers in the communities. These dashboards are updated daily using VirtualHealth Helios data and allow for analysis of the entire care management process and identification of areas for opportunity and efficiency.
- Performance on cost, utilization and quality measures, as well as patient-level care gaps to enable improvement in measure performance and overall primary care delivery. These metrics, which are available at the practice, county, region and statewide level, are based on Medicaid claims and updated quarterly. Care gaps are updated weekly when CCNC receives claims.
- Key behavioral health statistics including medication fills by medication type, last fill dates and utilization by certain diagnoses.
- This data also feeds into a Member dashboard that network leaders can utilize to study demographic characteristics, prevalence of chronic medical and mental health conditions, spending by category of service, and rates of hospital, ED, and other service use trends in their network and counties compared to

- that of others. This aids in program planning and resource allocation; identification of outlier patterns (such as unusually high rates of personal care services); and tracking of local utilization patterns over time.
- Through the joint efforts of CCNC, Inc. and NC DHHS, NCCCN receives daily notification of Medicaid population inpatient and ED visits from 111 NC hospitals. This three-times daily notification allows immediate identification of patients with high Transitional Care Impactability, ensuring care management support as they transition from hospital to home, including pharmacist review of medications and follow-up in the primary care medical home.
- The NC HIEA is now sending ADT event notifications to CCNC on their covered Medicaid population. CCNC has selected Bamboo Health Pings, real-time, admission, discharge, and transfer (ADT) e-notifications.

Reporting of Care Quality Indicators

N3CN reports performance on a subset of cost, utilization and quality measures to DHB on an annual basis in the Annual Quality Measures Report (QAV007). This report displays demographic data on the enrolled Medicaid Direct population, tracks measure performance over time and speaks to targeted quality improvement initiatives across the state to impact quality of care. Measures span programs across chronic diseases and prevention in pediatric population.

Monitoring of Risk Adjusted Key Performance Indicators: Clinical Risk Group (CRG)-risk adjusted analytics are applied to improve the accuracy of monitoring cost and utilization metrics over time, and to improve efficiencies in identifying patients most appropriate for care management services. 3M-developed methodologies are used to identify potentially preventable hospital admissions, readmissions, ED use, and ancillary services, to more accurately identify patients and areas where costs and utilization are higher than expected, accounting for patient acuity. This allows risk-adjusted comparisons of cost and utilization performance across Networks and Practices to facilitate development of techniques to impact unnecessary costs and measure impact of changes in care management approaches. Tracking of key metrics provides stakeholders with assurance that efforts are aligned toward the overarching goals of cost savings and quality improvement, and that all networks are held accountable for the overall performance of the program.

A.11 State Law and Regulatory Changes to Support HIT Activities in NC

A close review of North Carolina state statutes that affect healthcare providers' disclosure of patient information found several laws that were outdated, ambiguous, and out of alignment with the federal HIPAA Privacy Rule. To harmonize NC state laws with HIPAA and to facilitate the use of secure electronic exchange of patient information in a manner consistent with HIPAA, the 2011 General Assembly enacted two bills, SB 375 and SB 607. SB 375 establishes the "North Carolina Health Information Exchange Act," which is codified in Article 29A of Chapter 90 of the NC General Statutes. The Act regulates the use of the voluntary statewide HIE Network in a manner consistent with HIPAA Privacy and Security Rule. SB 607 made conforming changes to specific sections of existing North Carolina law that were identified as barriers to MU of electronic HIE.

In 2015, the NC General Assembly passed NC Session Law 2015-241 Section 12A.5, as amended by NC Session Law 2015-264, directing the formation of a new state agency to assume governance of the statewide HIE, and stipulating oversight mechanisms and a connectivity and data-sharing mandate for all providers that receive Medicaid and other state funds for the provision of health care services. The laws direct the newly formed NC HIEA to establish, administer and provide ongoing support for the statewide HIE network, now called NC HealthConnex. The laws also call for the implementation of a health information exchange analytics data warehouse to be used by HIE stakeholders for the purpose of "leverage[ing] historical and prescriptive data for the purpose of reducing healthcare costs and improving quality and access to care." Importantly, the laws

mandate connection to and data sharing with NC HealthConnex by Medicaid-funded facilities statewide by specified dates in 2018 and provide state funds to assist these facilities with the costs of onboarding. This new state governance structure and funding represent enormous opportunity for the state's Medicaid providers to meet their Meaningful Use obligations and use shared patient data to inform care decisions for better quality of care in 2016 and beyond.

Also of note, two other 2015 laws direct the collaboration of other state payers and systems with the statewide HIE network. NC Session Law 2015-241 Section 12.F.16.(f)(1) stipulates that the state's Controlled Substances Reporting System be integrated with the statewide HIE network (as well as achieve interstate connectivity and meet the federal standard of data security protocols) in order to assist with the stated goals: "to improve performance, establish user access controls, establish data security protocols, and ensure availability of data for advanced analytics."

NC Session Law 2015-245, regarding transformation of Medicaid and Health Choice programs in North Carolina, 1) directs all health plans serving Medicaid patients under the new structure to connect to the statewide HIE network, and 2) requires utilization of the statewide HIE network to perform certain functions currently performed by N3CN's Informatics Center in coordination with the new delivery system. NC Session Law 2017-57 clarified and amended the connection mandates of NC Session Law 2015-245 in June 2017, and provider connection deadlines were further amended by NC Session Law 2018-41 to require dentists and ambulatory surgical centers to submit demographic and clinical data by June 1, 2021, and pharmacies to submit claims data by June 1, 2021. NC Session Law 2019-23 delays the June 1, 2019, deadline until June 1, 2020. Additionally, licensed physicians whose primary area of practice is psychiatry now have until June 1, 2021, to connect. Further, SL 2019-23 now exempts the following provider types from the mandatory requirement to connect and send data to NC HealthConnex:

- Community-based, long-term services and supports providers, including personal care services, private duty nursing, home health and hospice care providers.
- Intellectual and developmental disability services and supports providers, such as day supports and supported living providers.
- Community Alternatives Program waiver services (including CAP/DA, CAP/C and Innovations) providers.
- Eye and vision services providers.
- Speech, language, and hearing services providers.
- Occupational and physical therapy providers.
- Durable medical equipment providers.
- Nonemergency medical transportation service providers.
- Ambulance (emergency medical transportation service) providers.
- Local education agencies and school-based health providers.

In response to the global COVID-19 pandemic, North Carolina policymakers passed a bipartisan relief package in May 2020 to provide assistance to families, schools, hospitals and small businesses. NCSL 2020-3 also extends the June 1, 2020, deadline for connecting to NC HealthConnex to October 2021 to allow health care providers hard hit by COVID-19 additional time to establish connectivity.

NC Session Law 2021-26 extends the NC HealthConnex connection deadline for most providers of Medicaid and State-funded health care services, and affiliated entities, until January 1, 2023.

A.12 HIT Activities Crossing State Borders

North Carolina borders four states: Virginia, Tennessee, Georgia, and South Carolina. It shares significant medical trading areas on the borders of Virginia and South Carolina. As North Carolina develops its health data exchange policies and technical services, has planned alignment opportunities with neighboring states driven by:

- Data exchanges that naturally flow across state borders;
- Opportunities for shared HIE infrastructure design and development;
- Cross-border provider Medicaid incentive determinations; and,
- Approaches to provider adoption of EHRs.

North Carolina partners with other states around HIT/HIE, including:

- In April 2010, the states of Tennessee and Alabama formed the Southeast Regional HIT-HIE Collaboration ("SERCH") to serve as a forum for discussion among bordering states. Along with Alabama and North Carolina, participating states include Arkansas, Florida, Georgia, Kentucky, Louisiana, Mississippi, South Carolina, Tennessee, and Virginia. Through SERCH, representatives from each state's Medicaid agency, state HIT offices, and RECs participated in weekly conference calls to discuss topics which the group determines to be of critical importance for advancing HIE and HIT. In September 2012, SERCH issued a report to ONC to improve the sharing of electronic health records among health information exchanges during disasters.
- In June 2010, North Carolina participated in a multi-state collaborative (Alabama, California, Colorado, Georgia, Maine, Missouri, New York, North Carolina, South Carolina, and Tennessee) that developed and released an RFI from vendors regarding enterprise medication management services.
- Through NCHICA, North Carolina participated in a Health Information Security and Privacy Collaborative and NHIN/eHealthExchange activities.
- NC Medicaid participates in several e-communities of practice, including several related to administration of the EHR Incentive Program.
- North Carolina has an exchange agreement with all 50 states for exchanging death certificates and exchange agreements for cancer incidence data with 24 states, including our border states of Virginia, Tennessee and South Carolina.
- DHHS shares its SMHP and provider guidance related to administration of the EHR Incentive Program with other states upon request and via the NC Medicaid EHR Incentive Program website.
- NC Medicaid works with bordering states to resolve data issues related to administration of the EHR Incentive Program stemming from providers that practice in multiple states.
- The NC HIEA is a member of Civitas Networks for Health, formally known as the Strategic Health Information Exchange Collaborative (SHIEC); served as a member of its Marketing and Communications Committee in 2017, active in 2018; served as co-chair of the Payer Committee since 2019-2021; and is an active member of the Government Relations and Advocacy Council.
- NC HealthConnex built emergency connections to neighboring state and regional HIEs to improve access to patient records during Hurricane Florence. In addition to existing connections with GaHIN (Atlanta) and VA HIE (Veterans Administration), NC HealthConnex opened the gateway for bidirectional query and exchange of patient records via the national eHealth Exchange Network, part of the Sequoia Project, to Coastal Connect HIE (Wilmington, NC), ETHIN (East Tennessee), GRAChiE (Augusta, Ga.), MedVirginia (Richmond, Va.), and SCHIEX (South Carolina).
- In late 2019, NC HealthConnex went live with an eHealth Exchange connection to the Department of Defense. North Carolina is a high priority connection for the DoD given the large number of military and veteran personnel in the state. Participants of NC HealthConnex provided over $4M in health care services

to Military Health Service beneficiaries in FY 2018. The DoD military treatments facility sites most impacted by onboarding NC HealthConnex with the DMIX are FT BRAGG, CAMP LEJEUNE, NHC CHERRY POINT, AF-C-4th MEDGRP-SJ & PORTSMOUTH. The DoD reports they will be able to increase the amount of military health service beneficiary health care information that will be available for sharing by more than 50 percent. The DMIX system enables integrated health data sharing among the Military Health System (MHS) GENESIS system, legacy DoD systems, VA systems, other federal agencies, and private-sector health providers.

- Building on the proactive monitoring of patient activity in the emergency department (ED) or in-patient settings, NC HealthConnex went live at the end of 2019 with a nationwide network called Patient Centered Data Home (PCDH). PCDH is a cost-effective, scalable method of exchanging patient data among health information exchanges (HIEs). It's based on triggering episode alerts, which notify providers a care event has occurred outside of the patient's "home" HIE and confirms the availability and the specific location of the clinical data, enabling providers to initiate additional data exchanges to access real-time information across state and regional lines and the care continuum. To date there are 45 HIEs across the country participating in the PCDH network.

A.13 Interoperability Status of the State Immunization Registry & Public Health Surveillance Reporting Database

The North Carolina Immunization Registry (NCIR) is a secure, web-based clinical tool which is the official source for North Carolina immunization information. Immunization providers may access all recorded immunizations in the NCIR, regardless of where the immunizations were given. According to CDC, by two years of age, over 20 percent of the children in the U.S. typically have seen more than one healthcare provider, resulting in scattered paper medical records. Immunization Registries help providers and families by consolidating immunization information into one reliable source.

Access to the NCIR via the North Carolina Identity Management (NCID) system is limited to North Carolina Immunization Program medical providers and other program affiliates. Access to the immunization information contained within the NCIR is meant for health care providers in the prevention and control of vaccine-preventable diseases and is not intended for general public use. The NCIR stores immunization records that are client-specific and created by the client's health care provider, and NC Vital Records live births data.

The primary purposes of the NCIR are:

- Provides consolidated immunization records at the point of clinical care for use by a vaccination provider in determining appropriate client vaccinations.
- Provides insight on population health; aggregate data on vaccinations is used in surveillance and program operations, and in guiding public health action with the overall goals of improving vaccination rates and reducing vaccine-preventable disease.
- To give patients, parents, health care providers, schools and childcare facilities timely access to complete, accurate and relevant immunization data;
- To assist in the evaluation of a child's immunization status and identify children who need (or are past due for) immunizations;
- To assist communities in assessing their immunization coverage and identifying areas of under-immunization; and

- To fulfill federal and state immunization reporting needs.

In February 2016, NC DPH began accepting the electronic submission of data for the NCIR. Eligible Hospitals (EHs) and Eligible Professionals (EPs) register their intent individually using the National Provider Identifier. EHs and EPs complete a short survey that captures information about the technical capability of their electronic health records to exchange immunization information with the NCIR. Upon successful completion of registration providers receive an auto-generated response e-mail confirming registration and subsequently an onboarding invitation from Immunization Registry.

The NCIR is utilizing direct connections with provider organizations or the NC HIEA to connect to the NCIR. All of the data exchange methods use web services to connect to the NCIR, and a provider can connect to the NCIR using any available method.

	Bi-directional
Purpose	The NCIR can transfer data to EHRs and EHRs can transfer data to the NCIR. Transfers can occur in real time
Direction of Transfer	Vaccination update: NCIR to EHR History/Recommendations: EHR to NCIR
File Formats	HL7 2.5.1, Release 1.5
Transaction Types	Updates: HL7 2.5.1, Release 1.5 VXU/ACK Queries: HL7 2.5.1, Release 1.5 QBP/RSP
Transport Protocol	Webservices
Currently in Use?	Yes

Figure 2 - NCIR Transfer of Data

https://hiea.nc.gov/services/public-health-reporting/connecting-ncir-nc-healthconnex

For more information, visit https://www.immunize.nc.gov/providers/ncirpromotinginteroperability.htm.

Within DPH, several public health surveillance databases are utilized to meet disease management, containment and reporting requirements. These systems and their supporting systems are described below.

Electronic Laboratory Reporting (ELR):

ELR sent to the Division of Public Health is sent to one of two systems: (1) the NC Electronic Disease Surveillance System (NC EDSS), or (2) the NC Lead Surveillance System (NC LEAD).

NC EDSS provides communicable disease surveillance, case follow-up and contract tracing, and disease outbreak management for public health epidemiologists and disease investigation specialists to receive, manage, process and analyze electronic data from public health entities and laboratories. Services include support for legally required reporting of communicable diseases to the health department by clinicians and laboratories, including electronic laboratory reporting; case investigation and follow-up; and communicable disease outbreak management.

NC LEAD allows public health officials to receive, manage, process, and analyze data for cases of suspected childhood lead exposure. ELR results indicating lead exposure are imported directly into NC LEAD, enabling immediate exchange of information between clinics, labs, and local health departments, as well as data analysis for the identification, tracking, and reporting of childhood lead exposure.

The current interface statuses of NC EDSS and NC LEAD are:

- • From State Laboratory for Public Health – functioning ELR to NC EDSS and NC LEAD
- • NC EDSS and NC LEAD to CDC – functioning – NC EDSS transitioning to HL7 messaging over next several years
- • From hospital laboratories - NC EDSS is receiving functioning ELR for mandatory reporting from 47 facilities including four major multi-facility health systems in the state. DPH is partnering with the North Carolina Health Information Exchange Authority to use its health information exchange, now known as NC HealthConnex, to provide a message relay service for hospital laboratories to transmit ELR to DPH. NC HealthConnex is now relaying data for several reference labs, Aegis, Curative and Bako Diagnostics.
- • The NC HIEA is currently receiving NC EDSS/NC COVID data with plans to ingest this data back to the HIE.
- • From National Commercial Laboratories – DPH is receiving functioning ELR for by law reporting only, from LabCorp, for NC EDSS and NC LEAD. DPH is receiving functioning ELR for NC LEAD from Mayo Medical Laboratories and is in the process of developing ELR for NC EDSS from Mayo as well. DPH is also in the testing phase with Quest for implementing an ELR feed to NC EDSS and NC LEAD
- • From providers, local health departments, and NC HealthConnex – DPH is analyzing feasibility of receiving electronic case reports (eCR) of reportable communicable diseases from health information systems into NC EDSS, which would replace paper-based reporting
- • NC EDSS from VR deaths and OCME- not planned or funded

Meaningful Use Stage 3 – 2015 Edition CEHRT: There were no EHs that were eligible to attest in Program Year 2021, but NC DPH was able to accept Electronic Laboratory Reports from EHs, according to the HL7 2.5.1 standards required to meet the 2015 Edition Certified Electronic Health Record Technology (CEHRT) definition.

Please note: **NC DPH was capable of and was accepting electronic Syndromic Surveillance data from eligible hospitals, via the NC Hospital Association, but** did not request nor receive electronic syndromic surveillance from EPs.

NC Disease Event Tracking and Epidemiologic Collection Tool: The NC Disease Event Tracking and Epidemiologic Collection Tool (NC DETECT) addresses the need for early event detection and timely public health surveillance in NC using a variety of secondary data sources like emergency departments, poison control centers, pre-hospital

medical information and NC College of Veterinary Medicine. NC DETECT is designed, developed and maintained by CCHI staff with funding by the NC DPH. New functionality is added regularly based on end user feedback.

For more information, visit https://ncdetect.org/.

StarLIMS: State Laboratory Information System for State Laboratory testing. For more information, visit https://www.starlims.com/industries/public-health/. This is the Primary software application used for Health Information Exchange by the State Laboratory. There are several other software applications developed in house for example: Clinical Environmental Laboratory Reporting (CELR), Billing tools, Purchasing of supplies, and more. We also communicate with business partners along with State and Federal entities using variable formats that need improvement due to the ever-changing information technology environment. The biggest problem for the State Laboratory is the need for Electronic Ordering solutions. We are ahead for Electronic Reporting due to StarLIMS and our IT support.

- Electronic Health Record (EHR) - The lab LIMS resources NEED to be integrated with current technology in Healthcare Informatics. We have isolated ourselves by not separating out the electronic data into common segments that are fully described by the Federal Government through Medicare:

  o Encounter data, Provider data, Patient data; Guarantor (responsible party/kin) data, Insurance (Payor) data, Services requested data, Results (return responses of services) data, Billing data, Supplemental data for the EHR.

- Electronic Order entry/requisitions – Deficiency can be corrected with integration of compatible HIE application. Combine this application with our current solutions will improve Health Information Exchange on Electronic Order entry. The quality improvements are significant with a reduction of clerical errors in ordering, sample integrity for better results, patient care allowing for demographic related references, timeliness of reporting and provider follow up care. Having accurate data for billing and Public Health surveillance and care is also a benefit matching lab test results to the patient or event which can be Clinical and Environmental.

- StarLIMS – Is responsible for Laboratory internal processes, Clinical and Environmental testing electronic workflow start (order) to finish (report).

- Surveillance – the NCSLPH works with Newborn babies, Public Health Programs both Clinical and Environmental, and Federal Partners for Post results analysis and follow up. HIE is vital to perform a more efficient process of sharing data with each of these partners and more. There are some tools available however they will require time to build, test/verify Validation and money necessary to finish.
  o This would be a very important tool for Post testing report tracking and follow up surveillance of outbreaks or by individual patient and/or groups of patients.
  o StarLIMS is now capable of Linking Clinical and Environmental samples under an Event manager for lab testing. Electronic transfer of this data would very useful. Development of this is required.

Health Information System (HIS): The HIS replaced the functionality of the Health Services Information System (HSIS) that was operational from 1983 to 2010. The HIS provides an automated means of capturing, monitoring, reporting, and billing services provided in, CDSAs, the North Carolina State Laboratory for Public Health and Environmental Lead Investigations by state staff in the Environmental Health Section. The HIS allows for the submission of claims to Medicaid and the reporting of all services delivered. Local health departments now use their own electronic health records systems to collect clinical services data and bill Medicaid, and selected data elements are submitted monthly to the Division of Public Health through batch text files.

Vital Records: Examples of Vital Records are births, deaths, fetal deaths, and changes to records such as adoptions and legitimations. In January 2010, North Carolina implemented a statewide web-based, electronic birth

registration system (EBRS), which was expanded to collect fetal death data. Plans are under development for a web-based, Electronic Death Registrations System (EDRS). The CDC's National Center for Health Statistics and the National Association of Public Health Statistics and Information Systems are developing standards in anticipation of potential, future meaningful use criteria that would include reporting of the medical portion of the birth certification through CEHRT. Because vital records serve both as a legal registration and public health function, separate interfaces or systems must be maintained for these distinct functions. The State Center for Health Statistics is a member of NAPHSIS and is providing feedback on standards as they are developed and the timing of integration of Vital Records with the statewide HIE will be revisited after other critical public health systems are integrated and based on readiness of Vital Records electronic systems and national standards development. For more information, visit https://schs.dph.ncdhhs.gov/data/vital.cfm#.

Central Cancer Registry (CCR): The Central Cancer Registry (CCR) is the statewide, mandated cancer surveillance system. Statute requires that all health care providers that diagnose or treat cancer (i.e., hospitals, physician offices, radiation oncology centers and laboratories) report cases to the CCR. About 80 percent of the cancer cases reported are from larger facilities, which are approved by the American College of Surgeon's Commission on Cancer, through electronic submissions from the hospital's Tumor Registry using a nationally defined standard. The remaining 20 percent of the cases are reported from freestanding diagnostic, physicians and treatment facilities. NC DPH can accept electronic submission of Cancer Diagnosis and Treatment information to the CCR Registration started on January 1, 2017. For more information, visit https://schs.dph.ncdhhs.gov/units/ccr/.

In 2017, the State Laboratory for Public Health initiated a project to support bi-directional exchange between eligible hospitals and providers where these providers will submit their test orders directly from their EHRs to the state laboratory and receive their test results back from the state laboratory directly into their EHRs.

Per guidance in State Medicaid Director Letter #16-003 pertaining to available HITECH funding for interoperability and HIE architecture, connecting public health systems to HIEs, and assisting EPs and EHs with meeting specific PI objectives, on May 21, 2019, North Carolina received approval for federal financial participation to assist with the design, development and implementation of the NC HealthConnex-NC SLPH interface and subsequent onboarding of Medicaid providers to the new service.

Additionally, NCDPH has plans to work with the NCHIEA to build out specialized registries. Future possible special registries include asthma and cardiovascular. The NC Diabetes Specialized Public Health Registry, developed by NCHIEA in partnership with NCDPH has been available for population health purposes since June 1, 2018. Full participants of NC HealthConnex are eligible to participate in the registry by signing the NC HealthConnex Diabetes Registry Form. As of December 2021, there are 833 participating organizations enrolled. Data submitted to NC HealthConnex will be included in the Diabetes Registry, as appropriate. No additional data submission from participants is required. The NC HealthConnex Diabetes Registry supports attestation for the Medicare Quality Payment Program Advancing Care Information for eligible clinicians.

DPH HIT-related Funding

PPHF: Capacity Building Assistance for Infrastructure Enhancements to Meet Interoperability Requirements
DPH received $753,484 for this project. The purpose of this award is to assist immunization awardees improve the efficiency, effectiveness, and/or quality of immunization data practices by strengthening the immunization information technology infrastructure, and to enhance or sustain awardees' capacity to support and extend interoperability between their Immunization Information Systems (IIS) and Electronic Health Record (EHR) systems. This funding is specifically targeted to improving IIS ability to interoperate with Electronic Health Record (EHR) systems, enabling or improving the ability of immunization providers to submit data to, and to receive

records and clinical decision support from IIS. The performance period was 09/01/2011 to 08/31/2013. This award allowed a one-year no cost extension which we used. Therefore, the funds extended into 2014.

Electronic Case Reporting (eCR)

The NC DPH Communicable Disease Branch received a grant from the Council of State and Territorial Epidemiologists (CSTE), funded by the Centers for Disease Control and Prevention (CDC), to hire a business analyst/project manager for one year (July 2017 – June 2018) to develop relationships with stakeholders across the state especially NC HealthConnex and assess the feasibility about what NC DPH will require to accept electronic case reports into NC EDSS. Most recently, in the summer of 2021, NC DPH used eCR for COVID. The initial senders of information were UNC, Vidant, OCHIN, Orange County HD and Pitt County HD.

Epidemiology and Laboratory Capacity (ELC) grant from CDC

The purpose of this grant is to protect the public health and safety of the American people by enhancing the capacity of public health agencies to effectively detect, respond to, prevent and control known and emerging (or re-emerging) infectious diseases. This is accomplished by providing financial and technical resources to (1) strengthen epidemiologic capacity; (2) enhance laboratory capacity; (3) improve information systems; and (4) enhance collaboration among epidemiology, laboratory, and information systems components of public health departments. Project C is specifically devoted to supporting Health Information Systems Capacity.

ELC Project C funds received by DPH
- 8/1/13-7/31/14: $375,548
- 8/1/14-7/31/15: $457,667
- 8/1/15-7/31/16: $500,918
- 8/1/16-7/31/17: $478,65
- 8/1/17-7/31/18: $461,398

B. North Carolina's "To Be" HIT Landscape Vision

NC DHHS is committed to the meaningful use of CEHRT to improve the quality, safety, efficiency and effectiveness of healthcare. In this section, the "To-Be" landscape for HIT is addressed with an outline of a five-year vision for major HIT activities, which are mostly concentrated on efforts around advancing the NC HIEA initiatives.

B.1 Five Year Vision

As seen in the final environmental scan, North Carolina Medicaid's vision for HIT aligns with the broad vision for HIT and HIE including the NC HIEA, the state-designated entity responsible for coordinating and executing a strategy for enabling statewide HIE in North Carolina. The NC HIEA is leveraging state-level oversight and multi-agency and stakeholder leadership to continue to work toward the original vision and mission as outlined in the original NC HIE Operational Plan, whereby the statewide HIE network will provide:

A secure, sustainable technology infrastructure to support the real-time exchange of health information to improve medical decision-making and the coordination of care to improve health outcomes and control healthcare costs for all residents of North Carolina.

B.2 Advancing the Objectives of HIE

A critical component of latter-stage Meaningful Use and improving health outcomes is meaningful patient data exchange. Collecting data in one's EHR is the groundwork for a healthcare provider's ability to easily access patient

data across the continuum of care and communicate efficiently with a patient's other providers to ensure an optimal care and follow-up plan. This section discusses leveraging statewide health information exchange infrastructure and a shared trust framework to support Medicaid providers, and all other providers statewide, in their pursuit of this goal.

B.2.1 Statewide HIE Governance and Organizational Approach

The following information is for historical reference. North Carolina's statewide HIE has gone through two major governance transitions, from its origin as a private-public partnership to part of the 501(c)3 that manages the state's Medicaid patients to a network now governed by its own state agency, the North Carolina Health Information Exchange Authority (NC HIEA). Of note, the NC HIEA is part of the NC Department of Information Technology's Government Data Analytics Center (NC DIT-GDAC) and leverages an existing public-private partnership between the GDAC and SAS Institute for provision of technology and analytic services. This section provides brief summary information of the HIE's earlier phases, and details recent milestones and the current state and future plans for connecting the state's health care data.

2010-2012: a public-private partnership

To ensure health information would be exchanged in an accurate, secure, and timely manner, the initial NC HIE organization led an effort to create a high-value HIE network and set of shared HIE services that built upon, enhanced and amplified existing capabilities and investments in HIT. Key components of North Carolina's statewide HIE landscape as of 2010 included:

- **State of North Carolina**: North Carolina state government, including NC Medicaid, NC DPH, and the OHIT to coordinate state agencies' HIT and HIE design, development and deployment efforts.

- **NC HIE**: Representing a wide range of stakeholders in a public-private partnership, NC HIE supported an open and transparent, collaborative process to develop the legal, policy and technical infrastructure to accelerate the use of HIE services.

- **Statewide Policy Guidance**: Provision of common and consistent technical, privacy, security, and legal frameworks for participants of HIE and to ensure the secure, interoperable exchange of data.

- **Qualified Organizations (optional)**: The original entities designated by NC HIE to contract with health care providers and other entities on NC HIE's behalf to facilitate participation in the HIE Network. (Note, this model is no longer applicable as of 2016 under state governance.)

- **End User**: A provider or other authorized user that accessed NC HIE services.
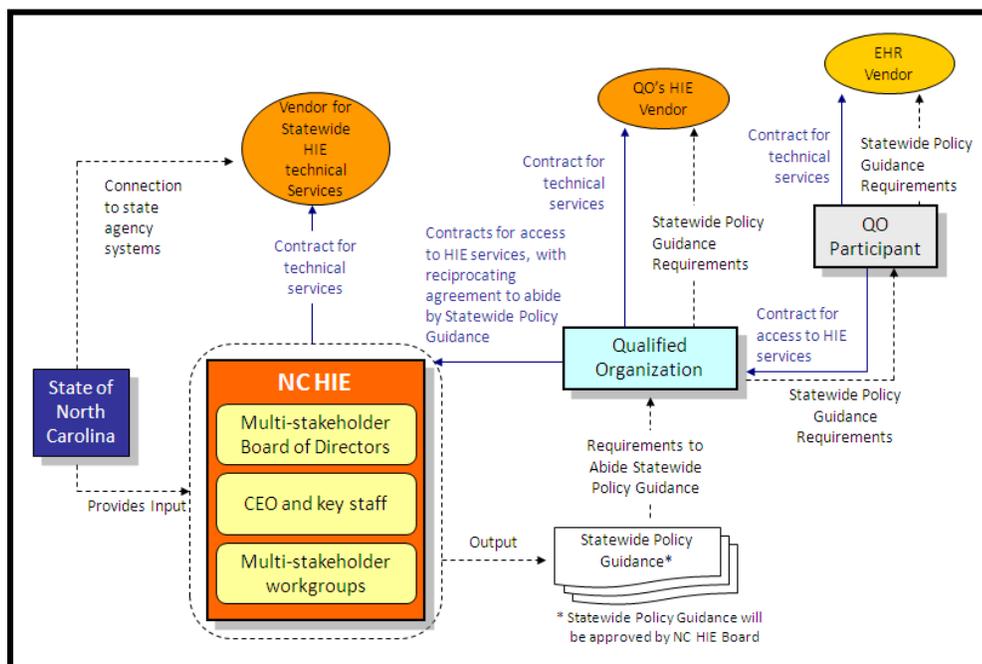
Figure 3 - Key entities and relationships in North Carolina's initial Statewide HIE Approach, 2010

While participation in the statewide HIE was (and is) voluntary, participants had to sign a contract or participation agreement with the NC HIE, binding it to compliance with the statewide HIE's participation agreement and NC HIE privacy and security policies. A process and policies were also established to ensure ongoing oversight of participating entities to ensure compliance with NC HIE's privacy and security framework. If a participating provider was identified as non-compliant with the statewide HIE's requirements as described in its contract, the entities' access to the HIE Network may have been terminated. Accountability and transparency were, and are, central to ensuring the success of statewide HIE and encouraging provider participation.

2013–2015: a 501(c)3 subsidiary of Medicaid's care management arm

During this time, North Carolina Community Care Networks (N3CN) governed NC HIE. N3CN and NC HIE shared a mission to impact care at critical moments through intelligent data use within the health care system. Under N3CN governance, NC HIE operations focused on leveraging the existing HIE infrastructure to first support North Carolina Medicaid and safety net providers, improving the health of the state's most vulnerable populations. NC HIE and N3CN aimed to work with organizations and local communities that had a need for health information exchange within their communities to collaborate rather than compete with existing community or provider HIE efforts.

In September 2015, concerns about sustainability of statewide HIE led the NC General Assembly to pass NC Session Law 2015-241 Section 12A.5, as amended by NC Session Law 2015-264, NC Session Law 2017-57 and NC Session Law 2018-41, which created a new state agency called The North Carolina Health Information Exchange Authority (NC HIEA) to oversee and administer North Carolina's HIE and set forth requirements for Medicaid providers to connect to and share patient data with the statewide HIE Network.

2016 and Beyond: state oversight and administration

On February 29, 2016, the NC HIE transitioned from the North Carolina Community Care Networks (N3CN) structure to a new state agency, the NC HIEA. The vision for statewide HIE under its new governance structure is not so different from the original vision developed for the NC HIE by a broad group of stakeholders statewide in

2010. The NC HIEA aims to provide the secure infrastructure to facilitate sharing of patient data to improve care coordination and quality of care, resulting in better health outcomes statewide. The strategy under new governance also has much in common with the strategy under N3CN—to focus first on connecting the state-insured, Medicaid, and other vulnerable populations. What distinguishes the NC HIEA and its strategy from the HIE's previous incarnations is a legislated mandate for data sharing by all provider facilities that receive Medicaid or other state funds for the provision of health services and state funding for operational ramp up, making the connection and initial service available at no cost to its participants. The state's plan is to gradually transition the operational HIE network to be 100 percent receipt-supported, and leverage robust, meaningful analytics to inform better care.

Throughout much of 2016, the NC HIEA's approach was two-pronged: 1) work to maintain uninterrupted service and optimize the user experience for current HIE participants, while continuing to build and test in-progress value-added features (such as public health interfaces); and 2) establish new guidelines, agreements, workgroups, and an Advisory Board of key stakeholders and provider representatives to inform its long-term strategy. The NC HIEA also rebranded the statewide HIE network from NC HIE to NC HealthConnex and developed a comprehensive communication plan to build provider and stakeholder trust in the new governing organization. To deliver expediently on these short-term goals, the NC HIEA leveraged existing relationships and contractual mechanisms within its parent agency, the NC Department of Information Technology (NC DIT), to partner with SAS Institute for technology services and support, and Eckel and Vaughan for its strategic communications.

The initial NC HIEA and SAS approach to building a robust HIE to serve NC is as follows:

- Emphasize bi-directional *conversations* and documents that are conformant to IHE (Integrating the Healthcare Enterprise) standards, and maximize the use of Consolidated Clinical Document Architecture (CCDA)/Continuity of Care Documents (CCD) wherever possible;
- Minimize impact on existing provider workflows by encouraging direct integration to participant EHRs as the *primary approach* for integrating participants into NC HealthConnex;
- Focus on value and thoughtful outreach to participants, showing them how NC HealthConnex can deliver value to their business operations and help them solve health care problems;
- Increase output and quality of the onboarding process for participants by focusing on achieving economies of scale and meaningful data. Leverage multi-tenant connections (where one connection equates to multiple providers, connection to other HIEs, etc.) and target outreach to large health systems in geographic regions with high volume of Medicaid patients;
- Work with the existing HIE technology provider to improve existing workflow, offer new value-added features, and tune the existing components of NC HealthConnex to perform at their utmost potential; and,
- Build the foundation for long-term sustainability by designing and prototyping analytics to support Medicaid reform that can provide direct visibility into population health across various cohorts of the state-funded patient population.

The figure below is an update to the figure above and depicts the relationships between state agencies, IT vendors and health care providers that make up the statewide HIE approach under the NC HIEA as of 2019.
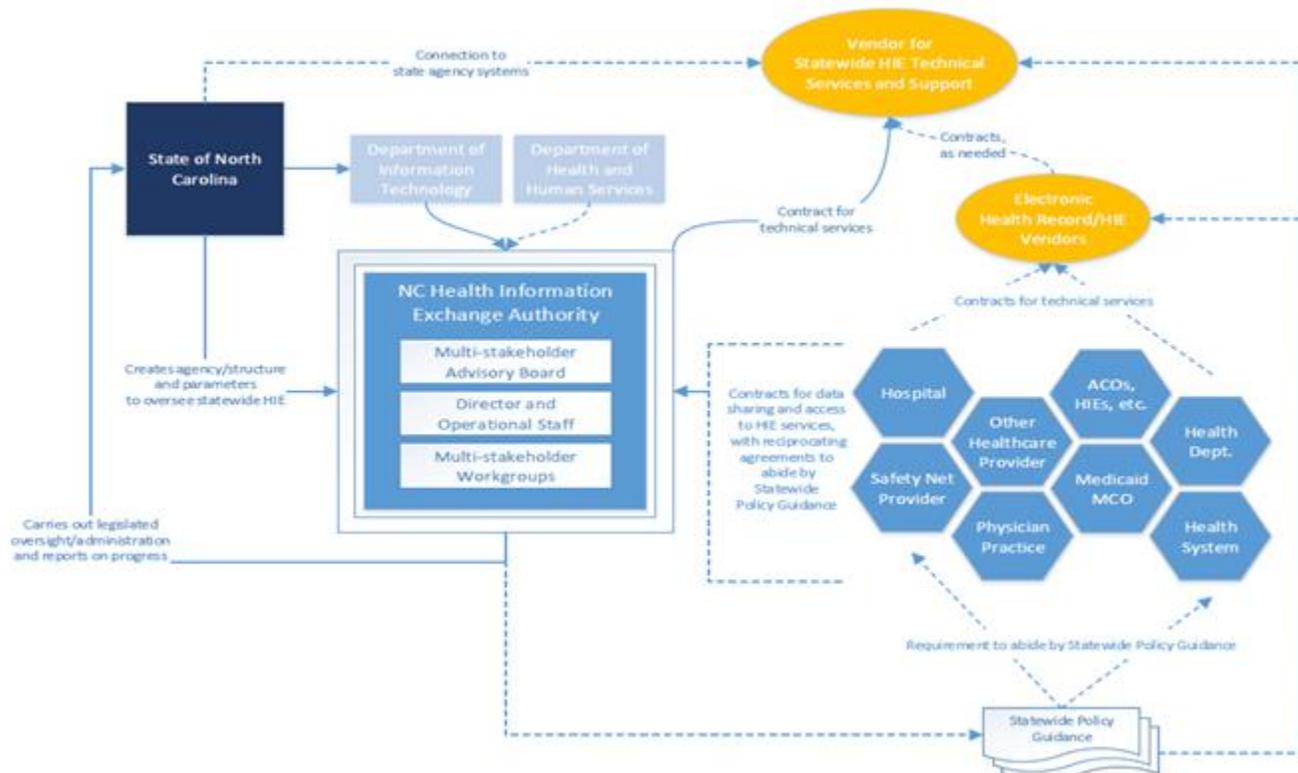

Figure 4 - Key entities and relationships in North Carolina's Statewide HIE Approach, 2017

While the initial organizational focus under the NC HIEA is on Medicaid provider onboarding, the NC HIEA coordinates tightly with NC DHHS and NC DIT, and is engaged with various leadership initiatives around health care reform in North Carolina, including representation on the North Carolina Institute of Medicine's Task Forces on Health Care Analytics, All-Payers Claims Database, and most recently, Serious Illness.

B.2.2 Statewide HIE Technical Approach

North Carolina's statewide HIE technical infrastructure framework has consisted of three categories of services: core, value-added, and support.

Core Services

Core Services support connectivity and data transport between multiple entities and systems. The goal is to provide a lightweight and flexible infrastructure and serve as gateway to access Value-Added Features. Core Services create a foundation to exchange health information across organizational boundaries, such that two entities can:

- Identify and locate each other in a manner they both trust;
- Reconcile the identity of the individual patient to whom the information pertains;
- Exchange information in a secure manner that supports both authorization decisions and the appropriate logging of transactions; and,
- Measure and monitor the system for reliability, performance and service levels.

NC HealthConnex core HIE services consist of the following components.

1. **Security Services**: Multiple functional processes that ensure only authorized users access system or service resources. Processes adhere to state and federal privacy and security standards. Access begins with a secure Web interface that conforms to security design standards. A consistent audit trail is established across components.
   - Provider Directory: Includes services for locating providers by facility location and unique identifier.
   - Facilities Index: Index of facilities that are connected and submit data to NC HealthConnex.
2. **DIRECT Secure Message Routing**: Enables participating providers to securely exchange key clinical information between their EHR systems (e.g., accept and route continuity of care documents (CCDs) between connected providers).
3. **Identity Management and Authentication**: Authentication is frequently handled through digital certificates that prove to the HIE that the systems are trusted sources.
4. **Transaction Logging**: Maintains a transaction log that can facilitate audit activities. The transaction log will track the origination and destination of an information transaction and verify that the transaction was completed.
5. **Consent Management**: Facilitates consent policies and patient preferences. NC HealthConnex supports the state's Opt-Out consent model. NC HealthConnex does not accept specially-protected data according to state and federal law (e.g. 42 C.F.R Part 2).
6. **Transformation Service**: Capability to provide transformation for certain data elements to comply with the NC HealthConnex data target standard (e.g., race, language, gender), and parse and validate various document formats (e.g., C-CDA).
7. **Enterprise Master Patient Index/Record Locator Service**: The service provides two capabilities:
   - Enables requesting a list of a patient's clinical documents, either via a demographic attribute query or a direct index lookup.
   - Enables requesting one or more of the documents listed from a query be transferred to the requester's system.
8. **eHealth Exchange (formerly known as NwHIN Exchange)**: Provides for a single, universal implementation of the eHealth Exchange gateway available as a service for authorized users and entities.
9. **NC HealthConnex Clinical Portal:** Provides for a consolidated, longitudinal, statewide view of a patient record, available to authorized users and entities.

In addition to these infrastructural components, NC HIE's initial deployment of core services included: (1) normalization of laboratory results; (2) transmission of CCD among participating entities; and (3) deployment of services in support of secure messaging using the Direct implementation specification.

Value-Added Services/Features

Accessible via core services, NC HealthConnex value-added features (formerly called services) serve as the tools and applications that allow end users the functionality to improve safety, efficiency, quality, and effectiveness of care. In developing its initial RFP for HIE services in 2010, the former NC HIE conducted a thorough and rigorous assessment of candidate value-added services across the dimensions of cost, feasibility, value to stakeholder groups, applicability to Meaningful Use, and appropriateness of delivery at the state level.

Based on the results of this 2010 assessment, NC HIE identified and prioritized the following value-added services/features (updated to reflect current status as of 2021 in NC HealthConnex):

- NC Immunization Registry – bidirectional interface live and available as of January 2017 with 129 live practices as of December 2021.
- State Lab Reporting – a connection to the State Lab of Public Health is on the 2019-2021 roadmap for NC HealthConnex; daily electronic reporting of reportable labs from hospitals to the NC DPH is live for sixteen hospitals (all ELR results), three hospitals (COVID-19 results only), and five reference labs (COVID-19 results only) as of December 2021, with five additional hospitals actively onboarding. Communicable Disease Reporting to the NC Division of Public Health – project on hold as of May 2017 per NC DPH readiness
- Medication Management module through CCNC's Pharmacy Home module – module enhanced at CCNC but not transferred to the NC HIEA in 2016
- Lab orders and results – As of October 2020, LabCorp is live and sending data to the HIEA. As of August 2020, Quest is live and sending data to the HIEA (These two companies share the NC lab market with the State Lab of Public Health and hospital laboratories)
- NC*Notify, an event notification service, where full NC HealthConnex participants receive alerts providing significant insights into patients' health care activity distributes over four million alerts per month to 570-plus organizational subscribers.

The following additional value-added features to address market demands and support Meaningful Use are in production or development as of May 15, 2020:

- State-level Disease Registries – the NC Diabetes Registry, a collaboration between NC DPH and the NC HIEA, is the first in the series, and was completed in June 2018. Planning for additional registries in partnership with NCDPH is underway.
- Clinical Event Notifications– the NC HIEA launched the NC*Notify clinical event notifications in September 2018; released Version 2.0 in April 2019, enabling additional clinical information inputs and delivery methods; released Version 3.0 in May 2020, enabling real-time HL7 notifications; released V3+ in summer 2020 providing additional data sources and a web-based application integrated into the clinical portal for care management. In spring of 2021, the NC HIEA released V4 and V4+ providing access to COVID-19 lab result alerts, allowing providers to react to positive cases in a timelier manner. In addition to COVID-19 notifications, additional alerts available include: High Utilizer Alert, Dental Alert, Care Team Change Alert, Diabetes Diagnosis Alert, and a Chronic Care Management Alert.
- Integration with the Controlled Substances Reporting System (CSRS) – requirement per NC Session Law 2015-241 Section 12.F.16.(f)(1); initial phase enables SSO access to the CSRS via the NC HealthConnex Clinical Portal. In September 2020, the NC HIEA began onboarding participants to this service.

Supporting Services

Supporting services include the functions needed to maintain the technical operations and include:

- *Systems Environments*: Ability to maintain appropriate environments for development, testing, training, and production.
- *Hosting Services*: Technical infrastructure and services needed to run, maintain, and support service delivery.
- *Training*: Training of end users and administrators within NC HealthConnex.
- *Help Desk*: Operations support and maintenance.

The technical framework of NC HealthConnex has changed little since the inception of the statewide HIE network in 2012. The figure below depicts the NC HealthConnex architecture and data flow with participating entities as of May 15, 2019.

Future state update: NC HealthConnex claims and eligibility workstreams are now underway.
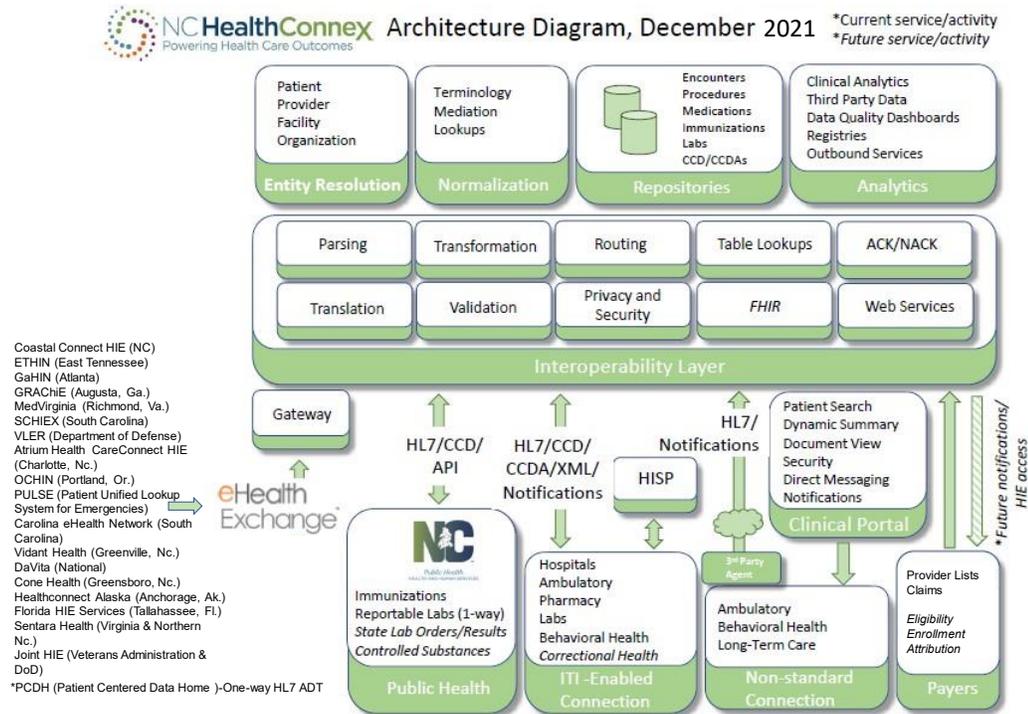
Figure 5 - Illustration of NC HealthConnex data architecture and relationships with other entities

B.2.2 Strategy for Statewide HIE under the NC Health Information Exchange Authority

Since its inception, the statewide HIE network encountered many barriers to connecting the key players in the healthcare community, including high integration costs, coordinating with the upgrade or adoption of each organization's own EHR system, and the constraints on internal resources that these projects create. In addition, health systems in North Carolina have continued to increase in number, size and scope so that an increasing percentage of care delivery is now being delivered through these systems. These challenges have required the HIE's different governance structures to consider alternative approaches and reassess strategies for accelerating statewide adoption of HIE. The map below illustrates key health systems and health information exchange organizations at play in North Carolina as of 2020.
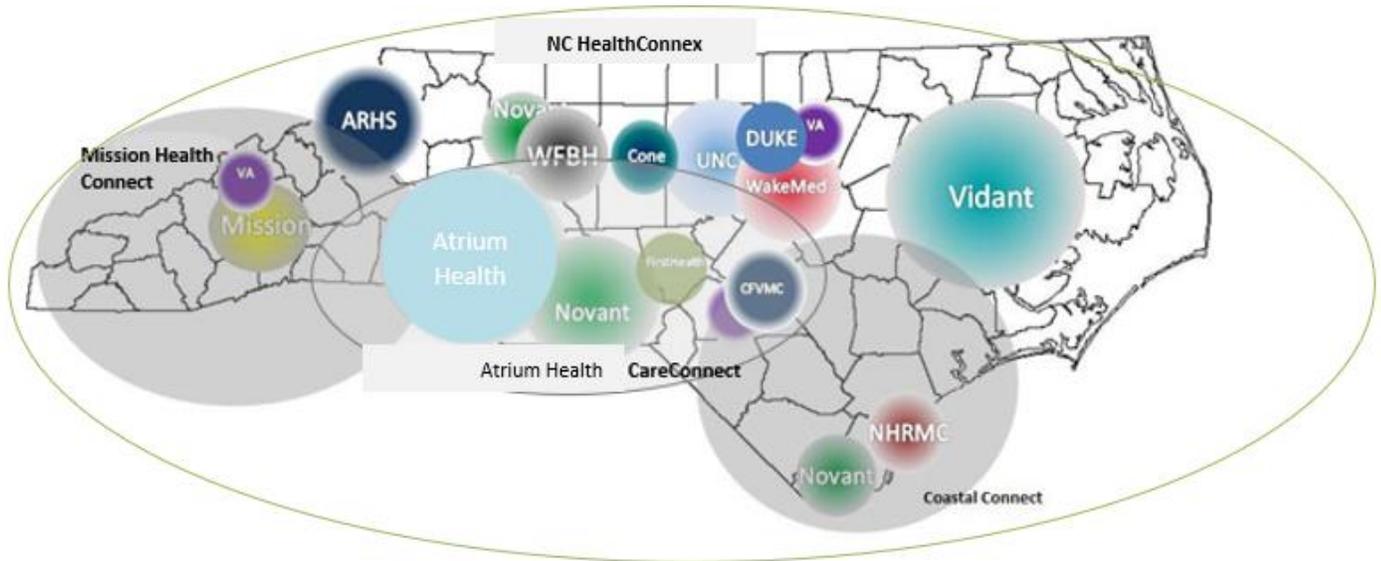
Figure 6 - Key Health Systems and Health Informatino Organizations in NC as of 2020

As noted in Section B.2.1. Statewide HIE Governance and Organizational Approach, the near-term strategy for the statewide HIE network, NC HealthConnex, is similar to the approach while under N3CN governance in 2013-2015 in that the main focus remains connecting providers that serve state-insured populations, though the main driver and differentiating advantage for 2016 forward was the 2015 state law requiring participation in NC HealthConnex by all NC health care providers receiving Medicaid or other state funds for provision of services by dates in 2018-2021 (see NC Session Law 2015-241 Section 12A.5, as amended by NC Session Law 2015-264, NC Session Law 2017-57 and NC Session Law 2018-41). The aggressive deadlines set forth in the law and in subsequent amendments are finally moving the needle with provider engagement and the NC health care market and demanding the NC HIEA's attention be placed on provider onboarding efforts, which made the short-term strategy limited and clear.

2017-2018 saw enormous progress in onboarding efforts, with nearly all organizations represented in the map above successfully onboarded to the HIE and sharing data. The NC HIEA will remain focused on onboarding smaller provider organizations and independent providers serving the state-insured population during 2019-2021, while simultaneously optimizing existing HIE features and completing the build of value-added features, including but not limited to:

- Enhancing clinical notifications delivery, including improvements to the NC*Notify service like inclusion of additional clinical data, delivery methods, and eventually "smart notifications" that leverage clinical intelligence to pull relevant data depending on the patient and event;
- Completing subsequent disease registries together with the NC DPH;
- Completing the integration effort with the NC Controlled Substances Reporting System to enable HIE participants to seamlessly access patient reports via their HIE connection;
- Continuing to onboard hospitals to the Electronic Lab Reporting functionality to NC DPH; and
- Continuing an accelerated, coordinated NC Immunization Registry onboarding effort with NC DPH and their list of registered providers.

The NC HIEA completed a three-year strategy document in April 2019, which is now available for download on its website: NC HIEA Roadmap 2021. This document includes five strategic focus areas for 2019-2021 with embedded initiatives under each. Among them, continued onboarding efforts; optimization of analytic capabilities for NC DHHS/NC Medicaid, as well as for health care providers and other payers; and appropriate HIE access for payers, patients, disaster response workers and other populations with a HIPAA-compliant need to view patient history.

2019-2021 – Continued Onboarding Efforts and Driving Value Through Statewide Interoperability and Analytics

The NC HIEA has continued to place its main focus on integrating the state's remaining providers of health care services for which Medicaid, State Health Plan, or other state funds are received. These connections represent over 90 percent of the state's health care providers and are expected to cover nearly all of the state's ten million lives. In instances where the Participant is willing, the NC HIEA will accept Participation Agreements from organizations serving patients not included in the state-insured population, though these integrations may be scheduled for later implementation.

The figure below represents the major organizations/facilities/provider groups that the NC HIEA has been targeting for integration through 2021, in addition to pharmacies, laboratories, and other providers subject to connect under state law. A green check-mark indicates that the organization is live with NC HealthConnex; a blue asterisk indicates that onboarding is partially completed and/or currently underway.
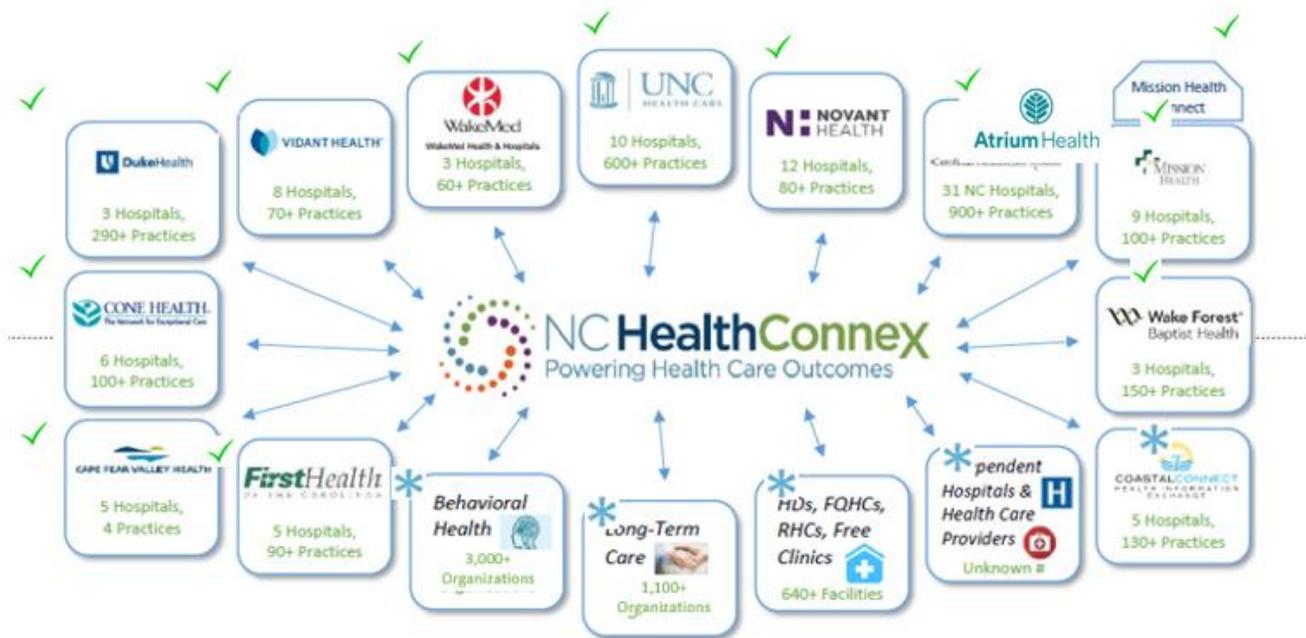
Figure 7 - Statewide Connection Status for NC HealthConnex, 2019

Note: The NC HIEA calculated the number of hospitals and practices in each system based on information from each organization's website, and/or as received from the entity directly.

Because all provider types that receive state funds of any kind for provision of health care services are required by law to participate with NC HealthConnex by dates through 2021, the NC HIEA's strategy must simultaneously onboard hospitals, primary care providers, health departments, rural health organizations and clinics, specialists, behavioral health providers, substance abuse treatment providers, long-term care providers, skilled nursing facilities, home health providers, correctional health providers, pharmacies, laboratories, emergency medical

service providers, public health providers, and other types of providers that fall under the state mandate, together, as efficiently and expeditiously as possible.

Having ADT and CCD information available through NC HealthConnex represents many immediate benefits to participating providers, particularly as the participant base and data repository grow. These benefits include:

- Increase efficiency and decision-making by enabling access to more complete patient information at the point of care;
- Prevent unnecessary hospital readmissions by enabling electronic care transitions and continuity of care after discharge;
- Ease physician workflow requirements with automated reporting to NCIR;
- Reduce adverse drug events resulting from drug interactions and allergies by providing improved access to medication and allergy history;
- Support Meaningful Use requirements;
- Create efficiencies related to sophisticated decision support;
- Communicate directly with other providers through secure messaging;
- Help to provide a patient-centered medical practice environment;
- Provide improved care coordination among different providers;
- Provide quicker access to patient clinical results resulting in decreased duplicate medical testing;
- Result in more efficient patient care by providing a wider range of access to patient histories; and
- Enable more comprehensive care management for chronic disease populations.

The NC HIEA anticipates onboarding the majority of the state's health care providers by 2021, but expects onboarding efforts to continue for many years, as those who have been slow to adopt technology do so, and the health care and EHR markets continue to mature. However, after the initial surge of onboarding in 2017-2018, the NC HIEA has shifted some focus and resources toward efforts to enable HIE access for other critical groups—such as correctional health services, disaster response teams, and emergency medical services; connect other state and nationwide patient data systems; and driving value for health care providers, the state, and other health care payers through analytics of available statewide health care data.

One of the benefits of leveraging the existing NC Government Data Analytics Center (GDAC)-SAS Institute partnership for NC HealthConnex is the knowledge and experience SAS brings to bear in advanced analytics for business administration. Under the aforementioned law, the NC HIEA is directed to build an HIE data analytics warehouse that will support Medicaid and State Health Plan administration and may also support additional analytic use cases for providers and payers.

The NC HIEA Roadmap 2021 envisions connected health care communications across North Carolina's many entities and patient data systems, which ultimately serve the patient and the state, as depicted in the figure below.
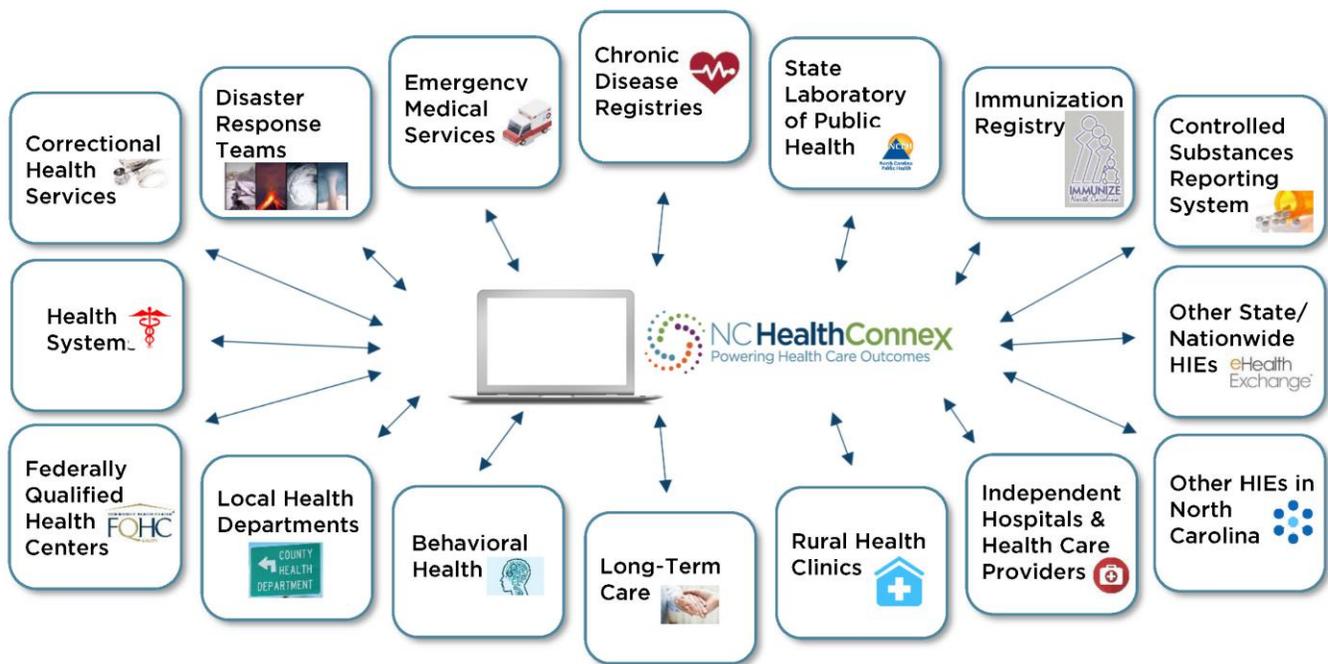

Figure 8 - Vision for Health Care Communications With NC HealthConnex 2021

While currently supported entirely by state-appropriated and federal HITECH funds, and being built as a figurative "public utility" for health care providers, patients and payers in North Carolina, the HIE is also planning for future sustainability.

2021-2023 – Continued Onboarding Efforts and Driving Value Through Statewide Interoperability and Analytics

In May 2021, the North Carolina General Assembly passed N.C.S.L. 2021-26, directing the NC HIEA to (i) examine the provider population subject to its Statewide Health Information Exchange Act (the "HIE Act," see N.C. Gen. Stat. § 90-414) and determine the status of each provider and entity's effort to connect to the HIE; (ii) conduct outreach to all providers and entities not yet connected and sharing data per the HIE Act; and (iii) report on these efforts as well as "recommendations regarding appropriate features or actions to support enforcement" of the HIE Act (N.C.S.L. 2021-26).

In fall 2021, the NC HIEA conducted a statewide connectivity analysis and convened an informal work group of NC HIEA Advisory Board members and NC HIEA staff, as well as stakeholders from within the health care provider, policy, and advocacy communities to explore relevant recommendations. The results of the analysis, which used provider data from NC Medicaid and the State Health Plan for Teachers and State Employees, yielded ~86,000 subject individual providers and entities statewide, 68 percent of which were connected and sharing data as required by the HIE Act as of November 2021 (the legislated deadline to connect is January 1, 2023). Of note, Medicaid providers were found to be connected at higher rates than non-Medicaid providers, including 90 percent+ of Medicaid primary care, pediatrics, and OBGYN providers.

As of February 2022, the NC HIEA is in process with the outreach effort to unconnected providers, as well as its report and recommendations to the North Carolina General Assembly.

The NC HIEA 2025 Roadmap is in development and will lay the groundwork for connectivity expansion and other initiatives through 2025. The Roadmap will be shared with CMS in the coming months.

B.2.3 Risks and Mitigation Strategies

In early versions of this SMHP (2010-2016), this section has focused mainly on the risks involved in failing to complete HIE core services development, and the possibility of misalignment of the HIE's core services with current/future Meaningful Use criteria. NC HealthConnex core services development is complete, and its core offering is very much aligned with several Meaningful Use objectives per *Section B.2.6 Link to Meaningful Use Strategy*.

Risks and mitigation strategies for the challenges before the NC HIEA from 2019-2021 are as follows in the table below.

Description of Risk	Probability	Impact	Prevention/Mitigation Strategy
Medicaid providers do not sign Participation Agreements early enough ahead of connection deadlines to achieve timely integration	Moderate	High	The NC HIEA performs statewide outreach through provider and advocacy organizations and will increase these efforts jointly with NC Medicaid to educate Medicaid providers on the connection requirement and its legal prerequisite, signing the DURSA-based NC HIEA Participant Agreement. The NC HIEA holds regular "How to Connect" calls/WebEx to explain and answer questions on the Participation Agreement and the anticipated connection timeline and has educated key stakeholders and REC practice support personnel in these areas.

Description of Risk	Probability	Impact	Prevention/Mitigation Strategy
Insufficient technical capacity to onboard all signed Participants subject to connect by dates in 2018-2021 as specified by state law	Moderate	High	In preparation for continued accelerated Medicaid provider onboarding in 2019-2021, the HIE's technical vendor, SAS Institute, continues to grow the size of its internal team and broaden its network of experienced integration subcontractors, whose resources may be incrementally added to scale up integration efforts as demand (i.e., the signed participant base) increases. The NC HIEA has also recommended additional adjustments to the law as currently written to provide more time for certain provider types to connect and make connection voluntary for others where the cost and effort would exceed the value of the data they collect (e.g., hospice service providers). These changes were codified in law in June 2019, NCSL 2019-23, also known as NC House Bill 70.

Description of Risk	Probability	Impact	Prevention/Mitigation Strategy
Time and resource constraints (and competition with other initiatives) of other state agencies or nationwide systems to connect their patient data systems to NC HealthConnex	Moderate	Moderate	Part of the NC HIEA's strategy for 2019-2021 is to expand its available patient data and HIE features to include that from other state systems like the NC DPH's NC Immunization Registry, NC Controlled Substances Reporting System, and NC State Laboratory of Public Health; and other nationwide systems like the US Department of Defense and nationwide Patient Centered Data Home.
			The NC DPH is tasked with preparedness efforts to keep the state population safe from disease outbreaks, and other such duties that can take precedence over its projects for data integration with NC HealthConnex. Nationwide systems likewise have competing priorities to connection with NC HealthConnex.
			NC DPH and NC HIEA leadership will hold regular touchpoints to track initiatives and barriers or constraints to meeting project timelines. In addition, the NC HIEA has dedicated a staff to each initiative, to lead careful planning and vetting of activities and project plans with all relevant stakeholders and co-manage initiatives with regular project touchpoints.

Description of Risk	Probability	Impact	Prevention/Mitigation Strategy
Time and resource constraints (and competition with other initiatives) of the Participant and/or EHR vendor	High	Moderate	The NC HIEA performs statewide outreach through provider and advocacy organizations, and will increase these efforts jointly with NC Medicaid, to make clear: 1) the connection deadlines set forth in NC Session Law 2015-241 Section 12A.5, as amended by NC Session Law 2015-264, NC Session Law 2017-57 and NC Session Law 2018-41, NC Session Law 2021-26, and 2) the process to connect, including time and resource requirements of the Participant and EHR vendor. Once a Participant signs, the technical kick-off packet and call/WebEx set forth Participant and vendor expectations and timelines for connection to NC HealthConnex and provide a forum for all parties to commit to a project timeline for integration. The NC HIEA also works directly to engage and educate EHR vendors on the requirement and steps required to connect on behalf of their Medicaid-serving provider clients and encourages and facilitates joint communication efforts to providers through EHR vendors. After each vendor completes the initial integration process, the NC HIEA and SAS leverage those vendor relationships to expedite subsequent Participant integrations.
HIE sustainability if state appropriations for HIE operational support do not continue past 2021	Low	Low	The NC HIEA is exploring sustainability paths apart from or in addition to state funding, including fees for health plan Participants (payers), fees for use of analytics or value-added features, and education of NC lawmakers on the value of a statewide HIE network as a publicly-funded utility.

Table 4 - HIE Risk Analysis

As noted in previous SMHP versions, NC Medicaid will manage risk through direct engagement with the NC HIEA and through rigorous oversight and monitoring activities. NC Medicaid's contract with the NC HIEA for the Medicaid onboarding effort described in the NC HIE I-APD Version 1.0 includes a detailed statement of work with funding tied to quarterly implementation milestones. The NC HIEA provides quarterly updates on the number of Participants who have access to core HIE services and progress toward the goals and objectives stated in the NC

HIE I-APD to NC Medicaid and CMS. In addition, the NC HIEA has begun more detailed monthly reporting across the NC Medicaid Information Systems enterprise and to CMS as of May 2019.

B.2.4 Annual Benchmarks and Performance Goals

For 2021-2023, the NC HIEA's goals for NC HealthConnex are still largely related to onboarding providers that receive state funds for the provision of health care services, at the direction of the NC General Assembly per NC Session Law 2015-241 Section 12A.5, as amended by NC Session Law 2015-264, NC Session Law 2017-57 and NC Session Law 2018-41. However, additional goals have been added in this Version 4.4 of the SMHP to reflect additional focus areas as described in NC HIEA Roadmap 2021. These include improved utilization of the HIE and its features (namely, NC*Notify clinical event notifications), improvement of the quality of data within the HIE (percent of HIE Participants compliant with the NC HIEA's minimum data target), and provider satisfaction with NC HealthConnex. These are as follow in the table below. These goals and benchmarks will be updated annually through 2023.

Performance Goal	Metric	2016 Baseline	2018 Goal	2018 Actual	2019 Goal	2019 Actual	2020 Goal	2020 Actual	2021 Goal	2021 Actual	2022 Goal	2022 Actual	2023 Goal	2023 Actual
Expand connectivity to NC HealthConnex Core Services	Total # of facilities	835	5,000	4,502	7,500	6,290	8,500	8,116	10,000	8,503	*3,000/600 per year		*3,000/600 per year	
	Total # of hospitals	22	110	97	120	113	125	126	130	140	All NC hospitals connected		All NC hospitals connected	
	Total # of health departments	23	85 (all)	63	85 (all)	72	85 (all)	85 (all)	85 (all)	85 (all)	85 (all)		85 (all)	
Expand patient and provider base within NC HealthConnex	Total # of unique providers with contributed patient records in NC HealthConnex	19,744 (Apr. 2017 actual)	TBD	41,568	65,000	TBD*	70,000	35,868 (Medicaid Only)	75,000	181,865 (Total unique providers both in-state and out-of state_	**86,000 (Total mandated provider population)		**86,000 (Total mandated provider population)	
	Total # of unique patients in NC	3.5 M	8 M	6 M	10 M	9.4 M	*10 M	13 M	*10 M	18-plus M (this includes	***10 M		***10 M	

	HealthConnex								out of state patients)				
Improve utilization of NC HealthConnex and its features/value added services	Average monthly queries to NC HealthConnex	N/A	N/A	300,000+	450,000	450,000	675,000	701,000	1,012,500	1-plus M (This metric does not include eHX queries/transaction)	1.5-plus M		2-plus M	
	Utilization of NC*Notify clinical event notifications measured by patient lives monitored	N/A	N/A	250,000	1 M	1.5 M	2.5 M	3.4 M	5 M	7.6 M	8-plus M		9 M	
Improve NC HealthConnex data quality	% of participants compliant w/NC HIEA minimum data target	N/A	N/A	78%	82%	81%	86%	85%	90%	****73% (for all data elements) 83% (for demographic data only) 50% (for encounter data only)	****80% (for all data elements) 88% (for demographic data only) 65% (for encounter data only)		****80% (for all data elements) 88% (for demographic data only) 65% (for encounter data only)	

| Provider satisfaction with NC HealthConnex | % of participants satisfied or very satisfied with NC HealthConnex (over all) and NC*Notify | N/A | N/A | 77% | 80% | 79% | 85% | A provider satisfaction survey was not conducted due to COVID impacts | 90% | A provider satisfaction survey was not conducted due to COVID impacts | 90% | | 90% | |

*5-year connection plan

**Continued work to identify the universe of organizations mandated to connect. Estimates will flux depending on results.

***The state's population hovers around 10 million, so while the total # of unique patients will grow slowly thereafter due to movement in the population, the goal has not been set higher than 10 million.

****The HIEA is currently working to develop more data quality tools to more deeply assess data content at the data element level. As our methodology improves there may be shifts in metrics.

Table 5 - Annual Benchmarks and Performance Goals for the Statewide HIE, 2019-2023

B.2.5 Link to Meaningful Use Strategy

In October 2010, NC HIE's Clinical and Technical Operations Workgroup evaluated the ability for NC HIE and the private market to support providers' ability to meet current and anticipated requirements of meaningful use. The table below shows this initial crosswalk and whether the HIE achieved each MU-related goal.

MU Stage 1 Objectives		MU Set	Role of NC HIE/NC HealthConnex's Core Services	NC HIE/NC HealthConnex Met Goal?
Eligible Professionals	**Eligible Hospitals**	**Core/Menu**		
Generate and transmit **permissible prescriptions electronically (eRx)**	*Not applicable*	Core	Not applicable; functionality addressed via EHR. HIE services not sponsored or hosted by NC HIE.	n/a
Incorporate **clinical lab-test** results into EHR as structured data	Incorporate **clinical lab-test** results into EHR as structured data	Menu	HIE's deployment of core services will include laboratory normalization functions that will facilitate the interoperable	Yes. Normalization delivered initially through core services. NC HIEA working to secure contracts with, the NC State Lab of

MU Stage 1 Objectives		MU Set	Role of NC HIE/NC HealthConnex's Core Services	NC HIE/NC HealthConnex Met Goal?
Eligible Professionals	Eligible Hospitals	Core/Menu		
			exchange of clinical lab-test results.	Public Health. Quest and LabCorp feeds are live for the Medicaid population.
Report ambulatory quality measures to CMS or the states	**Report hospital quality measures** to CMS or the states	Core	To be addressed by service provisioned by N3CN.	Now under state governance, there are no immediate plans as of 2019 for NC HealthConnex to support e-CQM reporting for the Promoting Interoperability Programs. The NC HIEA delivered data extracts to the Division of Health Benefits for Diabetes, Hypertension, and BMI. We have initiated a pilot effort with Office of Rural Health, focusing on 2 Rural health centers and 2 measures. COVID vaccine related activities have sidelined these efforts temporarily.
Capability to exchange **key clinical information** (for example, problem list, medication list, allergies, diagnostic test results), among	Capability to exchange key clinical information (for example, discharge summary,	Core	Core Services will enable authorized users on the statewide HIE network to search for, transmit, and	Yes. Delivered through the deployment of core services. As we roll out FHIR, we will possess more granular data

MU Stage 1 Objectives		MU Set	Role of NC HIE/NC HealthConnex's Core Services	NC HIE/NC HealthConnex Met Goal?
Eligible Professionals	Eligible Hospitals	Core/Menu		
providers of care and patient authorized entities electronically	procedures, problem list, medication list, allergies, diagnostic test results), among providers of care and patient authorized entities electronically		receive summary care records.	exchange capabilities.
The EP, EH or CAH who transitions their patient to another setting of care or provider of care or refers their patient to another provider of care should **provide summary of care record for each transition of care or referral**	The EP, EH or CAH who transitions their patient to another setting of care or provider of care or refers their patient to another provider of care should **provide summary of care record for each transition of care or referral**	Menu	Core Services will enable authorized users on the statewide HIE network to search for, transmit, and receive summary care records.	Yes. Delivered through the deployment of core services.
Capability to **submit electronic data to immunization registries or Immunization Information Systems** and actual submission in accordance with applicable law and practice	Capability to **submit electronic data to immunization registries or Immunization Information Systems** and actual submission in accordance with applicable law and practice	Menu	As a value-added feature, to be the conduit for a bidirectional interface between health care providers and the NC Immunization Registry (NCIR) that would enable automated vaccine reporting from the provider EHR, as well as support query of the NCIR for vaccination history	Yes. Live bi-directional interface with NCIR delivered as a value-added feature of NC HealthConnex, subject to provider onboarding by NC DPH Immunization Branch and the NC HIEA.

MU Stage 1 Objectives		MU Set	Role of NC HIE/NC HealthConnex's Core Services	NC HIE/NC HealthConnex Met Goal?
Eligible Professionals	Eligible Hospitals	Core/Menu		
			and recommendations.	
Not applicable	Capability to submit electronic data on **reportable (as required by state or local law) lab results** to public health agencies and actual submission in accordance with applicable law and practice	Menu	As a value-added feature, to be the conduit for a unidirectional, automated daily batch reporting interface from HIE Participant hospitals to NC DPH.	Yes. Live unidirectional interface with NC DPH supports sixteen hospitals (all ELR results), three hospitals (COVID-19 results only), and five reference labs (COVID-19 results only) as of December 2021, with five additional hospitals actively onboarding.
Capability to **submit electronic syndromic surveillance data** to public health agencies and actual submission in accordance with applicable law and practice	Capability to **submit electronic syndromic surveillance data** to public health agencies and actual submission in accordance with applicable law and practice	Menu	To be addressed as a value-added service/feature of the HIE.	Public health leadership decided to delay electronic submission to NC EDSS by eligible professionals until after the NCIR, SLPH, and Vital Records systems were fully integrated with the statewide HIE network.

However, the NC HIEA has expanded NC DETECT ambulatory data |

MU Stage 1 Objectives		MU Set	Role of NC HIE/NC HealthConnex's Core Services	NC HIE/NC HealthConnex Met Goal?
Eligible Professionals	Eligible Hospitals	Core/Menu		
				sources to ensure more complete coverage of the state to address the need for early event detection and timely public health surveillance in NC.

Table 6 - Core HIE Services and Stage 1 Meaningful Use Criteria

NC HealthConnex can support several of the Stage 3 Meaningful Use measures and objectives in use from 2019 forward. A crosswalk of these measures and NC HealthConnex functionality (including some future functionality) is shown in the table below.

Stage 3 MU Objective	Stage 3 MU Measure(s)	Supporting NC HealthConnex Functionality

	EP Measures: An Eligible Professional (EP), through a combination of meeting the thresholds and exclusions (or both), must satisfy all three measures for this objective:
	    Measure 1 – More than 60 percent of medication orders created by the EP during the Promoting Interoperability (PI) reporting period are recorded using computerized provider order entry.
	    Measure 2 – More than 60 percent of laboratory orders created by the EP during the PI reporting period are recorded using computerized provider order entry.
	    Measure 3 – More than 60 percent of diagnostic imaging orders created by the EP during the PI reporting period are recorded using computerized provider order entry.
	EH Measures: An Eligible Hospital/Critical Access Hospital (CAH) must meet the thresholds for all three measures.
	    Measure 1 – More than 60 percent of medication orders created by the authorized providers of the eligible hospital or CAH inpatient or emergency department (POS 21 or 23) during the Promoting Interoperability (PI) reporting period are recorded using computerized provider order entry.
	    Measure 2 – More than 60 percent of laboratory orders created by the authorized providers of the eligible hospital or CAH inpatient or emergency
		• **State Laboratory of Public Health Orders and Results:** This new bidirectional capability will allow Medicaid providers to use CPOE within their EHR to order laboratory tests and receive results from the State Laboratory of Public Health. This new functionality will contribute to Measure 2 for participating Medicaid providers, and will help to convert some of the two million labs now annually requested via paper and portal to an electronic process, seamlessly integrated within the provider's EHR.

	department (POS 21 or 23) during the PI reporting period are recorded using computerized provider order entry. **Measure 3** – More than 60 percent of diagnostic imaging orders created by the authorized providers of the eligible hospital or CAH inpatient or emergency department (POS 21 or 23) during the PI reporting period are recorded using computerized provider order entry.	
	Measures (identical for EP/EH): Providers must attest to all three measures and must meet the threshold for at least two measures to meet the objective. **Measure 1** – For more than 50 percent of transitions of care and referrals, the EP/EH/CAH that transitions or refers their patient to another setting of care or provider of care: (1) Creates a summary of care record using CEHRT; and (2) Electronically exchanges the summary of care record. **Measure 2** – For more than 40 percent of transitions or referrals received and patient encounters in which the provider has never encountered the patient, the EP/EH/CAH incorporates into the patient's EHR an electronic summary of care document. • **Measure 3** – For more than 80 percent of transitions or referrals received and patient encounters in which the provider has never before encountered the patient, the EP/EH/CAH performs a clinical information reconciliation. The provider must implement clinical information reconciliation for the following three clinical information sets: (1) Medication. Review of the patient's medication, including the name, dosage, frequency, and route of each medication. (2) Medication allergy. Review of the patient's known medication allergies. (3) Current Problem list. Review of the patient's current and active diagnoses.	• Direct Secure Messaging available to all NC HealthConnex participants through the NC HealthConnex Clinical Portal or visually integrated within a provider's EHR. The NC HealthConnex HISP is DirectTrust accredited and maintains compliance with all ONC/DirectTrust requirements. • Provider Directory with 26,000+ provider provider addresses available through NC HealthConnex Clinical Portal and sent to NC HealthConnex participants directly for use within their EHRs (updated quarterly). • Query-based retrieval of patient records within NC HealthConnex by providers at the point of care. New capability in 2019-2020 for EHR-integrated users to access a consolidated CCD which will contain the most current, consolidated information for Measure 3. • Backend reporting on message delivery notifications for MU/PI reporting verification/audit logging. • Note: non-eligible provider types connected to NC HealthConnex will augment the electronically available referral/trading partners for EPs/EHs/CAHs.
	Measures (1-5 identical for EP/EH): **Measure 1** – Immunization Registry Reporting: The EP/EH/CAH is in active engagement with a PHA to submit immunization data and receive immunization forecasts and histories from the public health immunization registry/immunization information system (IIS). **Measure 2** – Syndromic Surveillance Reporting: The EP/EH/CAH is in active engagement with a PHA to submit syndromic surveillance data from an urgent care setting. **Measure 3** – Electronic Case Reporting: The EP/EH/CAH is in active engagement with a PHA to submit case reporting of reportable conditions. **Measure 4** – Public Health Registry Reporting: The EP/EH/CAH is in active engagement with a PHA to submit data to public health registries. **Measure 5** – CDR Reporting: The EP/EH/CAH is in active engagement to submit data to a CDR.	• **Immunization Registry Reporting**: Live bidirectional connection to the NC Immunization Registry (NCIR), allowing for automated reporting from entry into the EHR patient record directly to the NCIR, as well as query capability through the EHR or NC HealthConnex Clinical Portal to the NCIR to pull vaccination history and recommendations. • **Public Health Registry Reporting:** All connected NC HealthConnex participants, once live, automatically submit data to the NC Diabetes Registry. NC HealthConnex provides documentation to this end for provider records/audit logging. **Electronic Reportable Laboratory Result Reporting:** Reporting through NC HealthConnex live/available. Hospital laboratories may submit their ELR daily batches via NC HealthConnex to NC DPH.

	EH Only: Measure 6 – Electronic Reportable Laboratory Result Reporting: The EH/CAH is in active engagement with a PHA to submit electronic reportable laboratory (ELR) results.	

Table 7 - Stage 3 Meaningful Use Objectives and Supporting NC HealthConnex Functionality

B.2.6 Clinical Quality Measures and Public Health Interfaces

At this time, the NC HIEA does not support the calculation and electronic reporting of clinical quality measures for the Promoting Interoperability Programs for its Participants. The NC HIEA plans to work closely with NC Medicaid and the Office of Rural Health to develop a strategy to support quality measurement under the new managed care structure. The NC HIEA is planning to participate in the NCQA's data aggregator validation program to support data aggregation for clinical quality measure reporting in partnership with NC Medicaid.

North Carolina's public health utilities through the Division of Public Health (DPH) include the following services (with related HIE capabilities in parentheses):

- NC Immunization Registry (bidirectional functionality live/available)
- Electronic Lab Reporting (daily batch reporting functionality live/available)
- NC Diabetes Specialized Registry (automated reporting for all HIE participants live/available)
- Additional NC Specialized Disease Registries (in planning stages for build of stroke registry). As of 2021, the NC HIEA and the Stroke Registry Workgroup have completed a comprehensive review of the 155 hospital data elements and 33 associated code groups. This project will utilize hospital stroke patient demographic and clinical data received by NC HealthConnex to identify patients at risk of stroke. The project is planned to be completed in June 2022.State Laboratory of Public Health (bidirectional orders/results interface planned for 2022-2023)
- NC Controlled Substances Reporting System (access within the HIE Clinical Portal complete
- Central Cancer Registry (potential candidate for future integration)

B.2.7 Short- and Long-Term Value Proposition

The creation and provision of statewide HIE core services and value-added features will yield benefits for participants across operational, service delivery, and programmatic dimensions as outlined in the table below.

Category	Participant Benefit
Operations	• Reduced cost of operations and solutions • Leverage common services (e.g., Value-Added nationwide HIE and public health gateways) • Leverage investment in Core Services to reduce cost of connecting physicians • Access to shared applications services • Single connection and data governance model • Reduces cost of managing multiple interfaces and negotiating independent data agreements • Consolidates required data feeds across multiple state reporting requirements • Provides legal benefits to participants • Indemnification for physicians and the participants

Category	Participant Benefit
Service Delivery	• Improve care coordination and quality across a broader community • Leverage connectivity to patient records available from other states and federal agencies via the eHealth Exchange gateway and the Patient Centered Data Home
Program	• Ability to participate in collaborative community • Ability to meet Meaningful Use and MIPS requirements related to health information exchange

Table 8 - Participant Benefits

B.3 Supporting Quality Reporting and Care Improvement Goals

While access to HIE services and widespread adoption of CEHRT are critical enablers of care improvement, providers also need the ability to collect, report and receive feedback on quality indicators to advance care and population health along evidence-based guidelines. Therefore, North Carolina will ensure providers have routine and timely feedback on the CMS-approved quality measures they collect and submit.

In addition, NC DHHS will expand upon its hands-on quality improvement model, the North Carolina Improving Performance in Practice (IPIP) project via the NC AHEC Program, developed in partnership with the NC Governor's Office, the NC DPH, CCNC, NCMS, the NC Academy of Family Physicians, CCME, the NC Healthcare Quality Alliance, and the major insurers in the state and other state agencies. NC IPIP was funded through NC AHEC funds as well as funding from philanthropic and other grant and payer organizations and delivered through a statewide network of QICs employed by the NC AHEC Program at each of its nine regional centers. Through AHEC's partnerships, all primary care providers in NC who accept Medicaid have access to the resources of the QICs(AKA Practice Support Coaches). The QICs are currently working in over 1,094 practices across the state, providing assistance to:

- Integrate the use of the EHR into practice workflow to improve care management;
- Develop office systems within the EHR to track patients with specific chronic diseases;
- Train practice staff to use data from EHR systems to produce dynamic, electronic reports reflecting clinical performance as measured by nationally-endorsed indicators;
- Assist practices in reporting quality measures;
- Educate practices on the importance of participating in HIE;
- Build the consistent use of quality measurement and HIE into common office policies and protocols to support improvement in care with increased access to data;
- Assist practices to use resources within the EHR to help educate their patient population on the importance of preventing and/or managing chronic disease;
- Stay current on all Promoting Interoperability criteria as it evolves over time; and,
- Provide electronic reporting to the designated public entity.
- Participate in Medicaid Managed Care (MMC) Quality Performance Improvement

The NC AHEC Program has expanded this proven model to embody the work of the REC by putting in place the personnel, educational resources, and direct technical assistance support to successfully implement and utilize technology to improve the quality of healthcare as funding allows.

The North Carolina Division of Health Benefits (DHB) has contracted with the NC Area Health Education Centers for the support of NC Medicaid providers in transitioning and succeeding in Medicaid Managed Care. DHB is working closely with the NC HIEA to have reliable, accessible and discrete beneficiary-level data to support quality

improvement activities. The NC HIEA will work with DHB to develop criteria to monitor the quality of priority data elements submitted to the HIE by Medicaid contracted practices as well as capacity to participate in the National Committee for Quality Assurance (NCQA) Data Aggregator Validation program. The current state of data availability requires funding investment in the delivery of priority data elements extracts to DHB, Clinically Integrated Networks (CINs) and Prepaid Health Plans (PHPs).

B.4 Vendor Initiatives through FFY 2023

B.4.1 North Carolina Area Health Education Centers

With Promoting Interoperability, previously described as Modified Stage 2 and Stage 3 of MU, and the CMS Quality Payment Program (QPP), NC will promote the electronic exchange of health information to improve the quality and lower the cost of health care in North Carolina. It is with this goal in mind that NC leveraged NC AHEC's existing infrastructure and strong history of adult learning to continue the work done in Stage 1 and 2 MU to promote the electronic exchange of health information to improve the quality and lower the cost of health care in North Carolina.

The objectives tied to the enhanced funding for NC Medicaid/NC AHEC initiatives have been as follows:

- Help NC physicians meet federal Promoting Interoperability criteria;
- Promote health information exchange;
- Promote patient engagement through use of electronic patient portals;
- Identify and address vendor-specific barriers to the achievement of Promoting Interoperability; and,
- Strengthen an existing statewide project management database to improve NC's ability to deliver information rapidly and appropriately so that the data can be utilized to drive quality improvement practices.

NC AHEC has made tremendous strides in supporting these practices in meeting Promoting Interoperability goals by tackling some of the more difficult challenges like connectivity, information sharing, and patient engagement. NC AHEC has maintained up to 1.5 staff in each of the nine regional AHECs to meet the needs of these Medicaid providers to ensure the success of NC's HIT initiatives and to further promote and ensure a higher quality of care for the vulnerable patient populations they serve. Funding for AHEC through the HITECH IAPD ended June 30, 2021, but HIT/HIE work will continue under a contract with NC DHHS division of Health Benefits through June 2023.

B.4.2 North Carolina Office of Rural Health (ORH)

In support of rural health centers and clinics, critical access and rural hospitals, and other primary care safety net providers, ORH provides technical assistance for a number of initiatives. The Rural Health IT initiative is of critical importance to NC Medicaid and to the clinics and hospitals for which ORH provides financial and technical assistance. For example, rural hospitals, as well as many statewide medical facilities that treat low income and uninsured residents, may receive assistance through ORH grant funds. The current HIE mandate requires most of these rural health care organizations to be connected to NC HealthConnex as a condition of receiving state funds. Non-compliance with the state mandate could negatively affect these primary care safety net sites and their ability to operate financially. Additionally, data from the HIE provides a valuable component to information needed for population health and value-based care.

Not only does the Rural Health IT Initiative incentivize health care providers to establish or upgrade their IT systems, but it also begins to shift safety net sites from a fee-for-service model to a quality, value-based

environment. ORH continues to work closely with NC Medicaid, NC AHEC, and the NC HIEA to provide Health IT assistance. ORH estimates that 15 state-supported Rural Health Centers sites, approximately 80 CMS rural health clinic sites, 20 critical access hospitals, 12 small rural hospitals, 83 free clinic sites, 257 community health center and FQHC-lookalike sites, 85 health department organizations that provide primary care, 53 telepsychiatry sites, 81 school-based health center sites, and 58 school-based health center telemedicine sites will continue to benefit from the additional technical assistance provided by the ORH Rural Health IT (HIT) Team. The Safety Net Sites map below illustrates an approximation of North Carolina's primary care safety net providers.

North Carolina Office of Rural Health
SFY 2022 Safety Net Sites
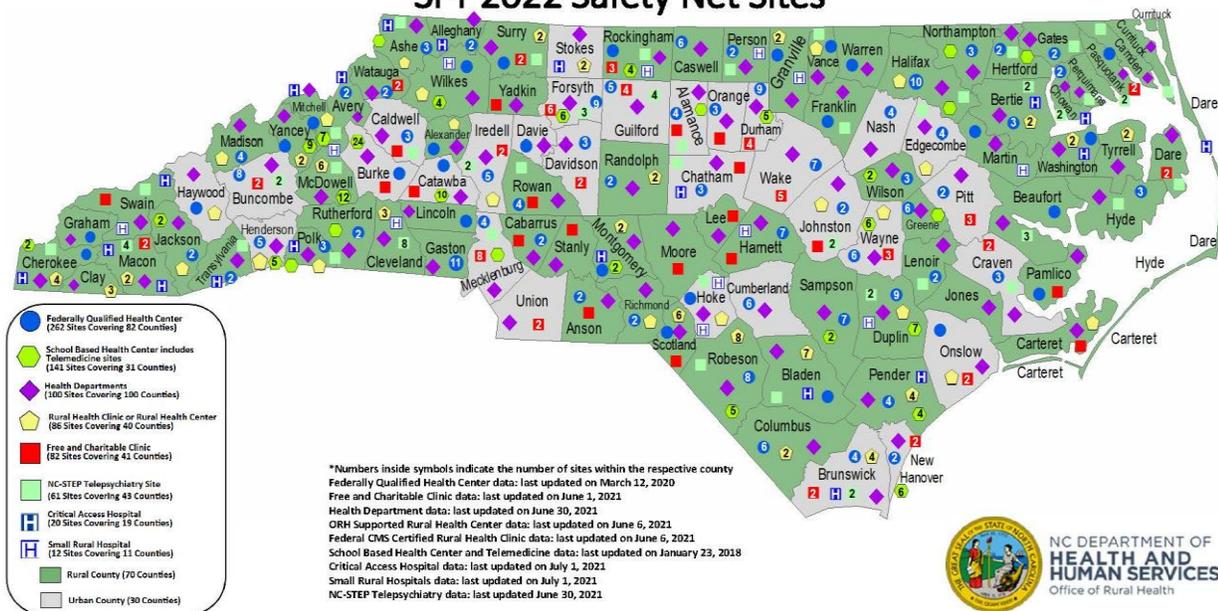
Following the ONC's "call to action" regarding the MU challenge in critical access and small rural hospitals, ORH has worked closely with NC AHEC to add value and leadership in realizing the ONC's MU goal for these hospitals. In addition to the RHCs and critical access and rural hospitals, ORH aims to assist any requesting safety net provider with Health IT assistance. For example, several of the free clinics in NC expanded their scope and became "free and charitable clinics," and now over 90 percent of the free and charitable clinics have adopted an EHR. As a result, these clinics hired additional providers where needed and have begun to accept and bill for Medicaid, making them eligible for MU/Promoting Interoperability with the need for more technical assistance while operating in this new environment.

ORH continues to support its Health IT efforts with a Rural Health IT program manager, three professional positions known as Rural HIT Specialists, one Telehealth Specialist, and one Health IT Database Administrator for a total of six HIT Team positions. The Rural HIT team requires professional positions with a high level of technical expertise; exceptional communication, presentation and training skills; and the ability to establish rapport not only with the clinics and hospitals but with other partners such as NCHA, NC Association of Free and Charitable Clinics (NCAFCC), NCCHCA, NC Medicaid, DHHS' Office of Health IT, NC AHEC, NC HIEA, and other stakeholders across the state.

B.4.3 Medicaid Evidence-based Decision Project (MED Project) and the Drug Effectiveness Review Project (DERP)

The Program team has established a Clinical Quality and Data Workgroup, which is considering how data captured during MU can be effectively used to determine areas of potential improvement relative to Medicaid clinical coverage. The use of these MU data to study and develop evidence-based coverage offers great opportunity, and dovetails with the federal meaningful use of Meaningful Use, or MU[2], initiative. Evidence-based standards and measures provide a mechanism for Medicaid to select the best treatments for improving health outcomes. This ability to exercise sound decision-making provides policymakers an unbiased analysis of complex issues.

To supplement the evidence-based data available through MU measure reporting, NC Medicaid has participated in two initiatives coordinated by the Oregon Health Sciences University's Center for Evidence-based Policy. These two projects are the Medicaid Evidence-based Decision Project (MED Project) and the Drug Effectiveness Review Project (DERP).

The **MED Project** is a collaboration of 21 state agencies, primarily Medicaid, with a mission to provide policy-makers and decision makers the tools and resources to make evidence-based decisions. As a member of MED, North Carolina will receive the following benefits:

- **Evidence and Policy Reports** - North Carolina will have access to proprietary reports on a variety of policy and evidence issues. The MED project produces evidence-based answers to well-defined questions. These reports utilize robust research strategies to appropriately cover clinical, policy and financial issues.
  Recent report topics include: COVID-19, Telehealth services, Gender Dysphoria, Behavioral Health, Substance Abuse Disorders, Pregnancy, Educational Services for Children, Collecting Health Equity Data involving race and ethnicity, Childhood Immunizations, Intervention for high health care use, Maternal Mortality, Medicaid Oversight of Home Ventilators, Non-financial Strategies to Increase Dental participation in Medicaid, Extra-spinal Chiropractic Services for Musculoskeletal Conditions, Real-time continuous Glucose Monitors, Genetic Testing, Postpartum Medicaid Coverage Extension, Whole Exome Sequencing, the Effectiveness of Devices for Asthma Care, Addressing COVID-19 Health Disparities, Diabetes Prevention Programs, Effectiveness of Telehealth for Treatment of Substance Abuse Disorders, Increasing Childhood Immunizations in Response to COVID-19, Medicaid Maternity Billing Models, Spinal Muscular Atrophy, Strategies for Early Identification of High Risk Pregnancy, Telebehavioral Health in Response to COVID-19, Treatment of Stimulant Use Disorders, Brexanalone and SAGE-217 for Postpartum Depression and Use of Doula and Community Health Worker Services to Improve Health Outcomes. In addition to these recent reports, North Carolina will have immediate access to a full archive of all reports produced by MED since its creation.

- **Rapid Response to State-Specific Needs** - North Carolina will also have access to MED's Participant Request service, which allows members to contact the MED project staff at any time and request a brief review of the evidence on an emerging state issue. The MED team will quickly search for evidence and produce a report on the topic. Participant requests can take a variety of forms, including an expert librarian search, a brief evidence summary, a policy brief, or a review of information provided by a vendor. Recent participant requests include: Definitions and Policies for Cosmetic and Reconstructive Surgeries; Epidural Steroid Injections of the Cervical and Lumbar Spine; Health and Behavior Assessment and Intervention Codes Policy Analysis; Prenatal Genetic Testing; Robotic-assisted Hysterectomy in Obese Women; Spinal Injections for Chronic Low Back Pain - Policy Summary and Substance Abuse Testing in Outpatient Treatment Programs; Breast Milk Feeding, Effectiveness of Devices for Asthma Care; Medicaid Coverage of High-Fidelity Wraparound; Medicaid Oversight of Home Ventilators; Real-Time Continuous Glucose Monitors and Sensor Augmented Insulin Pumps; State Strategies to Ensure Program

Integrity of Telehealth Services. North Carolina will be participating in this project for the FFYs of 2020-21 and 2021-22 with a two-year option.

- **Collaboration and Dissemination of Best Practices -** The MED Project is strengthened by the collective knowledge and expertise of its members. In addition to twice-monthly conference calls, participants meet twice a year at in-person meetings. These unique forums allow the MED project participants and other key staff to share ideas and collaboratively address common issues.
  In addition to its regular meetings, MED convenes Working Groups to address areas of special interest to states.   These groups address current challenges on priority issues through review of evidence and policies as well as sharing current state practices. Currently MED has five working groups: 1) E-Health, 2) Behavioral Health 3) Durable Medical Equipment, 4) Substance Use Disorder, and 5) Genetic Testing.
- **Information Resources -** North Carolina will have access to several proprietary information sources including:

  - Web-based Information Clearinghouse - The Information Clearinghouse compiles MED reports, federal, state and private payer policies and news and discussion forums, in a single location. It is available to participants and their agency staff through a secure website.
  - Weekly Updates – Weekly electronic newsletters that provide relevant, timely information and evidence to participants. MED staff scans a wide breadth of journals and publications and develops concise analyses for busy policy-makers.

The **DERP Project** is a collaboration of state Medicaid and public pharmacy programs. DERP produces concise, comparative, evidence-based products that assist policy makers and other decision-makers facing difficult drug coverage decisions.

DERP is nationally recognized for its clinical objectivity and high-quality research. It focuses on specialty and other high-impact drugs, particularly those that have potential to change clinical practice. DERP reports evaluate efficacy, effectiveness and safety of drugs to ultimately help improve patient safety and quality of care while helping government programs contain exploding costs for new therapies.

DERP offers:

- **High-Quality Evidence** – DERP offers the best available clinical evidence on which to base policy decisions related to pharmaceuticals. DERP reports compare the effectiveness of drugs commonly used for the same conditions, highlight safety issues, and assist public pharmacy programs to enact policies that help increase the quality of patient care. DERP reports include a comprehensive search of the global evidence, an objective appraisal of the quality of the studies found, and a thorough synthesis of high-quality evidence. Although the reports do not include cost data, policymakers are able to use the reports to make informed policy decisions that save money.
- **Independence Governance -** DERP is the only self-governed national forum available to public agencies. It uses a collaborative model and provides objective research on drug effectiveness to bring evidence to drug policy decisions. DERP reports are independent and objective. The research is conducted by investigators who have no financial or other conflicts of interest in the pharmaceuticals they study.
- **Improved Drugs Safety and Efficiency –**
  - DERP reports are used to develop prior authorization and drug utilization management policies
  - One state, using DERP reports for its preferred drug list, estimates approximately $37 million in costs avoided over five years, and another state estimates $80 million per year
  - Reports include up-to-date clinical evidence on adverse events and safety information of the drugs reviewed and have highlighted risks associated with the drugs studied before other sources

- o DERP reports are used to develop practice guidelines and provider education products to manage drugs with substantial off-label use
- **Drug Reports under Development include:**
  - o High-cost Drugs Pipeline
  - o Spinal Muscular Atrophy Research: the Effectiveness of Nusinersen (SMARTEN)
  - o Treatments for Hemophilia A
  - o Treatments for Transfusion Dependent Beta Thalassemia
  - o Keytruda Living Evidence Map
  - o Treatments for ADHD
  - o Biologics for Non-Asthma Indications
  - o Zulresso
  - o Utilization of High-Cost Drugs
  - o Review of Medications for Rare Diseases
  - o Voclosporin (Lupkynis) for Lupus (Participant Requested)
  - o Biosimilars Without the Same Indications as Originator Products (Participant Requested)
- **Results from the return on using Medicaid Evidence-Base Decisions:**
  - o Alabama- Alabama utilized a MED analysis of DME expenses that led to policy changes related to home IV services resulting in cost avoidance of $1 million annually.
  - o Minnesota- Minnesota has created a process to control the growth of high-tech imaging (HTI) use – stabilizing at 41 procedures per 1,000 enrollees, well below the trend rate previously experienced (47/1,000).
  - o Missouri- Missouri now requires prior authorization of CT and MRI imaging of the chest, lower back, head and neck, resulting in savings of over $9.3 million during a two-year period.
  - o Washington- Washington no longer covers arthroscopic debridement and lavage of the knee for osteoarthritis, resulting in an estimated savings of $400,000 within the first year of the policy.

Many of these reports and activities dovetail with the CQMs on which EPs and EHs must report for demonstrating MU under the NC Medicaid EHR Incentive Program. Expanding availability of evidence-based resources will provide NC more robust sources of best practices and the necessary data and information on which to base sound decisions. NC Medicaid believes the benefits of both MED and DERP are substantial. Therefore, NC Medicaid recently extended their agreement for both MED and DERP for another year through December 2022.

B.5 Medicaid Technical Infrastructure and Environment

NCTracks leverages and contributes data to the emerging HIE technical infrastructure.

NCTracks was developed under the oversight of a dedicated program office, the Office of MMIS Services (OMMISS), at the direction of the NC DHHS. NCTracks was designed to support the MITA standards. OMMISS has ensured that NCTracks is consistent with the provisions noted in the *North Carolina Statewide HIE Plan*, *Section 6.7*, whereby HIE services supported through the State HIE Cooperative Agreement will comply with all national standards as defined in the *Health Information Technology: Initial Set of Standards, Implementation Specifications, and Certification Criteria for Electronic Health Record Technology: Final Rule.*

The North Carolina Medicaid Incentive Payment System (NC-MIPS) is the interface through which eligible professionals interacted with the NC Medicaid EHR Incentive Program, and the related Attestation Validation Portal (AVP) provided the functionality for staff to administer the program, and still allows staff to track post-payment audits. The NC Medicaid EHR Incentive Program used NCTracks as the payment mechanism for incentive payments.

B.6 Community Care of North Carolina (CCNC Program)

Community Care of North Carolina is described in the State Plan of North Carolina as the enhanced Primary Care Case Management program for the State to manage the PCCM Medicaid Direct Population.

North Carolina Community Care Networks, Inc. (N3CN) is the private non-profit organization through which the State contracts to oversee the PCCM Program for the Medicaid Direct population which includes ensuring the Community Care of North Carolina affiliated Medicaid Direct providers meet program goals and performance measures.

N3CN ensures there is a sufficient panel of primary care providers to serve enrolled populations with initiatives agreed upon by DHB and N3CN. N3CN establishes uniform processes to carry out these initiatives.

N3CN uses its Data Platform to carry out some of the requirements outlined in State Plan and Contract#30-2021-061-DHB, between DHB and N3CN.

The Data Platform has healthcare claims data provided by Medicaid, as well as health information about program participants obtained directly from healthcare providers and care managers and/ or the primary care medical record. Additional data sources include: Surescripts pharmacy data pharmacy management system vendors such as PioneerRx, Genoa, and QS/1, among others, laboratory results from LabCorp and Solstas, and three-times daily hospital admission/discharge/transfer data from over 100 NC hospitals. Information is accessed by the Care Managers, Practice Support staff, and providers to identify patients in need of care coordination; to facilitate disease management, population management, and pharmacy management initiatives; to enable communication of key health information across settings of care; to monitor cost and utilization outcomes; and to monitor quality of care and provide performance feedback at the patient, practice, and network level.

Informatics Center Functions and Front-End Applications:

CCNC VirtualHealth (VH)- HELIOS Platform:

The CCNC VirtualHealth (VH)- HELIOS Platform enables care management staff and support to document and view the Medicaid recipient records throughout members' continuum of care, while receiving care management services. VH provides a standardized framework for the care management workflow and documentation, while incorporating tools for member assessments, goal setting, and health coaching. VH enables users to view members' progress through the care continuum and various episodes of care. VH platform includes three portals – Care Management (CM), Provider and Administrative portals.

The VH application is populated by data feeds sourced from CCNC's data warehouse. This allows for greater flexibility and the opportunity to exchange information across CCNC's applications, (such as analytic dashboards), while populating key risk stratification and claims information, such as prescription fills. Care management tools are incorporated into the VH system, such as health risk screenings, program-level, comprehensive needs assessments, medication management, care plans, and secure messaging to allow care managers to communicate member health information securely to providers involved in the members' care. Automation of referrals and program-specific tasking are leveraged to ensure evidence-based standards and key program components are met. Complex care management services also offer health coaching and integration of patient education tools (Healthwise). Staff have a mobile app (for care management staff to use on home visits or when internet connectivity is limited) available.. As of January 2022, approximately 1,200 care management and care coordination staff members use this care management platform statewide.

CCNC VH Provider Portal:

The VH Provider Portal was created to improve the care provided to the members served. It is intended to give clinicians a more comprehensive view of their members' medical/care management history and to foster better care coordination between members' care team participants.

Through the Provider Portal, members of the care team may view member information including but not limited to:

- Visit history (including inpatient, emergency department, and office visits),

- Medication list including those prescribed by other providers,

- Other providers or care management staff members of the members' care team,

- Comprehensive needs assessments, care plans, and medication reviews,

- Information on how to make a referral to the CCNC care management team, and

- Secure messaging to CCNC team including care managers and pharmacists.

As of January 2022, approximately 650 providers use this provider portal platform statewide.

Analytics and Reporting

CareImpact, CCNC's analytics and reporting platform utilizes Tableau software to convey data through web-based dashboards that enable filtering and trending, as well as drilling down to patient-level data. CareImpact conveys important information to CCNC staff and primary care medical homes for ensuring appropriate identification and care of the Medicaid population, including:

- Population health data via monthly member demographics, conditions, costs and utilization (Inpatient and ED usage)
- Risk Stratification layered with historic performance to assess Impactability, the likelihood of a care manager's intervention impacting the individual member and their health outcomes. The impact models actually assess the average 6-month savings likely to be yielded through care management for each member. By prioritizing outreach based on a member's impactability, care managers can apply its limited resources to the patients it can impact most.
    o Transitional Care Priority identifies those admissions with the highest likelihood of impact for care managers to engage, accompanied with Outpatient Follow Up recommendations and an assessment of how highly to prioritize a home visit
    o Priority identifies those patients not yet in the hospital who are struggling with their conditions and likely to be impacted by a care management intervention
- Operational dashboards that focus on the quality of the care management services delivered to patients by CCNC care managers in the communities. These dashboards are updated daily using VirtualHealth Helios data and allow for analysis of the entire care management process and identification of areas for opportunity and efficiency.
- Performance on cost, utilization and quality measures, as well as patient-level care gaps to enable improvement in measure performance and overall primary care delivery. These metrics, which are available at the practice, county, region and statewide level, are based on Medicaid claims and updated quarterly. Care gaps are updated weekly when CCNC receives claims.
- Key behavioral health statistics including medication fills by medication type, last fill dates and utilization by certain diagnoses.
- This data also feeds into a Member dashboard that network leaders can utilize to study demographic characteristics, prevalence of chronic medical and mental health conditions, spending by category of service, and rates of hospital, ED, and other service use trends in their network and counties compared to that of

others. This aids in program planning and resource allocation; identification of outlier patterns (such as unusually high rates of personal care services); and tracking of local utilization patterns over time.

- Through the joint efforts of CCNC, Inc. and NC DHHS, NCCCN receives daily notification of Medicaid population inpatient and ED visits from 111 NC hospitals. This three-times daily notification allows immediate identification of patients with high Transitional Care Impactability, ensuring care management support as they transition from hospital to home, including pharmacist review of medications and follow-up in the primary care medical home.

Reporting of Care Quality Indicators

N3CN reports performance on a subset of cost, utilization and quality measures to DHB on an annual basis in the Annual Quality Measures Report (QAV007). This report displays demographic data on the enrolled Medicaid Direct population, tracks measure performance over time and speaks to targeted quality improvement initiatives across the state to impact quality of care. Measures span programs across chronic diseases and prevention in pediatric population.

Monitoring of Risk Adjusted Key Performance Indicators: Clinical Risk Group (CRG)-risk adjusted analytics are applied to improve the accuracy of monitoring cost and utilization metrics over time, and to improve efficiencies in identifying patients most appropriate for care management services. 3M-developed methodologies are used to identify potentially preventable hospital admissions, readmissions, ED use, and ancillary services, to more accurately identify patients and areas where costs and utilization are higher than expected, accounting for patient acuity. This allows risk-adjusted comparisons of cost and utilization performance across Networks and Practices to facilitate development of techniques to impact unnecessary costs and measure impact of changes in care management approaches. Tracking of key metrics provides stakeholders with assurance that efforts are aligned toward the overarching goals of cost savings and quality improvement, and that all networks are held accountable for the overall performance of the program.

B.7 Effect of State Law

The NC HIE Legal/Policy Workgroup was charged with addressing the legal issues and/or barriers to the adoption of HIT. Prior to the enactment of recent legislation described in *Section A.11 State Law and Regulatory Changes to Support HIT Activities in NC*, North Carolina law contained a complex mixture of opt-in and opt-out provisions based on provider type, communicable disease and minor's consent rules. As amended, North Carolina laws that impact healthcare providers' disclosure of patient information are consistent with the HIPAA Privacy and Security Rules. The North Carolina HIE Act, codified in Article 29A of Chapter 90 of the NC General Statutes, is intended to improve the quality of healthcare delivery within North Carolina by facilitating and regulating the use of a voluntary, statewide HIE network for the secure transmission of patient information among healthcare providers and health plans in a manner that is consistent with HIPAA. The Act also ensures individuals have control over the use and disclosure of their information through the HIE Network by providing individuals with a continuous right to affirmatively decide to disallow his or her patient information from being disclosed through the statewide HIE Network through an opt-out process. The Act eliminates inappropriate statutory barriers to the adoption and use of EHRs that previously existed throughout North Carolina law.

The North Carolina Health Information Exchange Authority (NC HIEA) was created in NC Session Law 2015-241 s. 12A.4 and 12A.5 in September 2015 to oversee and administer North Carolina's HIE. On February 29, 2016, the HIE was transferred from the Community Care of North Carolina (CCNC) / North Carolina Community Care Networks (N3CN) structure to the new statewide North Carolina Health Information Exchange Authority (NC HIEA). In its new home under the NC HIEA, the statewide HIE network, now called NC HealthConnex, has stronger support than ever before from state government and key health care stakeholders, including financial assistance

through state-appropriated funds. The transfer of NC HealthConnex under state governance and the subsequent mandate for all health care providers that receive Medicaid or other state funds for provision of health care services participate with NC HealthConnex are significant steps toward building and sustaining a high-value statewide HIE network. Other 2015 laws incorporate a place for the statewide HIE network to support Medicaid transformation efforts and other required state data feeds; see *Section A.11 State Law and Regulatory Changes to Support HIT Activities in NC* for more information.

NC Session Law 2015-264, NC Session Law 2017-57 , NC Session Law 2018-41, and NC Session Law 2021-26—— which amend NC Session Law 2015-241 s12A.5—continue to support NC's mission to expand use of electronic health record systems and promote connectivity through the NC HIEA. The updated dates for mandated connection provide a more realistic timeline for establishing connectivity and submission of data and appropriates funding to support all activities related to upgrading and maintenance of the data exchange technical environment.

C. NC Medicaid EHR Incentive Program Milestones (2011-2021)

The NC Medicaid EHR Incentive Program, one of the major HIT initiatives in NC, hit the ground running in 2011 and was very successful in promoting the adoption and meaningful use of certified EHR technology among eligible North Carolina Medicaid providers.

The Program enrolled 6,158 participants in program years 2011 through 2016. At the close of the program in October 2021, NC had 99 eligible hospitals (EHs) who have received an incentive payment, and 88 that received all three payments; and 6,181 unique eligible professional (EP) participants, and 1,115 who have received all six payments.

As of December 31, 2021, NC Medicaid EHR Incentive Program payments to EPs totaled over $217 million, including over $92 million in MU payments. As of May 18, 2021, NC Medicaid EHR Incentive Program payments to hospitals totaled over $142 million, including over $85 million in MU payments. In total, the NC Medicaid EHR Incentive Program issued $358,564,583.31 to EPs and EHs from 2011 to 2021.

These have been formative years in the adoption of HIT and expansion of HIE connectivity and interoperability in North Carolina. Per the guidance in the final SMHP template, the information related to the activities necessary to administer and oversee the EHR Incentive Payment have been removed for this final SMHP submission, but the programmatic milestones and highlights can be found below. The technological milestones of the Program can be found in Section C.2 NC-MIPS Technological Highlights.

2011

- Implemented the NC Medicaid EHR Incentive Program in the first quarter of calendar year 2011.
- First payment was made in mid-2011.
- Partnered with the NC AHEC as NC's REC to encourage early adoption: REC staff served, and NC AHEC continues to serve, an incredibly important role in their hands-on assistance to the provider community across the state. NC Medicaid EHR Incentive Program staff participated in meetings and weekly office hours call with REC staff to address issues and challenges associated with EHR adoption and attestation for incentive payments.
- Multi-channel communication strategy: The NC Medicaid EHR Incentive Program developed and executed a preliminary Communication Plan toward the end of the year, including website improvements, regular articles in Medicaid provider bulletins and partner publications, outreach activities to partners and providers, and e-mail support to ensure better awareness of the program throughout NC and efficient handling of providers' questions and concerns.

2012

- A significant ramp up in provider awareness, participation, and incentive payments disbursed for the NC Medicaid EHR Incentive Program.
- Program team exceeded CMS' goal of making 2,000 payments to EPs and 45 payments to EHs by the end of 2012.
- The Program drafted NC Administrative Code with consensus of its stakeholder groups around exchange and CQM reporting requirements for providers participating in the NC Medicaid EHR Incentive Program.

2013

- Participation in the NC Medicaid EHR Incentive Program grew to 3,721 unique providers.
- The NC-MIPS Help Desk moved in-house to NC Medicaid, thereby decreasing the number and cost of support staff. The NC-MIPS Help Desk tracked provider interactions and worked with providers to resolve

open issues. As part of the NC-MIPS solution, desk procedures and operation guides tailored to supporting both provider and systems operations were developed.

- The Program Integrity staff moved from NC Medicaid's Program Integrity Section to NC Medicaid's Health IT Team.

2014

- The NC Medicaid EHR Incentive Program continued to adapt NC-MIPS, program website, attestation guides, and tailored outreach to be in compliance with Stage 2 MU and the flex rule.

2015

- Participation in the NC Medicaid EHR Incentive Program grew to 5,064 unique providers.
- The NC flex rule was implemented. Targeted outreach to encourage provider participation given the new flexibility.

2016

- The NC Medicaid EHR Incentive Program began accepting attestations for Modified Stage 2 MU.
- Last year a provider was able to attest to AIU and receive a first-year payment.
- Developed communication plan for Program Year 2016 AIU outreach campaign.
  - Outreach distributed through partner and stakeholder groups.
  - Conducted targeted outreach to encourage participation.

2017

- The NC Medicaid EHR Incentive Program began accepting attestations for Stage 3 MU.
- NC Medicaid established a new contract with NC AHEC to continue assisting NC providers with HIT initiatives including support of the NC Medicaid EHR Incentive Program and MIPS.

2018

- The NC Medicaid EHR Incentive Program began accepting attestations for Program Year 2018 Modified Stage 2 and Stage 3.
- NC Medicaid amended the SFY2018 contract with NC AHEC to continue assisting NC providers with HIT initiatives including support of the NC Medicaid EHR Incentive Program and MIPS.

2019

- The NC Medicaid EHR Incentive Program began accepting attestations for Program Year 2019 Stage 3 MU.
- NC Medicaid amended the SFY2019 contract with NC AHEC to continue assisting NC providers with HIT initiatives including support of the NC Medicaid EHR Incentive Program and MIPS through SFY2020.

2020

- NC closed Program Year 2019 on April 30, 2020.
- NC opened Program Year 2020 on May 1, 2020.
- NC Medicaid amended the SFY2020 contract with NC AHEC to continue assisting NC providers with HIT initiatives including support of the NC Medicaid EHR Incentive Program and MIPS through SFY2021.

2021

- NC closed Program Year 2020 on April 30, 2021.
- NC began accepting attestations for Program Year 2021 on May 3, 2021.

- Conducted extensive targeted outreach to encourage past participants to meet Stage 3 MU and attest in the final year of the program.
- The Program continued to staff a dedicated help desk to assist participants through final determinations of all Program Year 2021 attestations.
- NC-MIPS closed at midnight on October 31, 2021 - no more attestations were accepted for the NC Medicaid EHR Incentive Program.
- Program Year 2021 incentive payments were issued to providers by November 23, 2021.
- The final D-18 was sent to CMS on November 30, 2021.

C.1 Communication and Outreach Efforts

North Carolina saught to maximize provider participation in the incentive program. It used coordinated outreach efforts across multiple stakeholders to support the provider community using multiple approaches. Communication goals in 2020-2021 focused on encouraging providers to come back to attest for MU and ensure they had the proper knowledge and resources to do so. Those messages included:

- Availability of incentive money through October 31 2021;
- Availability of a total of six payments;
- Requirement of attesting to Stage 3;
- Requirement of 2015 CEHRT;
- Auditing requirements, particularly around the SRA; and,
- Resources available to assist providers including Program help desk, webinar series, FAQs, AHEC, etc.

C.1.1 Program Year 2021 Outreach Campaign

The following Medicaid Bulletin articles and outreach efforts each included a reminder that all Program Year 2021 attestations must have been submitted by Oct 31, 2021. The NC Medicaid EHR Incentive Program worked closely with several internal and external stakeholder and partner groups to disseminate these program updates and messages.

- 10/6/2020 - Article published in the October 2020 Medicaid Bulletin - NC-MIPS is Open for Program Year 2020, Program Year 2020 Webinar Series, The Security Risk Analysis (SRA) and Program Year 2021 Announcements
- 10/6/2020 – October Medicaid Bulletin article highlighted in 'Your Update from NCTracks' email from NCTracks- Immunizations and Keeping Kids Well: Trends and COVID-19 Webinar on October 15
- 10/6/2020 - October Medicaid Bulletin article highlighted on www.nctracks.nc.gov under Provider Announcements
- 11/3/2020 - Article published in the November 2020 Medicaid Bulletin - NC-MIPS is Open for Program Year 2020; Program Year 2020 Webinar Series; The Security Risk Analysis and Program Year 2021 Announcements
- 11/3/2021 – November Medicaid Bulletin article highlighted in 'Your Update from NCTracks' email from NCTracks- New Medicaid Bulletins, Advanced Medical Home Webinar Thursday, Veterans Day Reminder and Thanksgiving Holiday
- 11/3/2020 - November Medicaid Bulletin article highlighted on www.nctracks.nc.gov under Provider Announcements

- 12/1/2020 - Article published in the December 2020 Medicaid Bulletin - NC-MIPS is Open for Program Year 2020, Program Year 2020 Webinar Series, The Security Risk Analysis and Program Year 2021 Announcements
- 12/1/2020 – December Medicaid Bulletin article highlighted in 'Your Update from NCTracks' email from NCTracks - New Medicaid Bulletins Available
- 12/1/2020 - December Medicaid Bulletin article highlighted on www.nctracks.nc.gov under Provider Announcements
- 1/5/2021 - Article published in the January 2021 Medicaid Bulletin - NC-MIPS is Open for Program Year 2020, Program Year 2020 Webinar Series, The Security Risk Analysis (SRA) and Program Year 2021 Announcements
- 1/5/2021 - January Medicaid Bulletin article highlighted in 'Your Update from NCTracks' email from NCTracks - Upcoming Webinars
- 1/5/2021 - January Medicaid Bulletin article highlighted on www.nctracks.nc.gov under Provider Announcements
- 2/2/2021 - Article published in the February 2021 Medicaid Bulletin - NC-MIPS is Open for Program Year 2020, Program Year 2020 Webinar Series, The Security Risk Analysis (SRA) and Program Year 2021 Announcements
- 2/2/2021 - February 2021 Medicaid Bulletin article sent to AHEC project manager, AHEC project manager forwarded to regional coaches to share with practices
- 2/3/2021 – February Medicaid Bulletin article highlighted in 'Your Update from NCTracks' email from NCTracks - Medicaid Bulletin Webinars, New Medicaid Bulletins, and No Provider Training in Feb
- 2/3/2021 - February Medicaid Bulletin article highlighted on www.nctracks.nc.gov under Provider Announcements
- 3/2/2021 - Article published in the March 2021 Medicaid Bulletin - Program Year 2020 Webinar Series, The Security Risk Analysis (SRA) and Program Year 2021 Announcements
- 3/2/2021 March Medicaid Bulletin article highlighted in 'Your Update from NCTracks' email from NCTracks - SPECIAL BULLETIN COVID-19 #158: Correction to COVID-19 Lab Code 87428
- 3/2/2021 - March Medicaid Bulletin article highlighted on www.nctracks.nc.gov under Provider Announcements
- 4/6/2021 - Article published in the April 2021 Medicaid Bulletin - Program Year 2020 Webinar Series, The Security Risk Analysis (SRA) and Program Year 2021 Announcements
- 4/7/2021 - April 2021 Medicaid Bulletin article sent to AHEC project manager, AHEC project manager forwarded to regional coaches to share with practices
- 4/8/2021 - April Medicaid Bulletin article highlighted in 'Your Update from NCTracks' email from NCTracks - Medicaid Bulletin Webinars
- 4/8/2021 - April Medicaid Bulletin article highlighted on www.nctracks.nc.gov under Provider Announcements
- 5/4/2021 – Article published in the May 2021 Medicaid Bulletin - Program Year 2021 Announcements and the Security Risk Analysis
- 5/5/2021 – May Medicaid Bulletin article highlighted in 'Your Update from NCTracks' email from NCTracks- New Medicaid Bulletins & Pharmacy Newsletter Available, Q&A Added to License and Accreditation FAQs page
- 5/5/2021 - May Medicaid Bulletin article highlighted on www.nctracks.nc.gov under Provider Announcements

- 5/5/2021 – Article sent to AHEC project manager, AHEC project manager forwarded to regional coaches to share with practices
- 7/6/2021 – Article published in the July 2021 Medicaid Bulletin - Four Months Left to Submit Program Year 2021 Attestations and the Security Risk Analysis
- 7/7/2021 – July Medicaid Bulletin article highlighted in 'Your Update from NCTracks' email from NCTracks - New and Updated Provider Fact Sheets for Managed Care and New Medicaid Bulletins Now Available
- 7/7/2021 - July Medicaid Bulletin article highlighted on www.nctracks.nc.gov under Provider Announcements
- 7/12/2021 - 7/26/2021 – Outreach on Oct 31 deadline sent by Incentive Program staff to EPs who had previously attested to meaningful use
- 7/21/2021 – Incentive Program staff emailed to NC AHEC and Office of Rural Health (ORH) an article highlighting the Oct 31, 2021 deadline for submitting Program Year 2021 attestations with helpful resources for EPs and asked that they distribute the article to their network of coaches, providers, and partner organizations
- 7/22/2021 – NC AHEC distributed the 7/21 article highlighting the Oct 31, 2021 deadline to their NC AHEC regional offices and the following partner organizations for further distribution through their networks:
  - NC Academy of Family Physicians
  - NC Pediatric Society
  - NC Medical Society
  - Old North State Medical Society
  - NC Association of Physician Assistants
  - NC Community Health Care Association
  - NC Office of Rural Health
  - NC Medical Group Management Association
- 7/28/2021 – ORH distributed the 7/21 article highlighting the Oct 31, 2021 deadline to 1,700+ of their stakeholders
- 8/3/2021 – Article published in the August 2021 Medicaid Bulletin - Three Months Left to Submit Program Year 2021 Attestations and the Security Risk Analysis
- 8/3/2021 – August Medicaid Bulletin article highlighted in 'Your Update from NCTracks' email from NCTracks- Reminder: Expedited Hardship Advances for CDSA-Contracted Providers at Risk of Not Meeting Financial Obligations & New Bulletins Available
- 8/3/2021 - August Medicaid Bulletin article highlighted on www.nctracks.nc.gov under Provider Announcements
- 9/7/2021 – Article published in the September 2021 Medicaid Bulletin - Two Months Left to Submit Program Year 2021 Attestations; Security Risk Analysis
- 9/8/2021 – September Medicaid Bulletin article highlighted in 'Your Update from NCTracks' email from NCTracks - Upcoming Managed Care Webinars, SPECIAL BULLETIN COVID-19 #178 & New Medicaid Bulletins Available
- 9/8/2021 - September Medicaid Bulletin article highlighted on www.nctracks.nc.gov under Provider Announcements
- 10/1/2021 – Added note with October 31 deadline to signature for Incentive Program's help desk emails

- 10/5/2021 – Article published in the October 2021 Medicaid Bulletin - Last Month to Submit Program Year 2021 Attestations and the Security Risk Analysis
- 10/5/2021 – October Medicaid Bulletin article highlighted in NCTracks email
- 10/5/2021 - October Medicaid Bulletin article highlighted on www.nctracks.nc.gov under Provider Announcements
- 10/12/2021 – Outreach sent by Incentive Program staff to Program Year 2020 participants reminding of October 31 deadline
- 11/8/2021 – Targeted outreach sent to those EPs who attested in NC-MIPS that they had not yet completed their SRA. Email reminded them of needing to complete the SRA by December 31, 2021.

C.1.2 Communication Channels

C.1.2.1 NC Medicaid EHR Incentive Program Website

The Medicaid EHR Incentive Program website is part of the larger NC Medicaid website and is located at: https://medicaid.ncdhhs.gov/medicaid-ehr-incentive. Pertinent information is still available on the website, including a payment spreadsheet showing all payments made to EPs from 2011-2021.

This website is managed in-house by the acting Program Manager. The site will be updated with relevant auditing information through September 2023.

C.1.2.2 Medicaid Bulletins

Medicaid Bulletins were the primary vehicle for disseminating messages to the larger Medicaid provider community. These monthly e-periodicals are sent to communicate important policy information to all Medicaid-enrolled providers. More than 11,000 practices, professionals, and healthcare entities currently subscribe and access the Medicaid Bulletin via listserv notifications and the NC Medicaid website.

The NC Medicaid EHR Incentive Program's business analyst submitted a monthly article to the Medicaid Bulletin through December 2021. Medicaid Bulletins are archived here: https://medicaid.ncdhhs.gov/providers/medicaid-bulletins.

C.1.2.3 NC Medicaid EHR Incentive Program Help Desk

The NC Medicaid EHR Incentive Program Help Desk assisted providers with questions and concerns around registration, attestation, and the validation process. The Help Desk began in 2011 as an augmentation of the Medicaid Enrollment, Verification, and Credentialing System Center. The Program's Operations Team hosted the Help Desk, and it was comprised of CSC staff, including some veteran EVC Help Desk staff. In June 1, 2013, the Help Desk moved in-house to NC Medicaid, thereby decreasing the number and cost of support staff. From May 2021 to December 2021, the Help Desk was covered by audit staff, as a full-time help desk staffer was no longer required.

C.2 NC-MIPS Technological Highlights

NC-MIPS is a proprietary system built to collect and verify provider attestation data—including provider type, patient volume, and attestation details—for the purposes of administering the EHR Incentive Program in compliance with the Final Rule. While no longer accepting attestations, past participants are still able to view their successfully submitted attestations on NC-MIPS. Its internal counterpart, AVP, allowed program staff to validate and track attestations through post-payment audit. Program staff are still able to use AVP for the purposes of conducting post-payment audits.

There were many technological achievements from 2011-2021, but the highlights and milestones from NC-MIPS and AVP are listed below.

2011

- January 1, 2011—Go Live (CMS Registration)
- January 4, 2011—EP Registrations received from CMS
- January 15, 2011—EH Registrations received from CMS
- February 15, 2011—Go Live (NC-MIPS Attestation)
- March 2011—EP Attestations Begin
- March 2011—Go Live (Validation and Payment)
- March 2011—EP Incentive Payments Begin
- September 1, 2011—EH Attestations Begin
- September 31, 2011—EH Reporting Year Ends for FFY 2011
- September 2011—EH Incentive Payments Begin
- November 30, 2011—EH Attestation Deadline for FFY 2011
- December 2011—In excess of $20 Million in Incentive Payments Distributed

2012

Beginning in January 2012, further NC-MIPS development was carried out in-house at OMMISS/NC Medicaid by newly added state staff. Early 2012 projects included addition of AIU and MU attestation capability. To accommodate these upgrades, 2012 AIU attestations were accepted through an electronic attestation template in April, May & June. During this time the groundwork for a better attestation validation portal was also underway.

- February 29, 2012—EP Attestation Deadline for CY 2011
- April 1, 2012—Electronic Attestation Template Implementation
- July 23, 2012—Go Live (2012 AIU Attestation through NC-MIPS 2.0)
- August 20, 2012—Go Live (MU Attestation)
- November 30, 2012—Go Live (Replacement Attestation Validation Portal)
- December 2012—In excess of $87 Million in Incentive Payments Distributed

2013

- January 7, 2013—Go Live (Stage 1 MU Eligibility Changes)
- February 18, 2013—Advanced reporting functionalities
- February 18, 2013—Audit Tab
- February 18, 2013—File Upload
- March 15, 2013—Go Live (Stage 1 MU Measure Changes)
- May 15, 2013—Advanced Search
- May 15, 2013—Provider Relations & Provider Relations Lead roles in Attestation Validation
- May 15, 2013—Outreach Tab

2014

- 6/6/2014 – Do not allow providers to do account set-up in MIPS when their B-6 is "IN_PROGRESS"
- 9/19/2014 - Go Live (Stage 1 CQMs. New 64 CQMs in place of Core CQM, Alternate CQM & Additional CQM for MU Attestations for [Program Year 2014])
- 11/21/2014 - Go Live (Stage 2 MU Measure Changes)

2015

- 1/1/2015—Go Live (Program Year 2015 for EPs)

- 1/30/2015—Go Live (Flexibility Rule for EPs – To accept flexibility rule attestations from 1/30/2015 until the end of the EP attestation tail period, April 30, 2015.)
- 3/16/2015—Extended tail period deadline from 04/30/2015 for EH [Program Year 2014]
- 5/1/2015—Flexibility Rule ends for EP [Program Year 2014]

2016

- Feb 2016—Go Live (Modified Stage 2 MU Measure Changes)
- March 2016—NCID Username Update Tool
- April 2016 – Close Program Year 2015
- June 2016—Go Live (Program Year 2016 AIU for EPs)
- June 2016—Go Live (Program Year 2016 AIU/MU for EHs)
- July 2016— Go Live (Program Year 2016 MU for EPs)
- September 2016 - Removal of MPN and Billing MPN fields and related text from MIPS and AV Portals.
- September 2016 - Referral rule changes in AV Portal.
- September 2016 – Make system changes in MIPS for Program Year 2017 Modified Stage 2 MU, schedule Go Live May 2017
- October – April 2017 – Make system changes in MIPS for Stage 3, scheduled Go Live May 2017
- December 2016 – Added page to track AHEC utilization

2017

- January – April 2017 – Make system changes in MIPS for Modified Stage 2 and Stage 3 MU
- April 30, 2017 – Close Program Year 2016
- May 2017 – Go Live (Program Year 2017 Modified Stage 2 and Stage 3 MU)
- August 2017 – Hard stop for EPs and EHs when Payment year is 1 [2017 PY and beyond]
- August 2017 – Hard stop for EPs and EHs when EH has received their third payment and EP has received their sixth payment
- August 2017 – New field and text box on the Objective#10 page when EP is in active engagement with to submit syndromic surveillance data [Modified Stage 2 and Stage 3]
- September 2017 – New status "Payment Adjustment" in AV Portal for Recoupment/Additional payments
- October 2017 – Allow providers to "Withdraw" their attestations even after program year is no longer active
- October 2017 – New CQM requirements for Program Year 2017 and beyond
  - Remove all domains and domain validations
  - Remove 11 CQMs [CMS179v5, CMS126v5, CMS148v5, CMS163v5, CMS182v6, CMS141v6, CMS140v5, CMS62v5, CMS77v5, CMS61v6 and CMS64v6]
- November 2017 – Add new reporting period for the CQM's and error message updates on the MU page

2018

- February 2018 – Create an additional report for Provider Relations based on B-6 to be called Welcome Letter.
- April 30, 2018 – Close Program Year 2017
- May 2018 – Go Live (Program Year 2018 MU for EPs & EHs)
- May 2018 – System updates for EPs who have done MU in a prior program year submitting between May 1 - Dec 31, 2018
- May 2018 – AHEC Page updates beginning May 1, 2018 (Program Year 2018)
- June 2018 – B-6 & C-5 transaction updates to add new fields

- June 2018 – EP Individual Patient Volume Page - Removed incident to-related questions
- June 2018 – Hard stop on the status page for provider's who have failed payment year 1 Audit and returning for payment year 2 in Program Year 2018
- June 2018 – New look-up table to check for Group 1 or Group 2
- June 2018 – Routing based on B-6 payment year for EPs who complete first-time account set-up (Group 1 & 2)
- June 2018 – Drop-down list of registries instead of text boxes for MU Objective 10 Measure 3 (Modified Stage 2) or MU Objective 8 Measure 4 (Stage 3)
- July 2018 – Created two new Statuses "Voluntary Payment Return" for providers who have returned payments and "Adjustment due to Recoupment" for failed Audits [EP & EH]
- July 2018 – Change "DMA" to "NC Medicaid" and update URL's on all MIPS pages and EP Attestations Guides
- August 2018 – Updates to Stage 3 MU Attestations Guides
- August 2018 – Text updates to the Modified Stage 2 and Stage 3 Objectives for the 2018 PY
- November 2018 – New CQMs for 2018 Program Year [Total CQM's for 2018 PY=53]

2019
- January 2019 – System updates (starting 1/1/2019) for returning EPs who have already submitted their Part 1 Attestations for 2018 Program Year (between 5/1/2018 and 12/31/2018)
- February 2019 – Updates to text for Modified Stage 2 MU Objectives 8 and 9 for all new attestations and Attestation Guide update (Program Year 2018)
- March 2019 – Implemented Work-around for EPs with Greenway CEHRTs
- May 2019 –2019 Program year launched
    - Part 1 for "Returning MU" users launched for 2019 Program year
    - Full submission for "New MU" users launched for 2019 Program year
    - Remove "Modified Stage 2" option and update text on the "Measure Reporting Period" Page for 2019 Program year
    - NC-AHEC page updates for Program Year 2019
    - Updated CQMs and instructions for 2019 Program year
    - Updated Stage 3 MU Objectives for 2019 Program Year
- June 2019 – AV-Portal: Add a new field "NCIR Exclusion" in the Attestation Tab for EP's for Program Year 2018 and beyond
- June 2019 – NC-MIPS Portal: Stage 3 MU - Update Objective 6 Exclusion logic
- July 2019 – NC-MIPS Portal: Stage 3 MU - Update Objective 7 Exclusion logic
- July 2019 – Create custom process state ("Greenway Withdrawn") for Greenway Attestations
- August 2019 – Transactions: Upgrade the Entity Framework in Visual Studio, E-7, E-8
- September 2019 – NC-MIPS Portal: Portal changes to accept MU and CQMs from Returning Greenway EP's [2018 PY only]
- October 2019 – AV-Portal: New field in PR and PI right rail & Attestation Tab for Audit Email sent date and create a new report for Audit Heads up Email Sent
- October 2019 – AV-Portal: Add a new PI report - "Audits In Progress"

2020

- January 2020 – NC-MIPS & AV Portals: System updates for Part 2 (starting 1/1/2020) for returning EP's who have already submitted their Part 1 Attestations for 2019 Program Year (between 5/1/2019 and 12/31/2019)
- February 2020 – NC-MIPS: New 2019 Only Ops Report [PY 2019 & Beyond]
- March 2020 – AV-Portal: Update the Trigger for the External Status of Waiting for Signed Attestation to Validating Attestation
- May 2020 – Program Year 2019 closed, and Program Year 2020 launched
  - NC-MIPS & AV Portals: System updates (starting 5/1/2020) to accept 2020 Program Year Attestations
  - NC-MIPS Portal: Measure Reporting Period page updates for Program Year 2020 launch
  - Updated CQMs and instructions for 2020 Program Year
  - Updated Stage 3 MU Objectives for 2020 Program Year
  - Updated Stage 3 MU Attestation Guide
  - NC-AHEC page updates for Program Year 2020

2021

- May 2021 - Program Year 2020 closed
- May 2021 – began accepting Program Year 2021 attestations
  - NC-MIPS was updated to allow EPs to submit a Program Year 2021 attestation before having completed the SRA. EPs that submitted in NC-MIPS before completing their SRA must have attested that they would complete the SRA prior to Dec. 31, 2021.
  - If selected for post-payment audit, EPs will be responsible for submitting the 2021 SRA regardless of whether it was completed by, or after, the date of attestation in NC-MIPS.
  - Outreach was conducted for all those who indicated they had not yet completed their SRA on the date of attestation in NC-MIPS
- October 2021 – NC-MIPS closed for Program Year 2021
  - As of midnight October 31, 2021, providers were no longer allowed to alter attestation data
- December 2021 – All payments were issued before December 31, 2021

2022-2023

- NC-MIPS still serves as a resource for providers, particularly those who are being audited as they still need access to their successfully submitted attestations
- AVP is still used by program staff for the purposes of conducting and tracking post-payment audits
- D-18 adjustments will still be sent to CMS in the case of a failed audit
- All D18 transactions to process payment adjustments will be submitted no later than September 2023
- Providers will no longer have access to NC-MIPS by September 2023
- NC-MIPS and AVP will be decommissioned and no longer be accessible by state staff by September 2023.

C.2.1 NC-MIPS Decommissioning Plan

Program staff is working with the NC DHHS security team to ensure NC-MIPS and AVP are both decommissioned as outlined below.

- Time frame – Access to the NC-MIPS and AVP applications will be shut down 9/22/2023. We will begin decommissioning the software and environments on 9/23/2023 at 10 am and will complete the decommissioning by 10/03/2023.
- Stakeholder communications – We have communicated that these systems will no longer be accessible to all affected stakeholders.
- Dependencies – We have evaluated the application dependencies and integration points. There are currently no shared APIs either inbound or outbound. No third-party entities require notice.
- Decommission software/hardware - The hardware and software are hosted within NC DHHS\DIT data center. All web and application servers will be decommissioned by our DIT staff. Hardware, typically Virtual machines will be removed. Its likely physical hardware will be redeployed after being DOD wiped to ensure NCTracts data is recoverable by the new system owner.
- Domain Management – The applications noted above are subdomains of **nctracks.nc.gov.** For example (https://**ncmips.**nctracks.nc.gov/ and https://**av**.nctracks.nc.gov/). We will be working with NC DHHS\DIT to remove the DNS entries and for each and revoke all certificates.
- Contracts and licenses – We will work with DHHS Procurement and conduct an audit of contracts and vendors that support the site or who we have licensed software. Procurement will determine whether the licenses can be transferred as well as ensure software maintenance has ended.
- Management of content and data – We will archive all data collected within the system as required by law.

D. The State's HIT Roadmap

D.1 HIT Milestones and Highlights from 2011-2022

North Carolina has made great strides to increase visibility of health IT in the state. NC will look to maintain momentum gained through HITECH funding and HIT initiatives over the past decade and explore new opportunities to improve healthcare for North Carolinians through health IT.

HIT milestones and highlights from 2011-2021 are listed below.

2012

- Several steps laying the groundwork for HIE occurred.
  - A Master Services Agreement (MSA) between NC DHHS and NC HIE, establishing NC DHHS as a QO of the NC HIE, was executed.
  - The first Scope of Work (SOW) under this MSA included Medicaid's fair share of the development of NC HIE Core Services, establishment of NC DHHS and NC HIE reporting requirements, and detailed DHHS' utilization of the NC HIE's virtual QO services.
  - A resolution stating NC DHHS' intentions to champion HIE in its business processes was published.

2013

- The NC AHEC had enrolled over 5,144 primary care providers by 2013 and provided onsite support to primary care and specialty practices including assessing the practice; assisting in the selection of the most appropriate EHR system; guidance on system implementation; guidance on security and risk assessments; and guidance on system optimization through meeting MU.
- NC ORH initiated a pilot program dedicated to helping FQHCs and RHCs meet the initial stages of MU.
- The Program hosted an NC HIT Stakeholder Summit with all primary stakeholders. There were more than 65 attendees, representing 21 organizations across the NC HIT landscape.

2014

- NC ORH hired a dedicated full-time employee to provide technical assistance for telemedicine and telepsychiatry programs being developed across the state.
- NC OHIT hired a new director.
- The first NC hospitals went live with NC HIE's HISP/Direct Secure Messaging service, integrated directly into their Epic and Meditech EHR systems.

2015

- ORH began to align, to the extent possible, performance measures for quality of care required of its grantees providing primary care services with Uniform Data System (UDS) reporting standards.
- The North Carolina Health Information Exchange Authority (NC HIEA) was created to oversee and administer North Carolina's HIE.

2016

- HIE was transferred from the Community Care of North Carolina (CCNC) / North Carolina Community Care Networks (N3CN) structure to the new statewide North Carolina Health Information Exchange Authority (NC HIEA).
- NC Broadband Infrastructure Information Office released the NC State Broadband Plan that included seven recommendations specific to broadband and telehealth.

2017

- The NC HIEA received CMS funding to support cost-effective Medicaid provider onboarding to the NC HealthConnex.
- NC Opioid Action Plan was developed, which includes strategies that utilize HIT such as expanding use of NC's PDMP, NC Controlled Substances Reporting System (CSRS).

2018

- NC HealthConnex launched the NC Diabetes Specialized Public Health Registry, which supports attestation for Meaningful Use Stage 3 and Modified Stage 2 for eligible hospitals, eligible critical access hospitals, and eligible professionals as well as Medicare Quality Payment Program Advancing Care Information for eligible clinicians.
- NC began conversations with emPOWER and PULSE teams to explore participation in these projects.

2019

- NC OHIT began working with ITD on plans for transitioning from HITECH to MES and participating in monthly calls led by NC's MES State Officer.
- The NC HIEA participated in initial conversations to optimize coordinated efforts, and improve a shared understanding of the HITECH to MMIS funding transition.

2020

- NC OHIT sent monthly de-identified planning Medicaid emPOWER reports to the NC Division of Public Health, Public Health Preparedness and Response Branch to enhance situational awareness of and support emergency planning for and public health response activities for Medicaid beneficiaries that rely upon select electricity-dependent durable medical equipment (DME), facility-based dialysis, oxygen tank services, at-home hospice services and home health services.

- NC OHIT aided leaders in data-based decision making in North Carolina's battle against the COVID-19 pandemic by analyzing survey responses to mitigate human error in reporting, tracking response rates, conducting targeted outreach, and managing the help desk for the COVID-19 Hospital Medical Surge Daily Survey. This survey provided regional and statewide situational awareness regarding hospital capacity within North Carolina by tracking COVID patient admissions, inpatient and ICU bed capacity, available ventilators and other relevant data.
- The NC HIEA began work to identify capabilities/use cases for NC HealthConnex, analyze each capability, and based on the use case description, identify which MITA business process would be supported by the capability. In addition, the NC HIEA created a HIT Advantage Framework document broken out into the categories, documenting current, in-progress, and future use cases where HIE/HIT capabilities were grouped into the following functional categories: Service Delivery, Population Health, Master Data Management, Administrative, and Care Management.

2021

- Early in 2021, the NC HIEA presented a detailed project progression plan to the NC Medicaid MES Program Manager and project staff on methodologies used in financial, personnel, technology maintenance & operations, and new development strategies for use in future MMIS APD funding requests.
- During the planning and initiation phase, the NC HIEA developed draft outcome-based statements and evaluation criteria illustrating how the HIE meets and intersects with the business needs of the state Medicaid information technology systems and worked with MES certification staff for scheduling of the formal certification review process. However, due to the newness of the HIE MES certification for HIEs at the federal level, efforts were paused as the NC HIEA pursued a more focused alignment to the state's Medicaid program goals and objectives. It is anticipated that the NC HIEA will resume certification efforts in 2022.

2022

- The NC HIEA has been asked to participate in sessions with NC Medicaid for the MITA State Self-Assessment 2022 on HIE-Medicaid as-is business processes and how we can partner to transform to the to-be for the NC Managed Care Transformation environment.
- The NC HIEA has made significant progress toward creating services and partnerships that provide increased access to data, supporting data-driven decision-making and improving outcomes for NC residents. Looking ahead, the NC HIEA will continue to build upon a consumer-driven sustainability model that ensures ongoing support of stakeholder initiatives by increasing provider connections and expanding data sources and data sharing capabilities. The NC HIEA is fully committed to supporting the State of North Carolina in reducing care gaps, increasing utilization and outcome monitoring, and identifying and supporting vulnerable populations ensuring equitable care across all populations.
- The NC HIEA foresees future integration meetings with the North Carolina Department of Health Benefits (DHB) where future state project collaborations based on strategic objectives transpire.

As aforementioned, the NC HIEA 2025 Roadmap is in development and will lay the groundwork for connectivity expansion and other initiatives through 2025. This detailed roadmap showing where the NC HIEA expects to be in 2025 and its plans to get there will be shared with CMS in the coming months.

D.2 EHR Adoption – Final Updates

There were 6,181 providers who successfully attested for the Program. Of those, 3,799 successfully attested for MU at least once, meaning they had a CEHRT and could demonstrate meaningfully using it.
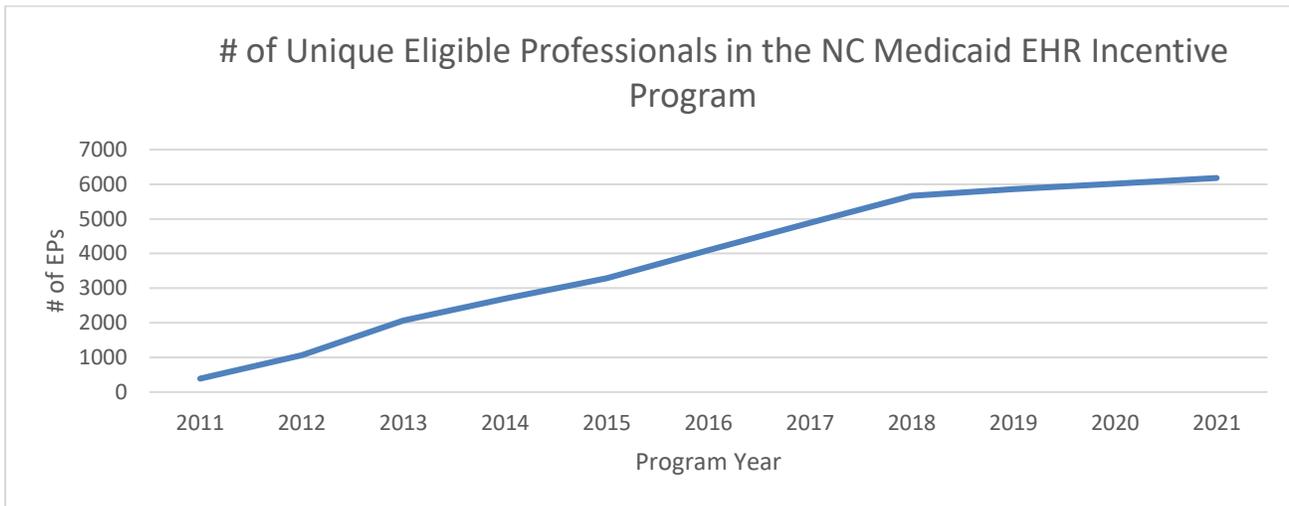
Figure 9 - NC CEHRT Adoption from Program Years 2011-2021

D.3 Annual Benchmarks for Audit and Oversight – Final Updates

As of February 2022, Program staff have completed 1,732 audits. Of the completed audits, 45 failed. See summary chart below.
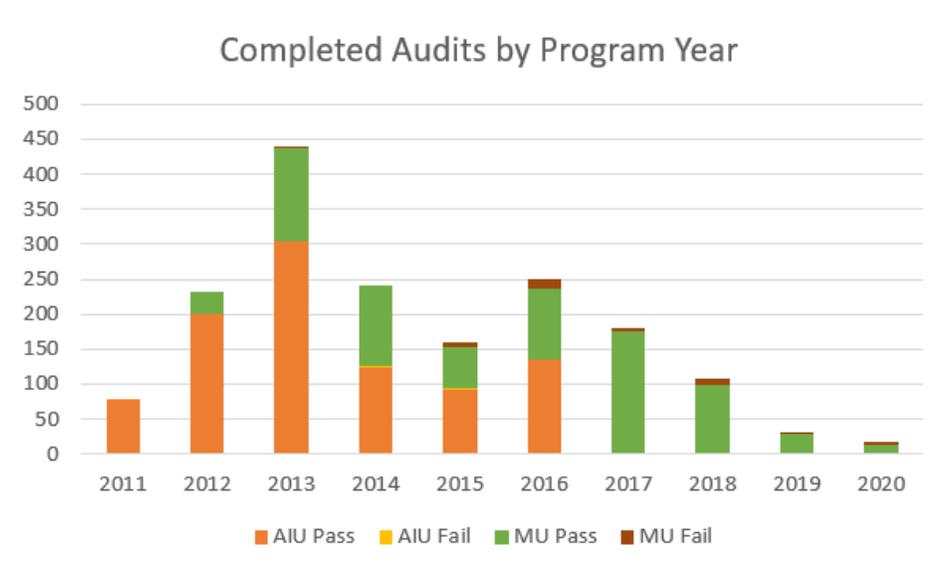
To improve customer service and audit outcomes, beginning with Program Year 2017, program staff emailed all providers after they received the incentive payment to remind them to retain all data supporting their attestation for six years. The email also includes a sample audit letter, so providers are familiar with process. It is hoped that this additional step will make the audit process smoother for the providers eventually selected for audit and that it will further reduce the number of failed audits. Additional details are available in the State's Audit Strategy, NC-2021-06-21-HITECH-Audit Strategy.pdf, approved June 30, 2021.

NC tracked participation and attrition rates to estimate CEHRT adoption and to plan targeted outreach to encourage return participation. The chart below shows number of successful attestations per program year and participation year by first program year of participation. Attrition patterns can be seen in each program year column. For example, of the 1,247 providers who attested in Program Year 2011, 427 returned for payment year 2 in Program Year 2012, and of those, 266 returned for payment year 3 in Program Year 2013, and of those 118 returned in 2014, etc. About 18 percent participated in all available consecutive program years after the first year of participation.

		2011	2012	2013	2014	2015	2016
2011	**Year 1**	1247					
2012	**Year 1**		1917				
	Year 2	427					
2013	**Year 1**			1240			
	Year 2	310	1110				
	Year 3	266					
2014	**Year 1**				614		
	Year 2	42	114	437			
	Year 3	207	749				
	Year 4	118					
2015	**Year 1**					566	
	Year 2	41	62	105	255		
	Year 3	68	148	272			
	Year 4	138	489				
	Year 5	93					
2016	**Year 1**						574
	Year 2	20	27	46	44	234	
	Year 3	57	67	105	165		
	Year 4	116	188	213			
	Year 5	119	421				
	Year 6	86					
2017	**Year 2**	13	11	18	15	32	186
	Year 3	27	39	47	51	150	
	Year 4	58	68	88	132		
	Year 5	79	146	172			
	Year 6	97	353				
2018	**Year 2**	3	10	7	8	4	30
	Year 3	22	24	27	14	33	112
	Year 4	27	47	37	41	105	
	Year 5	60	67	74	105		
	Year 6	53	110	141			
2019	**Year 2**	1	0	0	2	1	3
	Year 3	1	2	2	3	5	13
	Year 4	5	8	7	9	15	42
	Year 5	15	13	9	16	36	
	Year 6	8	23	19	46		
2020	**Year 2**	1	1	3	1	6	4
	Year 3	3	1	2	6	1	9
	Year 4	3	6	2	6	7	17
	Year 5	7	10	12	10	16	18
	Year 6	18	7	20	27	27	
	Year 2	0	0	1	1	0	1

2021	**Year 3**	1	2	3	0	5	6
	Year 4	3	3	5	6	3	8
	Year 5	7	12	13	10	25	24
	Year 6	13	14	21	18	41	35

Appendix 1 - Acronyms and Abbreviations

Acronyms and Abbreviations	
ACA	Accountable Care Act
ADT	Admission, Discharge and Transfer
AHEC	Area Health Education Centers
AHRQ	Agency for Healthcare Research and Quality
AIU	Adopt, Implement, Upgrade
ARRA	American Recovery and Reinvestment Act
AVP	Attestation Validation Portal
BCBSNC	Blue Cross Blue Shield of North Carolina
BTOP	Broadband Technology Opportunities Program
CAH	Critical Access Hospital
CAI	Community Anchor Institution
CBOC	Community Based Outpatient Clinic
CCD	Continuity of Care Document
CCHA	Coastal Carolinas Health Alliance
CCHIE	Coastal Connect Health Information Exchange
CCME	Carolinas Center for Medical Excellence
CCN	CMS Certified Number
CCNC	Community Care of North Carolina
CCNC-UP	CCNC for Uninsured Parents
CCofSP	Community Care of the Southern Piedmont
CCR	Central Cancer Registry
CDC	Centers for Disease Control

CDSA	Child Development Service Agency
CEHR	Children's Electronic Health Record
CHA	Cabarrus Health Alliance
CEHRT	Certified Electronic Health Record Technology
CHC	Community Health Center
CHIP	Children's Health Insurance Program
CHIPRA	Children's Health Insurance Program Reauthorization Act
CHOW	Change of Ownership
CIH	Cherokee Indian Hospital
CIP	Capital Improvement Program
CIS	Credentialing Information System
CMIS	Case Management Information System
CMS	Centers for Medicare & Medicaid Services
CMS R&A	CMS Registration and Attestation System
CPOE	Computerized Physician Order Entry
CQM	Clinical Quality Measure
CRH	Central Regional Hospital
CSC	Computer Sciences Corporation
DCHI	Duke University Center for Health Informatics
DDR	Daily Disease Reporting
Department	North Carolina Department of Health and Human Services
DHHS	North Carolina Department of Health and Human Services
DHB	Division of Health Benefits (NC Medicaid), formerly Division of Medical Assistance (DMA)

DMH/DD/SAS	Division of Mental Health/Developmental Disabilities/Substance Abuse Services
DPH	Department of Public Health
DRIVE	Data Retrieval and Information Validation Engine
DSOHF	Division of State Operated Healthcare Facilities
ED	Emergency Department
EFT	Electronic Funds Transfer
EH	Eligible Hospital
EHR	Electronic Health Record
EMSPIC	EMS Performance Improvement Center
EMR	Electronic Medical Record
EMS	Emergency Medical Services
e-NC	e-North Carolina Authority
EP	Eligible Professional
EPSDT	Early and Periodic Screening, Diagnostic and Treatment
ESB	Enterprise Service Bus
EVC	NC Medicaid's Enrollment, Verification, and Credentialing System/Center
FFP	Federal Financial Participation
FFS	Fee-For-Service
FIP	Facilities Investment Programs
FPL	Federal Poverty Level
FQHC	Federally Qualified Health Center
FRC	Financial Responsibility Center
FTE	Full-time Employee

GLRBI	Golden LEAF Rural Broadband Initiative
GUI	Graphical User Interface
HHS	Health and Human Services
HIE	Health Information Exchange
HIO	Health Information Organization
HIPAA	Health Insurance Portability and Accountability Act
HIS	Health Information System
HIT	Health Information Technology
HIT Plan	NC Medicaid Health Information Technology Plan
HITECH	Health Information Technology for Economic and Clinical Health Act
HIT Task Force	North Carolina HIT Strategic Planning Task Force
HO	Hearing Office
HP	Hewlett Packard
HPES	Hewlett Packard Enterprise System
HRSA	Health Resources Services Administration
HSIS	Health Services Information System
HWTFC	Health and Wellness Trust Fund
HWTFC	Health and Wellness Trust Fund Commission
I-APD	Implementation Advanced Planning Document
IC	Informatics Center
IDN	Integrated Delivery Networks
IDS	Increased Demand for Community Health Center Services
IHS	Indian Health Services
IPH	Institute for Public Health

IPIP	Improving Performance in Practice
IT	Information Technology
ITS	Information Technology Services
LHD	Local Health Department
LME	Local Management Entities
LMFT	Licensed Marriage and Family Therapist
MCNC	Microelectronics Center of North Carolina
MCO	Managed Care Organization
MFCU	Medicaid Fraud Control Unit
MITA	Medicaid Information Technology Architecture
MMIS	Medicaid Management Information System
MPN	Medicaid Provider Number
MSA	Master Service Agreement
MU	Meaningful Use
NC	North Carolina
N3CN	North Carolina Community Care Networks
NC EDSS	NC Electronic Disease Surveillance System
NC HIE	North Carolina Health Information Exchange
NC OEMS	The North Carolina Office of Emergency Services
NCAC	North Carolina Administrative Code
NCAS	North Carolina Accounting System
NCB-Prepared	North Carolina Bio-Preparedness Collaborative
NCCHCA	North Carolina Community Health Center Association
NC DETECT	NC Disease Event Tracking and Epidemiologic Collection Tool

NCHA	North Carolina Hospital Association
NCHESS	North Carolina Hospital Emergency Surveillance System
NCHEx	North Carolina Healthcare Exchange
NCHICA	North Carolina Healthcare Information and Communications Alliance
NCID	North Carolina Identifier
NCIR	North Carolina Immunization Registry
NC-MIPS	NC Medicaid Incentive Payment System
NCMS	North Carolina Medical Society
NCMSF	North Carolina Medical Society Foundation
NC PATH	North Carolina Program to Advance Technology for Health
NCREN	North Carolina Research and Education Network
NCRHC	North Carolina Rural Health Center
NCTN	North Carolina TeleHealth Network
NCTN-H	North Carolina TeleHealth Network - Hospitals
NC TRACKS	NC Transparent Reporting, Accounting, Collaboration, and Knowledge Management System
NHIN	Nationwide Health Information Network
NPI	National Provider Identifier
NTIA	National Telecommunications and Information Administration
NwHIN	Nationwide Health Information Network
OHIT	Office of Health Information Technology
OMMISS	Office of Medicaid Management Information System Services
ORH	Office of Rural Health (formerly Office of Rural Health and Community Care)
ONC	Office of the National Coordinator

OSC	Office of the State Chief Information Officer
PA	Physician Assistant
PAC	Picture Archiving and Communication
PAM	Patient Activation Measure
PBH	Piedmont Behavioral Health
PCG	Public Consulting Group
PCHP	Piedmont Cardinal Health Plan
PECOS	Provider Enrollment, Chain, and Ownership System
PI	Program Integrity
PMO	Project Management Office
PreMIS	Pre-Hospital Medical Information System
Program	North Carolina Medicaid EHR Incentive Program
PSO	Patient Safety Organization
QI	Quality Improvement
QIC	Quality Improvement Consultants
QIS	Quality Improvement Specialists
QMAF	Quality Measures and Feedback
QO	Qualified Organization
RAID	Redundant Array of Independent Disks
RCHD	Rowan County Health Department
REC	Regional Extension Center
RFP	Request for Proposal
RHC	Rural Health Center
RPMS	Resource Patient Management System

SCHIEx	South Carolina Health Information Exchange
SCHIP	State Children's Health Insurance Program
SCIO	State Chief Information Officer
SERCH	Southeast Regional HIT-HIE Collaboration
SFTP	Secure File Transfer Process
SHAP	State Health Access Program
SL	Session Law
SMARTT	State Medical Asset Resource Tracking Tool
SMHP	State Medicaid HIT Plan
SNG	Strategic Networks Group
SOA	Service-Oriented Architecture
SOW	Statement of Work
SPBC	Southern Piedmont Beacon Community
SS-A	State Self-Assessment
STEMI	EMS response time, acute trauma care, acute cardiac care
TIN	Taxpayer Identification Number
UBT	University Based Training
UNC-CH	University of North Carolina at Chapel Hill
VA	Veterans Affairs
VistA	Veterans Administration Electronic Health Record
vSPR	Virtual Single Patient Record
WIC	Women, Infant, and Children
WNCHN	Western North Carolina Health Network