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NC Health Information Exchange (NCQ)

# Data Specifications 2021 Onboarding Packet

SAS Global Hosting and U.S. Professional Services

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# 1 Introduction

## 1.1 Purpose of this Document

This document contains the Data Specifications for the North Carolina state-operated health information exchange, NC HealthConnex. The following sections provide the required and optional content for HL7 2.x healthcare message types as well as the HL7 Clinical Document Architecture (CDA) documents that may be exchanged with NC HealthConnex.

## 1.2 Project Description

NC HealthConnex is the state-designated health information exchange managed by the North Carolina Health Information Exchange Authority (NC HIEA). SAS has been contracted to deliver the services necessary to support the NC HealthConnex technology infrastructure, to enable health care providers submit clinical information about their patients to NC HealthConnex, and to provide clinical and claims-based analytics to the State for state-funded health care.

Data flows into NC HealthConnex via connections to the Electronic Medical Record (EMR) systems of participating provider organizations. Data is submitted as HL7 messages (for example, HL7 2.x, specifically version 2.1 and higher) and as clinical documents (for example, the CDA standard). Data is exchanged bi-directionally with EMRs using the IHE standard when requested by the participant and technically feasible by the participant's EMR vendor. Data is stored centrally for the purposes of viewing in the clinical portal, exchanging clinical documents, and feeding into the provided outbound services.

In addition to the core functionality of the NC HealthConnex health information exchange infrastructure, additional services are available for full participants that are designed to integrate more complete patient information into care delivery including:

### **NC HealthConnex Clinical Portal**

The Clinical Portal can be used to query and exchange patient records, view longitudinal patient records, and access other features such as the Veterans Administration (VA) and external HIEs via the eHealth Exchange.

### **Direct Secure Messaging**

NC HealthConnex utilizes Secure Exchange Solutions (SES) as our HISP (Health Information Services Provider), which is also a participant in the DirectTrust framework. Full participants are eligible to receive a unique secure email address assigned in the NC HIEA Direct domain. Users can append files containing Protected Health Information to their Direct messages.

### **Provider Directory**

The Provider Directory is a directory of secure email addresses of NC HealthConnex participants and North Carolina Providers participating in DirectTrust.

### **NC\*Notify**

NC\*Notify is a subscription-based service that notifies providers as their patients receive services across the care continuum, spanning geography, health care systems, acute and ambulatory care settings.

### **Registries**

The NC HIEA is a proud partner with the North Carolina Division of Public Health (NCDPH) and is working alongside this agency to deliver public health registry reporting for full participants through the NC HealthConnex connection including connection to the North Carolina Immunization Registry (NCIR), Electronic Lab Reporting (ELR), and a Diabetes Registry.

For additional information on NC HealthConnex and available services, please visit <https://hiea.nc.gov/>.

## 2 NC HealthConnex Connection Overview

### 2.1 High-Level Data Flow

Data flows into NC HealthConnex in the following ways:

1. Through TLS direct connection, which allows a provider’s EMR to communicate with NC HealthConnex. Supported message transactions include:

- HL7 v2 messages
- CDA documents or related structures like CCDs

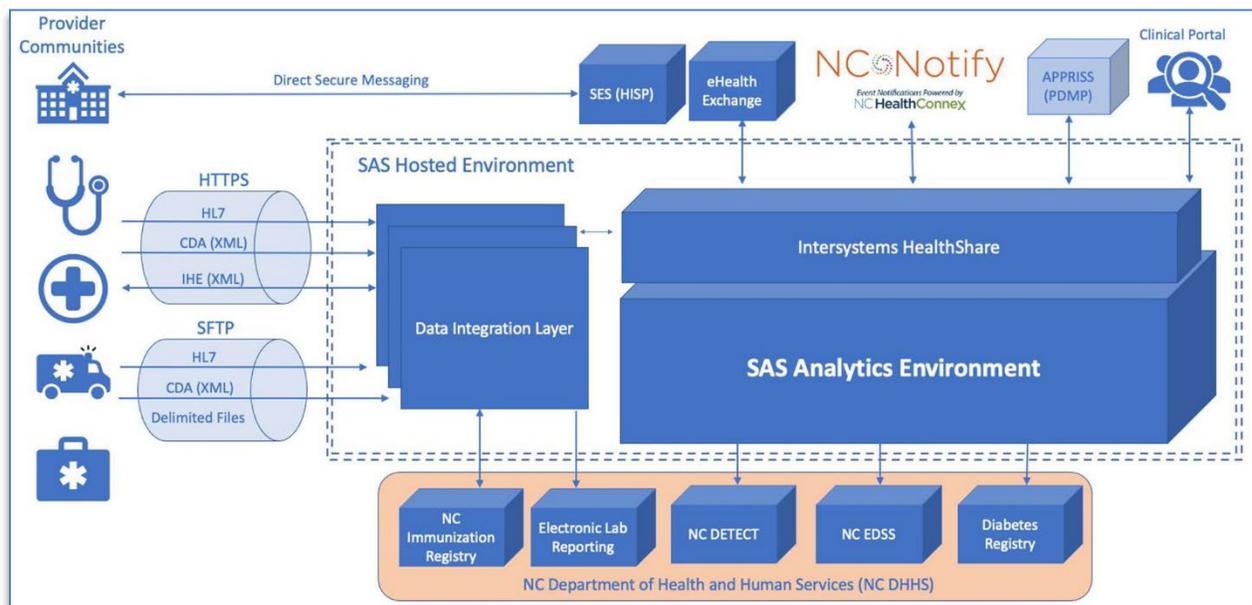
When documents arrive in NC HealthConnex, they are stored in the Document Repository and are viewable in the Clinical Portal. CDA integrations are normally done in two ways:

- a. A one-directional feed of all applicable CDA documents for a provider organization’s population, and
- b. A bi-directional query-response interface that abides by IHE specifications.

2. SFTP document exchange is used when a provider’s EMR does not have the ability to connect directly with NC HealthConnex. Supported messages for exchange include:

- HL7 v2 messages
- CDA documents or related structures like CCDs.
- Delimited Files used for the NC HealthConnex notification service, NC\*Notify

Figure 1: Basic Flow of Health Information



## 2.2 Overview of the Connection Process

Figure 2: Connection Process Flow



The process to set up an initial connection to NC HealthConnex follows the steps listed in **Figure 2**. At each step in the connection workflow there may be actions required of the participant, the entity through which the participant is connecting, the North Carolina Health Information Exchange Authority (NC HIEA), and/or the NC HIEA's technical vendor SAS.

While these steps reflect the process to set up an initial connection to NC HealthConnex, participants who onboard multiple facilities through one interface may go through a condensed subset of these steps when rolling on additional facilities.

- **PA Executed:** The process to connect to NC HealthConnex starts with the participant's signing the Participation Agreement. The Participation Agreement is the governing document between the North Carolina Health Information Exchange Authority and the participant. See **Section 2.3** for more information on the Participation Agreement.
- **Intake Process:** Once the Participation Agreement has been executed by the North Carolina Health Information Exchange Authority, the participant arrives into SAS' queue to connect. SAS contacts the participant and confirms their path to connect.
- **Technical Discussions:** Technical discussions are held with participants, their EMR, or their data connector once all stakeholders are engaged and ready to proceed with the connection. During the technical discussion, SAS reviews the connection requirements outlined in this document. If the participant connects through an EMR or data connector who has an established, live connection to NC HealthConnex, this step is skipped as no additional technical discussions are required.
- **Provide Portal Credentials:** During the technical onboarding of the participant, if they have signed a Full Participation Agreement, then the participant is provided credentials to access the NC HealthConnex Clinical Portal. The participant may be provided with portal credentials prior to SAS engaging with them or their EMR or data connector for technical onboarding. If the participant has a Submit Only PA, then this step is skipped.
- **Connectivity:** sFTP or TLS secured through mutual certificates are available connection options. There is a preference for TLS. During this step SAS works with the entity connecting to establish and test connectivity. If the participant connects through an EMR or data connector who has an established, live connection to NC HealthConnex, then this step is skipped.
- **Development & Analysis:** SAS requests a sample set of messages to analyze and ensure the messages meet the data target requirements. If any data elements are missing or are not being sent in the correct format, SAS will work with the entity connecting on options to adjust the messages being sent. Once adjustments are made, a new sample set of messages is provided and the analysis is re-run. There may be several rounds of analysis depending on the number of changes required. If the participant connects through an EMR or data connector who has an established, live connection to NC HealthConnex, then this step is skipped.
- **Approvals:** During the approvals step, the NC HIEA confirms a participant has a valid participation agreement on file prior to moving into a Live state.

- **Testing/QA:** SAS and the NC HIEA perform QA and User Acceptance Testing on the connection to ensure no additional development is required, and the participant's data displays in the portal as expected.
- **Live in Production:** The participant is moved into production, and SAS confirms receipt of the participant's data in the production environment.

The steps to connect are listed in **Figure 3**. Note the durations for each task may vary depending on the number of interfaces being developed, the amount of analysis required, and responsiveness of the entity connecting.

**Figure 3: Steps to Connect**

Task	Dependency
Complete Pre-Requisites	
Kick Off Project	Pre-Requisites Completed
Connectivity Established	Project Kick Off
ADT Messages Received	Connectivity Established
CCD Messages Received	Connectivity Established
ADT Development	Messages Received
CCD Development	Messages Received
ADT QA	Development Complete
CCD QA	Development Complete
ADT UAT	QA Complete
CCD UAT	QA Complete
ADT Live in Prod	UAT Complete; Hold for CCDs
CCD Live in Prod	UAT Complete

## 2.3 General Implementation Requirements

### Participation Agreement

The Participation Agreement is the legal contract that governs data sharing between the health care provider and the NC HIEA. This agreement can be found on the NC HealthConnex website with instructions for completion.

- The [Full Participation Agreement](#), which is aligned with the eHealthExchange Data Use and Reciprocal Support Agreement or DURSA, will allow providers full use of current and future NC HealthConnex value-added features and satisfies the State requirement to submit clinical and demographic data. Organizations with a Full Participation Agreement may submit data to NC HealthConnex either through a unidirectional connection or a bi-directional data connection. Full participants with a unidirectional connection can access patient data using the NC HealthConnex clinical portal.
- The [Submission Only Participation Agreement](#) will enable a provider to submit the clinical and demographic data required by law in a unidirectional technical connection in order to be in compliance with the HIE Act. However, this agreement will prohibit all other data exchange services, including HIE data query and response, clinical or event notifications, and public health registries. Participants with a Submission Only Agreement should consult with legal counsel prior to sending data that does not pertain to health care services paid for with State funds pursuant to the HIE Act. Being able to only submit State funded data will also depend on the technical capability of your EMR vendor to implement data filtering. Please note: the [HIE Act](#) was amended on June 6, 2019, and certain provider types are no longer required to connect. If an exempt provider would like to voluntarily participate in NC HealthConnex in order to view patient records or utilize the HIE value-added features, the organization must complete a Full Participation Agreement.

### Required Technology

To connect to NC HealthConnex, participants must have required technology in place. This includes EMRs that are minimally capable of sending HL7 V2.x messages and higher. EMR products that are ONC-certified for Meaningful Use for Centers for Medicare & Medicaid Services (CMS) Incentive Programs are preferred. Additional information can be found on the [2019 Promoting Interoperability Medicaid Program page](#).

### Timely Data

The submission of timely data is required to connect to NC HealthConnex. This means real-time ADT messages and/or timely CCD documents are sent within 24 hours of the close of an encounter.

### Full Demographic Patient Information Provided

Patient information must be provided in full ADT messages. If PIX messages are used to register a Patient, accompanying CCD documentation must be provided.

### Data Elements Required

Participants must submit all data elements they collect from the NC HealthConnex Data Target (**Table 2**). The required data target elements align with the Office of National Coordinator for Health Information Technology (ONC) [Common Clinical Data Set \(CCDS\)](#). If specific information from the Data Target cannot

be supplied, then this must be clarified and documented during the onboarding process. Additional detailed information on meeting data element requirements can be found in **Section 3**.

## 2.4 Connection Pathways

### mTLS (mutualTLS)

This type of connection provides encryption utilizing mutual TLS and requires certificate exchange between the Healthcare Organization and NC HealthConnex. mTLS is the preferred method to encrypt data to and from NC HealthConnex.

To set up a mTLS connection to NC HealthConnex, the following information is needed:

- Participant Information: Organization name and address
- Contact Information: Contact information for staff working to set up connection including a business or project manager and IT contact who will set up the connection
- Technical Details: Sending IP address (for both test and production servers) as well as IP Service Provider

**Note:** The highest version of TLS that is supported is minimum 1.2.

### SFTP

This type of connection is used for unidirectional submission of HL7 and/or CDA Data Files. SFTP can also be used for ELR Submission to NCDPH via NC HealthConnex.

Information needed to set up the SFTP connection include:

- Participant Information: Organization name and address
- Contact Information: Contact information for staff working to set up connection including a business or project manager and IT Contact who will set up the connection
- SFTP Technical Details: Sending IP address (for both test and production servers) as well as IP Service Provider

### 3 Field-Level Data Target

To ensure quality data is submitted, [Table 1](#) outlines the data elements required for connection to NC HealthConnex. The data elements in the table are broken down into two categories; R=Required and RC = Required if Collected.

As a part of the connection process we can work towards aligning with the data you collect. To see an example of an adjusted Data Target for a Specialty provider, see [Appendix 1](#).

Table 1: NC HealthConnex Data Target

NC HealthConnex Standard Data Target			
Section	Data Element	Example	R=Required RC=Required if Collected
Patient	Sending Organization	General Hospital	R
	Sending Organization OID	2.16.840.1.1138 83.3.3282.1004098	R
	Date/Time of Message	20160627084300	R
	CCD/Message Type	Summary of Care CCDA v2.1, Admit, Discharge	R
	Unique Message ID	EPIC_12345678	R
	Patient ID	Pied-1234	R
	Patient ID Type	Preferred Types: MRN, SSN, Driver's License	R
	Organization Associated with Patient ID	Piedmont	R
	Patient Primary Care Provider	Dr. Sally Smith	RC
	Primary Care Provider NPI	987654321	RC
	Patient Last Name	Smith	R
	Patient Middle Name	Doe	RC
	Patient First Name	John	R
	Patient Name Suffix	Jr	RC
	Patient Birthdate	19620717	R
	Patient Gender	Male	R
	Patient Street Address	123 Lane Drive	R
	Patient City	Raleigh	R
	Patient State	NC	R
	Patient Zip Code	27605	R
	Patient Country	USA	RC
	Patient Telephone	919-123-4567	RC
	Patient Race	White or Caucasian	R
	Patient Language	ENG	RC
	Patient Ethnicity	Not Hispanic or Latino	R
	Patient SSN	123456789	RC
Driver's License	999999	RC	
DeathIndicator	Y	RC	

	<b>DeathDateTime</b>	20160627084300	RC
<b>Encounter/Visit</b>	<b>Patient Class</b>	Outpatient	R
	<b>Service Level</b>	Group Therapy* only specialty providers	R* Only for group therapy providers
	<b>Unique Encounter Visit Number</b>	1223456	RC
	<b>Visit DateTime Low</b>	20160627084300	R
	<b>Visit DateTime High</b>	20160627084300	RC
	<b>Care Provider NPI</b>	123456789	R
	<b>Encounter Place of Service/Facility</b>	Facility 1	R
	<b>Encounter Place of Service/Facility ID</b>	987654321	R
	<b>Hospital Service</b>	Emergency	RC
	<b>Department/Ward</b>	ICU	RC
	<b>Room</b>	108	RC
	<b>Bed</b>	A	RC
	<b>Organization Entered At</b>	Facility 1	R
	<b>Reason for Visit</b>	Cough	RC
	<b>Attending Provider</b>	Dr. John Smith	R
	<b>Attending Provider NPI</b>	123456789	R
	<b>Referring Provider</b>	Dr. John Smith	RC
	<b>Referring Provider NPI</b>	123456789	RC
	<b>Consulting Provider</b>	Dr. John Smith	RC
	<b>Consulting Provider NPI</b>	123456789	RC
	<b>Admitting Provider</b>	Dr. John Smith	RC
	<b>Admitting Provider NPI</b>	123456789	RC
	<b>Admit Source</b>	emd, outp, born, gp, mp, nursing, psych, rehab, other	RC
	<b>Admit Reason Code</b>	99999	RC
	<b>Admit Reason Description</b>	Acute Resp Failure	RC
	<b>Admit Type Code</b>	E	RC
	<b>Admit Type Description</b>	Emergency	RC
	<b>Discharge Disposition Code</b>	01	RC
	<b>Discharge Disposition Description</b>	Discharged to home or self care (routine discharge)	RC
	<b>Discharge Date/Time</b>	20160627094500	RC
<b>Discharge Location Code</b>	FT	RC	
<b>Discharge Location Description</b>	Facility Two	RC	
<b>Vitals</b>	<b>Code</b>	8867-4	RC
	<b>Code Description</b>	HEART RATE	RC
	<b>Code System Name</b>	LOINC	RC

	<b>Observation Value</b>	80	RC
	<b>Observation Value Units</b>	/min	RC
	<b>Organization Entered At</b>	Facility 1	RC
	<b>DateTime of Observation</b>	20160701192000	RC
<b>Social History</b>	<b>Code</b>	8517006	RC
	<b>Code Description</b>	Former Smoker	RC
	<b>Code System Name</b>	SNOMED CT	RC
	<b>DateTime of Observation</b>	20160627084300	RC
	<b>Time Low</b>	20050701	RC
	<b>Time High</b>	20080601	RC
	<b>Organization Entered At</b>	Facility 1	RC
<b>Allergies</b>	<b>Allergy Category</b>	Adverse Reaction to Drug	RC
	<b>Code</b>	2556	RC
	<b>Code Description</b>	Citalopram	RC
	<b>Code System Name</b>	RXNORM	RC
	<b>Allergy Status</b>	Active	RC
	<b>DateTime of Observation</b>	20160627084300	RC
	<b>Time Low of Allergy</b>	20151019	RC
	<b>Time High of Allergy</b>	20151019	RC
	<b>Allergy Reaction Display Name</b>	Hives	RC
	<b>Severity Display Name</b>	Mild	RC
	<b>Organization Entered At</b>	Piedmont	RC
<b>Diagnosis</b>	<b>Code</b>	55607006	RC
	<b>Code Description</b>	Diverticulitis of large intestine	RC
	<b>Code System Name</b>	SNOMED CT	RC
	<b>Diagnosing Provider Name</b>	Dr. John Snow	RC
	<b>Diagnosing Provider NPI</b>	123456789	RC
	<b>Diagnosis Encounter Number</b>	1223456	RC
	<b>Diagnosis DateTime Entered On</b>	20160627084300	RC
	<b>Organization Entered At</b>	Facility 1	RC
	<b>Diagnosis Status</b>	final, working	RC
<b>Procedures</b>	<b>Code</b>	93010	RC
	<b>Code Description</b>	Electrocardiogram	RC
	<b>Code System Name</b>	CPT	RC
	<b>Procedure DateTime (Low/High if available)</b>	20160628084300.00	RC
	<b>Procedure Encounter Number</b>	1223456	RC
	<b>Organization Entered At</b>	Facility 1	RC
<b>Results (Lab/Rad)</b>	<b>Description of Order</b>	Codes like "NW" for New Order and "CA" for Cancelled	RC
	<b>Ordered Lab/Rad Date</b>	20160628084300	RC
	<b>Unique order identifier</b>	Lab123	RC

	<b>Ordering Provider</b>	Dr. Sally Doe	RC
	<b>Ordering Provider NPI</b>	123456789	RC
	<b>Result Status</b>	Final, Received	RC
	<b>Ordered item Code</b>	3094-0	RC
	<b>Ordered Item Code Description</b>	Comprehensive Metabolic Panel	RC
	<b>Ordered Item Code System Name</b>	LOINC	RC
	<b>Interpreting Provider</b>	Dr. John Doe	RC* RAD Results only
	<b>Interpreting Provider NPI</b>	258963254	RC* RAD Results only
	<b>Specimen Collection DateTime</b>	20160628084300	RC
	<b>Result TimeLow</b>	20150404083400	RC
	<b>Result TimeHigh</b>	20150404083400	RC
	<b>Unique Result Identifier</b>	Result123	RC
	<b>Result Code</b>	2345-7	RC
	<b>Result Code Description</b>	Blood Glucose	RC
	<b>Result Code System Name</b>	LOINC	RC
	<b>Result Observation Value</b>	126	RC
	<b>Result Observation Value Unit</b>	mg/dL	RC
	<b>Result Observation Reference Range</b>	60-125	RC
	<b>Result Observation Interpretation Display Name</b>	High	RC
	<b>Unique Encounter Visit Number</b>	1234	RC
<b>Organization Entered At</b>	Facility 1	RC	
<b>Performing Location</b>	Lab Location	RC	
<b>Medications</b>	<b>Instance (Order) ID</b>	123455	RC
	<b>Code</b>	236608	RC
	<b>Code Description</b>	Glucosamine-Msm-Chondroit-Hrb	RC
	<b>Code System Name</b>	RXNORM	RC
	<b>Medication Order Status</b>	Active, In Progress	RC
	<b>Code for Route of Medication</b>	C38288	RC
	<b>Medication Route Display Name</b>	Oral	RC
	<b>Medication Dose Value</b>	1	RC
	<b>Medication Dose Unit</b>	tbl	RC
	<b>Medication Frequency</b>	Twice Daily	RC
	<b>Prescribing Provider Name</b>	Dr. John Snow	RC
	<b>Prescribing Provider NPI</b>	123456789	RC
	<b>Unique Encounter Visit Number</b>	1234	RC
	<b>Organization Entered At</b>	Facility 1	RC
<b>Medication Order Date</b>	20190304084300	RC	

	<b>Medication Time Low</b>	20150218	RC
	<b>Medication Time High</b>	20160622	RC
<b>Immunizations</b>	<b>Instance (Order) ID</b>	123455	RC
	<b>Immunization DateTime</b>	20081026084300	RC
	<b>Organization Entered At</b>	Facility 1	RC
	<b>Code</b>	43	RC
	<b>Code Description</b>	HEPATITIS B, ADULT	RC
	<b>Code System Name</b>	CVX	RC
	<b>Immunization Status</b>	Given/Refused	RC
	<b>Immunization Dose</b>	0.5	RC
	<b>Immunization Dose Units</b>	mL	RC
	<b>Immunization Route</b>	Intramuscular Injection	RC
<b>Problems</b>	<b>Problem Instance ID</b>	1234	RC
	<b>Code</b>	249288007	RC
	<b>Code Description</b>	Incomplete bladder emptying	RC
	<b>Code System Name</b>	SNOMED CT	RC
	<b>Problem Status Code</b>	Active	RC
	<b>Problem Time Low</b>	201509010	RC
	<b>Problem Time High</b>	20150928	RC
	<b>Provider Name</b>	Dr. John Snow	RC
	<b>Provider NPI</b>	123456789	RC
	<b>Unique Encounter Visit Number</b>	1234	RC
<b>Organization Entered At</b>	Facility 1	RC	
<b>Insurance</b>	<b>HealthFund</b>	Blue Cross Blue Shield	RC
	<b>Entered At</b>	Piedmont	RC
<b>Family History</b>	<b>Family Member</b>	Mother	RC
	<b>Diagnosis</b>	Diabetes	RC
	<b>Organization Entered At</b>	Facility 1	RC
<b>Plan of Care (Appointments)</b>	<b>Unique Appointment ID</b>	23659	RC
	<b>Appointment Time Low</b>	20181014	RC
	<b>Organization Entered At</b>	Facility 1	RC
	<b>Provider to be Seen</b>	Dr. Sam Smith	RC
	<b>NPI of Provider to be seen</b>	985632145	RC
<b>Plan of Care (Orders)</b>	<b>Unique Order identifier</b>	Lab456	RC
	<b>Organization Entered At</b>	Facility 1	RC
	<b>Ordered item Code</b>	57021-8	RC
	<b>Ordered Item Code Description</b>	CBC W Auto Differential panel - Blood	RC
	<b>Ordered Item Code System Name</b>	LOINC	RC
<b>N/A</b>	<b>Sending Application</b>	EPIC700	RC
	<b>Prior Patient Numbers</b>	1234567	RC

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	<b>Prior Visit Number</b>	9988776655	RC
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## 4 HL7 Message Specifications

Detailed HL7 message specifications for ADT, ORU, and OMP messages can be found in attached [Appendix 1](#).

### 4.1 ADT Message Example

Figure 4: ADT Message Example

```

MSH|^~\&|MEDITECH|FACILITYCODE|NCHIE|NCHIE|201603221326||ADT^A04|456DSFAD1215A1|P|2.4
EVN|A04|201603221326|||201601060812
PID|||MR00444911||SMITH^JOHN^ROBERT||19820224|M||2106-3|608 NORTH ST^^DURHAM^NC^27701||919-555-
2139|919-555-6000|UNK|M|VAR|MF051765609|999-99-9999|||
PD1|||859^PROVIDER^PRIMARY^CARE^^^^&FACILITYCODE^^^^FACILITYCODE
PV1||O|MF.OPSRGI|C|||WHESE^PROVIDER^ATTENDING^N|||UC|||9|||MF051765609|||
|201601060812
PV2|||ACCIDENTAL FALL^ACCIDENTAL FALL
IN1|1|EPO|80|AETNA US HEALTHCARE|||
AL1|1|DA|F001000476^PENICILLINS^CODINGSYSTEM|U|UNK|20160322
AL1|2|DA|F006001550^CODEINE^CODINGSYSTEM|U|HYPERTHERMIA|20160322
AL1|3|DA|F006001554^HYDROCODONE^CODINGSYSTEM|MO|NAUSEA/VOMITING|20160322
AL1|4|DA|F006002755^ERYTHROMYCIN BASE^CODINGSYSTEM|U|RASH|20160322
DG1|1|I10|R19.7^DIARRHEA, UNSPECIFIED^I10|||A
DG1|2|I10|K64.4^RESIDUAL HEMORRHOIDAL SKIN TAGS^I10|||W
DG1|3|I10|R10.31^RIGHT LOWER QUADRANT PAIN^I10|||W
PR1|1|LOCAL|0DBK8ZX^EXCISION OF ASCENDING COLON, ENDO,
DIAGN^LOCAL||20160106|||5168^SURGEON^PROVIDER
PR1|2|LOCAL|0DBB8ZX^EXCISION OF ILEUM, ENDO, DIAGN^LOCAL||20160106|||5168^SURGEON^PROVIDER
PR1|3|LOCAL|0DBN8ZX^EXCISION OF SIGMOID COLON, ENDO,
DIAGN^LOCAL||20160106|||5168^SURGEON^PROVIDER
PR1|4|LOCAL|0DBM8ZX^EXCISION OF DESCENDING COLON, ENDO,
DIAGN^LOCAL||20160106|||5168^SURGEON^PROVIDER
PR1|5|LOCAL|0DBL8ZX^EXCISION OF TRANSVERSE COLON, ENDO,
DIAGN^LOCAL||20160106|||5168^SURGEON^PROVIDER

```

## 4.2 ORU Message Example

Figure 5: ORU Message Example

```
MSH|^~\&|FACILITYCODE^FACILITYCODE|FACILITYCODE^FACILITYCODE|ISC^ISC|NCHIE^NORTH CAROLINA HEALTH
INFORMATION EXCHANGE|20160323101427||ORU^R01|1739662.1|P|2.2
PID|1||M000640513^^^FACILITYCODE&FACILITYCODE^FACILITYCODE||SMITH^JOHN^J||19800324|M||2131-1|5616
WHITE STREET^^ROANOKE RAPIDS^NC^27870-
9041||||W||V0651312318^^^FACILITYCODE&FACILITYCODE^FACILITYCODE|999-88-7777
PV1|1|O|FACILITYCODE&FACILITYCODE^FACILITYCODE|||||||MAIN10549130102019-06-14
09:53:00.000^^^FACILITYCODE^VN|||||||201906140953
ORC|NW|LAB|MAIN105492019-06-1409:53:00.000|||||^FACILITYCODE^^^DN
OBR|1|02196843^FACILITYCODE^FACILITYCODE|6541561516^FACILITYCODE^FACILITYCODE|CBC^CBC^L|||2016032
30958|||||201603231004||1654984^PROVIDER^ORDERING^^^FACILITYCODE-PV&FACILITYCODE-
PV||01984087|||||201603230958||CH|F|
OBX|1|ST|6690-2^LEUKOCYTES^LN|1|8.1|K/UL|4.8-10.8|N||A|F|||201603231011
OBX|2|ST|789-8^ERYTHROCYTES^LN|1|4.41|M/UL|4.2-5.4|N||A|F|||201603231011
OBX|3|ST|718-7^HEMOGLOBIN^LN|1|12.8|G/DL|12.5-16.0|N||A|F|||201603231011
```

## 4.3 OMP Message Example

Figure 6: OMP Message Example

```
MSH|^~\&|FACILITYCODE^FACILITYCODE|FACILITYCODE^FACILITYCODE|ISC^ISC|NCHIE^NORTH CAROLINA HEALTH
INFORMATION EXCHANGE|201605281200||OMP^O09|1739662.1|P|2.5
PID|1||M000640513^^^FACILITYCODE&FACILITYCODE^FACILITYCODE||VELASQUEZ^RICARDO^J||19800324|M||2131
-1|5616 WHITE STREET^^ROANOKE RAPIDS^NC^27870-
9041||||W||V0651312318^^^FACILITYCODE&FACILITYCODE^FACILITYCODE|999-88-7777
PV1|1|O|FACILITY NAME^^^MAIN OFFICE|||||C879903839-2992^PROVIDER LAST^PROVIDER FIRST^^^MAIN
OFFICE^^^DN|||||4FBE8F3D-B808-4949-BE4B-849011A36E9D^^^MAIN
OFFICE^VN|||||201605281100
ORC|NW|||||201605281218|||C879903839-2992^PROVIDER LAST^PROVIDER FIRST^^^MAIN OFFICE^^^DN
RXO|00143965609^SERTRALINE 25 MG TABLET^NDC^00143965609^SERTRALINE 25 MG
TABLET^L|1.00|TA^TABLET^L||^TAKE 1 TABLET BY ORAL ROUTE EVERY DAY^L|||0|0|||25|MG^MG^L
RXR|1^ORAL^L
```

## 5 CDA Xpath Specifications

Detailed Xpath specifications for CDA documents will be sent to you prior to your technical onboarding call. If you have questions about these specifications, please email [HIESupport@SAS.com](mailto:HIESupport@SAS.com).

## 6 Clinical Document Specifications

### 6.1 Overview

NC HealthConnex stores clinical documents, represented as CDA documents and the CCD constructs therein, from various participants in the repository, displays documents in the NC HealthConnex Clinical Portal, and sends documents for various facilities using the IHE IT Infrastructure (ITI) Technical Framework. To participate in sending and receiving clinical documents to and from NC HealthConnex, a participant must conform to the specifications provided by IHE. These specifications can be accessed from the following links listed in sections [6.1.1](#) and [6.1.2](#).

#### 6.1.1 IHE IT Infrastructure (ITI) Technical Framework (2018)

[http://www.ihe.net/uploadedFiles/Documents/ITI/IHE\\_ITI\\_TF\\_Vol1.pdf](http://www.ihe.net/uploadedFiles/Documents/ITI/IHE_ITI_TF_Vol1.pdf)

[http://www.ihe.net/uploadedFiles/Documents/ITI/IHE\\_ITI\\_TF\\_Vol3.pdf](http://www.ihe.net/uploadedFiles/Documents/ITI/IHE_ITI_TF_Vol3.pdf)

#### 6.1.2 Additional IHE ITI Transaction Format Message Examples

[http://wiki.ihe.net/?title=XDS.b\\_Implementation](http://wiki.ihe.net/?title=XDS.b_Implementation)

In addition, included below are descriptions of the ITI transactions NC HealthConnex supports.

### 6.2 Retrieving Documents from NC HealthConnex

#### 6.2.1 ITI-8 – Patient Identity Feed (Register Patient)

##### *ITI-8 message – from Participant to NC HealthConnex*

The participant sends ITI-8 message to register a patient in NC HealthConnex's Master Patient Index (MPI) system. This links the patient's local facility identifier (MRN, patient ID) to the patient's enterprise identifier (MPI EUID, Enterprise ID).

#### 6.2.2 ITI-44 – (Register Patient, method 2)

##### *ITI-44 message – from Participant to NC HealthConnex*

As an alternative to sending an ITI-8, a participant can send an ITI-44 message to register patient in NC HealthConnex's MPI system. This links the patient's local facility identifier (MRN, patient ID) to the patient's enterprise identifier (MPI EUID, Enterprise ID). The difference between the ITI-8 and ITI-44 is that the ITI-44 is an XML document, whereas an ITI-8 is an HL7 message.

#### 6.2.3 ITI-9 – PIX Query (Get Enterprise ID)

##### *ITI-9 query – from Participant to NC HealthConnex*

The participant sends ITI-9 query to NC HealthConnex using a patient's local ID in order to get enterprise identifier (MPI EUID, Enterprise ID).

##### *ITI-9 response – from NC HealthConnex to Participant*

NC HealthConnex responds with patient's enterprise identifier (NCHIE EUID, Enterprise ID). This enterprise identifier is used in the ITI-18 query, so the participant can see what documents are associated with this patient from all facilities sending to NC HealthConnex.

## 6.2.4 ITI-45 – PIX Query (Get Enterprise ID, method 2)

### *ITI-45 query – from Participant to NC HealthConnex*

As an alternative to the ITI-9 query, the participant can send an ITI-45 query to NC HealthConnex using a patient's local ID and facilityCode/OID in order to get enterprise identifier (MPI EUID, Enterprise ID). The difference between the ITI-9 query and ITI-45 query is that the ITI-45 is an XML document, whereas an ITI-9 is an HL7 message.

## 6.2.5 ITI-18 – Registry Stored Query (Use Enterprise ID to get List of Available Documents)

### *ITI-18 query – from Participant to NC HealthConnex*

The participant sends ITI-18 query message including a patient's EUID in order to see which documents are available in NC HealthConnex's system from all facilities sending to NC HealthConnex.

### *ITI-18 response – from NC HealthConnex to Participant*

NC HealthConnex responds with list of available documents that can be pulled by the participant. 'This response says, "I have two documents available for you to pull back via an ITI-43 request".'

## 6.2.6 ITI-43 – Retrieve Document Set (Retrieve Wanted Documents)

### *ITI-43 request – from Participant to NC HealthConnex*

The participant sends an ITI-43 message asking for one or more documents included in the ITI-18 response.

### *ITI-43 response – from NC HealthConnex to Participant*

NC HealthConnex sends an ITI-43 response including the documents the participant indicated they wanted via the ITI-43 request.

## 6.3 Sending Documents to the NC HealthConnex

### 6.3.1 ITI-8 (Register Patient)

#### *ITI-8 message – from Participant to NC HealthConnex*

The participant sends ITI-8 message to register a patient in NC HealthConnex's MPI system. This links the patient's local facility identifier (MRN, patient ID) to the patient's enterprise identifier (MPI EUID, Enterprise ID).

### 6.3.2 ITI-41 (Provide and Register CDA)

#### *ITI-41 message – from Participant to NC HealthConnex*

The participant sends ITI-41 message to provide and register a CCD in NC HealthConnex's document repository.

### **6.3.3 ITI-41 response – from NC HealthConnex to Participant**

NC HealthConnex sends a response message indicating whether ITI-41 message was loaded into repository successfully. Notice the 'ResponseStatusType:Success'. This indicates the document successfully loaded into the document repository.

### **6.4 Additional Specification Resources**

For more resources on formatting documents for use in ITI transactions, please refer to the IHE specifications found in [6.1.1](#) and [6.1.2](#).

## Contact Information

If you have questions regarding this document, contact us at [HIESupport@SAS.com](mailto:HIESupport@SAS.com).