Clinical Data Sharing Strategy and Roadmap
IT Systems and Processes Milestone #3:
Clinical Data Sharing and Interoperable Systems across the PPS
Contents
1. Definitions and Abbreviations used in this document.......................................................... 3
2. Introduction .................................................................................................................................. 3
   2.1 Intended Readership.............................................................................................................. 3
   2.2 Management Summary ........................................................................................................ 3
3. Clinical Data Sharing and Interoperability across the PPS Network – Definition ................... 4
   3.1 Clinical Data Sharing and Interoperability Requirements & Framework.............................. 4
   3.2 Achieving Clinical Data Sharing and Interoperability across the PPS ................................. 5
      3.2.1 Standard HL7 Message and Flat File Interface Specifications...................................... 5
      3.2.2 Usage of Standard Code Systems ................................................................................ 6
      3.2.3 Organizational Identifiers (OID) and Medical Record Numbers (MRN) ......................... 6
      3.2.4 eMPI Considerations .................................................................................................. 6
      3.2.5 RHIO Integration and Care Plan Sharing ...................................................................... 6
      3.2.6 SCC Preforming Providing System (PPS) Data Flows and RHIO Integration.................... 7
      3.2.7 Logical Overview of the PPS (Inter-Hub) Data Sharing Framework.............................. 10
   3.3 Business Continuity and Data Privacy Controls .................................................................. 11
   3.4 Constraints .......................................................................................................................... 11
   3.5 Dependencies ...................................................................................................................... 12
   3.6 Risks ..................................................................................................................................... 12
4. SCC Data Governance Model ................................................................................................. 13
5. Implementation Timeline and Roadmap .................................................................................. 14
1. Definitions and Abbreviations used in this document

**DSRIP:** Delivery System Reform Incentive Payment Program

**EMR:** Electronic Medical Record

**ISP:** Information Security Plan

**MRN:** Medical Record Number

**OID:** Organization Identifier

**PPS:** Performing Provider System

**RHIO:** Regional Health Information Organization

**SCC:** Suffolk Care Collaborative

**SSP:** System Security Plans

2. Introduction

This document outlines the technical strategy and roadmap for building out the SCC PPS Population Health Platform to achieve Clinical Integration and System Interoperability across the PPS.

As of the date of this writing the scope of the document is limited to requirements set forth within the IT Systems and Processes Organizational work stream Milestone #5. The strategy and roadmap outlined herein are based on conclusions from a several technical meetings that have been attend by IT Task Force members. The SCC IT Task force consists of technical and project management representatives from each of the three Hubs, Northwell Health, Catholic Health System and the Stony Brook Medicine that are part of the SCC.

2.1 Intended Readership

This document has been written for project stakeholders who are already familiar with the Delivery System Reform Incentive Payment (DSRIP) program and its associated Information Technology requirements. Project stakeholders include management, development and affiliated staff who have partnered with the Suffolk Care Collaborative under the umbrella the DSRIP program.

2.2 Management Summary

The overall performance and success of the SCC PPS Population Health Platform will only be as good as the underlying data that is contributed. In an effort to improve patient outcomes data is taken from the various sources and normalized in single longitudinal record for each patient. As more data is contributed to the platform the accuracy and breadth of the patients health record increases thereby increasing the rate of positive patient outcomes and reducing the probability of readmissions.

Recognizing that each Hub (and organizations within a given Hub) have their own data sets and technical persona, this document has been written to provide an overview of the technical strategy that is needed to achieve clinical data sharing and interoperability across the PPS. It is important to note that each Hub may choose to implement their own underlying technology to achieve interoperability within their hub.
but at the same time are required to contribute the necessary data sets to the SCC PPS Population Health Platform (and RHIO) that are required to achieve our DSRIP program requirements.

3. Clinical Data Sharing and Interoperability across the PPS Network – Definition

The IT Task Force has jointly agreed on the following definition for Clinical Data Sharing and Interoperability across the PPS network.

Clinical data sharing and interoperability describes the extent that the SCC Population Health Platform can receive and interpret shared patient data across the PPS. For the SCC Population Health Platform to be interoperable it must be capable of receiving clinical data from disparate EMR systems and subsequently display and report on that data in a consistent manner.

The ability to accurately and consistently display patient data within Regional Health Information Organizations (RHIO) provides the final link towards achieving interoperability across the PPS.

3.1 Clinical Data Sharing and Interoperability Requirements & Framework

*Points below are hub specific but are ultimately rolled up into a normalized PPS wide architectural framework designed to improve patient outcomes.*

It is expected that each Hub will be responsible for each of the following technical requirements:

1. Complete the technical on-boarding and clinical data acquisition for all attested providers within the given Hub.
   - Where applicable provide technical guidance and training material to all to coalition partners as a means of supporting and integrating provider EMR platforms across the PPS network.

   Training material can be found on the SCC website here -> https://suffolkcare.org/forpartners/information-technology

2. Where applicable working with EMR vendors at provider sites to assure that the EMR platform can provide the required discrete and non-discrete data items required to *lite up* the DOH defined measures used to monitor patient outcomes.

3. Matching patient records and creating a unique longitudinal record for each Medicaid member within the given Hub.
4. Normalizing clinical data items from disparate EMR systems into a standard format such that Medicaid members can be tracked across DSRIP projects and consistent DOH reports can be generated.

Examples of key reports are as follows:
- Hub specific Domain 1 Patient Engagement metrics
- Proactive reporting used to track provider performance against domain 2, 3 & 4 measures in advance of receiving performance results from the DOH.
- Domain 2 and 3 reports that are required to be submitted to the DOH.

5. Developing and maintaining patient to provider attributions consistent with the agreements made with the SCC.

6. Identifying the Patient Population based on the DOH Roster and agreements made with the SCC.

7. Providing the technical assets and resources required to support the Domain 1 Project specific technical requirements.

8. Maintaining Security, Data Confidentiality and user Access Restrictions as per the SCC System Security Plans submitted to the DOH.

9. Assuring that data exchange agreements are in place and maintained between all PPS network providers throughout the duration of the project.

10. For those providers that have been integrated with the given Hubs EDW provide a data feed of all aggregated and “normalized” patient data records into the SCC Enterprise Data Warehouse for the purpose of PPS wide reporting.

11. Assuring that all attested provider EHRs are successfully connected and integrated with their RHIO’s HIE under the umbrella of SHIN-NY requirements and initiatives.

3.2 Achieving Clinical Data Sharing and Interoperability across the PPS

The following sections outline key technical principles that have been adopted across the PPS.

3.2.1 Standard HL7 Message and Flat File Interface Specifications

Defining and agreeing on a standard interface specification that will be used for RHIO integration and aggregating clinical data across hubs into a centralized PPS wide Enterprise Data Warehouse (EDW).
SCC Interface Specifications can be found here ->
https://suffolkcare.org/forpartners/information-technology

3.2.2 Usage of Standard Code Systems
Where applicable data elements exchanged between electronic interfaces are based on standard
coding systems and identifiers that are maintained by recognized standards organizations.

3.2.3 Organizational Identifiers (OID) and Medical Record Numbers (MRN)
OID and MRN pairs are used to help uniquely identify patients within each organization, across
each hub and ultimately across the PPS. The technical onboarding teams will work with
providers and EMR vendors to assure that the PPS can uniquely identify patient records from
their source systems.

3.2.4 eMPI Considerations
The MPI (Mater Patient Index) process for each system is key to identifying the patients
appropriately. It is important that we are able to identify the different systems that are generating
MRN numbers for each data source.

The Population Health Platform has its own MPI matching and a matching queue. It is called
MPM (Master Patient Matching) and is different from a true MPI or eMPI system because it
does not create identifiers on the patient for outside system consumption. The patient identifier
from MPM is only used for localized patient alignment within the SCC platform.

Like all MPI services the MPM has algorithms that are tunable per provider. This allows MPM
to put different emphasis on different patient attributes for its matching logic. For instance, a
Date of Birth or MRN are weighted more heavily than a SSN. If the match does not happen
through the algorithm, there is a match queue that a team of technical associates review for the
purpose of manually matching patients.

3.2.5 RHIO Integration and Care Plan Sharing
The SCC is currently participating in the DSRIP Care Plan Information Technology Subgroup
sponsored by the Greater New York Heath Association (GNYHA). The purpose of this group is
to develop an implementation plan for QE infrastructure that will support electronic exchange of
the DSRIP care plans across multiple PPS partners. This group will also take recommendations
from the Care Plan Content Subgroup on technical requirements necessary to facilitate
appropriate care plan sharing across PPS partners. Additionally, this group will determine needed
education and communication to PPS leads and their partners on necessary technical and
administrative steps for connecting to the QE and for care plan sharing.

Every effort will be made to adopt the recommendations of the Care Plan Information
Technology subgroup.
3.2.6 SCC Preforming Providing System (PPS) Data Flows and RHIO Integration

The SCC PPS consists of three Hubs, namely, Northwell Health, Catholic Health System and the Stony Brook Medicine (SBM). The SCC PPS recognizes that each Hub has their own unique data sets, technology and business requirements and therefore allows each Hub to utilize the technologies and RHIO of their choice. This section has been written to provide an overview of the Hub Specific Data flows and RHIO integration strategy that is being adopted across each Hub and how each implementation will ultimately be interoperable under the wider initiatives of the Statewide Health Information Network of New York (SHIN-NY).

3.2.6.1 Catholic Health Services Hub Data Flow and RHIO Integration Strategy

Within the Catholic Health Services hub, the responsibility of assuring providers are connected and actively sharing data with a RHIO resides under IT Population Health Management Department.

Catholic Health Services is actively working with the Healthix RHIO to prioritize PPS Partner QE participant agreements based on DSRIP milestones and NYS DOH requirements.

At present, all six acute care hospitals are connected to Healthix and participating in HL7 data exchange and RHIO consent management via ADT.

Additional scopes of work include integrating the RHIO into clinical workflows via single sign on with the EMR, CCD-A exchange, and LOINC normalization of RHIO data.

For CHS owned and affiliated ambulatory practices that are on Epic, data will be sent to Healthix through the existing interface setup. Participant consent authority will still be managed and respected by individual participant agreements in the interface pipeline. CHS is currently working with Healthix on assessing implementation of a community consent based model to help manage access of information across the Medicaid population and assist with real time event notification from the RHIO.

For those providers who are not on Epic, Catholic Health Services will work with the hub partners to setup their HL7 and CCDA interface connections to send data to the CHS interface engine. The CHS interface engine in turn will send data to the CHS population health management platform and RHIO.

For those providers who are already connected to Healthix, an assessment will be made to determine what current information is being sent to the RHIO and if there is an opportunity to expand the richness of the contributed data by existing participants.
3.2.6.2 Northwell Hub Data Flow and RHIO Strategy

The Northwell Technical On-boarding process and RHIO integration strategy involves two broad categories of providers:

- Northwell-owned, within the Northwell Health Physician Partners group, and
- Voluntary Providers within the Northwell Hub network of SCC.

For Northwell-owned providers, Northwell integrates data via a bi-directional provider EHR interface to a central enterprise Health Information Exchange platform. This platform is bi-directionally interfaced with the Healthix QE, and will also enable connectivity with the SCC Population Health Platform, hosted by the Cerner EDW.

For Voluntary providers, whom Northwell has contracted for DSRIP but who remain independent from the hospital system, Northwell will leverage the Healthix QE to interface data to the Northwell’s enterprise HIE, which will, in turn, connect and provide data to the Northwell EDW.
3.2.6.3 Stony Brook Hub Data Flows and RHIO Strategy

Within the Stony Brook hub the responsibility of assuring providers are connected and actively sharing data with a RHIO falls under the charter of the SBM Technical On-boarding team.

The Stony Brook Hub Technical On-boarding process and RHIO integration strategy divides providers into two categories:

- Those providers whom are already connected and activity sending data to a RHIO
- Those providers who are not connected to a RHIO

For those providers who are already connected to a RHIO no further action is required as we do not want to disturb their existing connectivity and associated clinical workflows.

For those providers who are not connected to a RHIO the SBM Technical On-Boarding team assists them in both the development of their HL7 and CCDA interfaces as well as their last mile connectivity into the NY Care Information Gateway (NYCIG) RHIO.

**Achieving RHIO Connectivity from the SCC Population Health Platform:**

A core piece SCC’s RHIO connectivity and integration strategy is the concept of aggregating multiple provider specific inbound HL7 connections into a single set of outbound HL7 connections to the RHIO (NYCIG). Where, each outbound HL7 connection is based on a specific HL7 message type (i.e. ADT, ORU etc).
This approach eliminates the need for each provider to establish direct connectivity to both the RHIO and the SCC Population Health Platform.

As shown in Figure 2 all message aggregation is performed by the Stony Brook Interface engine, which is a sub-component of the SBM Population Health Platform, depicted within the diagram as the green circle labeled SBM HIE. It is important to note that the data content of the provider’s original messages is not altered in anyway but the format of the message may in some cases be altered to accommodate the technical requirements of the receiving RHIO system.

**SBM Population Health Platform**

**Data Acquisition**

**Population Management Platform:**
(Clinical & Financial)

- 2 years historical (flat files)
- Going forward flat files

**RHIOs:** (Clinical)

- Going forward only HL7 or CCD or CCDA

**Figure 3: Logical Overview of the SBM Population Health Platform**

3.2.7 Logical Overview of the PPS (Inter-Hub) Data Sharing Framework

Figure 2 provides a logical overview of the Inter-Hub data sharing strategy. The SCC is working with each of the Hubs to standardize on a common enterprise wide technology platform that will be used for Hub specific and PPS wide reporting to the state. However, SCC’s technical implementation strategy is designed to be vendor neutral and allows each hub to implement and deploy their own individual technical solutions if desired. The only core requirement is that the SCC interface specification from the Hubs EDW to the SCC EDW is strictly adhered to for the purpose of proactively monitoring provider performance and reporting to the state.
3.3 Business Continuity and Data Privacy Controls

The SCC System Security Plans (SSP), which have been submitted to NYS DOH under Milestone #5 of the SCC Implementation plan, document SCC’s Business Continuity and Data Privacy Controls. The SCC Information Security Plan (ISP) is an integral part of the SSP documentation suite and addresses the “current state” Data Security and Confidentiality plan requirements. In preparation for the receipt of DOH claims data both the SSPs and the ISP will be updated to reflect “future state” requirements. The DOH requires the updated SSPs and ISP to be completed by no later than 6/30/2016; However the SCC Information Security office plans to align the delivery of these documents with the completion of the DOH “Opt-Out” process which is currently scheduled May 2016.

The current state ISP has been shared with both the IT Governance Committee and the IT Task Force and comments have been incorporated where applicable. When completed the updated future state ISP will be published to the same parties for review, comment and sign off.

3.4 Constraints

Achieving interoperability across the PPS is particularly challenging since our PPS is based on a 3 hub model (consisting of Northwell Health, Catholic Health System and Stony Brook Medicine) each of which have their own proprietary technical infrastructure and business requirements.

This constraint will be mitigated by achieving interoperability with the RHIO’s, HIE and SHIN-NY requirements.
3.5 Dependencies

- Assuring that all required discrete and non-discrete data items can be sourced from provider EMRs.

- Hubs agreeing to share clinical data with the PPS for the purpose of monitoring provider performance, improving patient outcomes and reporting patient engagement to the DOH.

3.6 Risks

- Ability to achieve a standard PPS wide representation of all clinical data items captured from EMRs.

- Ability to achieve RHIO integration across attested PPS providers associated with the PPS.
4. SCC Data Governance Model

Figure 3 outlines the SCC Data Governance Model

- Technical policies and procedures developed and enforced by the IT Task force are approved by the IT Governance Committee and Board where applicable
- IT Governance and oversight is applied across all clinical projects as well as the development of the Integrated Delivery System (IDS)
- IT Governance is applied across all data acquisition projects to assure data confidentiality and security is maintained across all engaged providers

Figure 5: SCC IT Data Governance Model
5. Implementation Timeline and Roadmap

Most all integration milestones will be implemented as a series of recurring technical integration activities for each PPS partner.

**Milestone 1** – Domain 1 Patient Engagement data exchange via BOX in place since the first quarterly report which was submitted to the DOH on July 31, 2015.

**Milestone 2** – Successfully onboarding downstream partner EMR data into localized hub specific data repositories. We anticipate this being an ongoing work stream which started in July of 2015 and will be recurring across all PPS partners through March 31, 2018.

**Milestone 3** – Achieving data sharing and interoperability between hub specific data repositories and the SCC Enterprise Data Warehouse. Aspirational milestone target date December 31, 2106.

**Milestone 3.1** – Migrating Domain 1 Patient Engagement data from hub specific BOX reports into programmatic interfaces that feed data into the SCC EDW. Recurring task aspirational starting in July 2016 through March 31, 2018.

**Milestone 4** – Creating Domain 1 Patient engagement quarterly reports from the SCC EDW. Recurring task starting in March 2016 date through the end of the DSRIP program March 31, 2020.

**Milestone 4.1** – Creating Domain 2 and 3 proactive reports from the SCC EDW for the purpose of proactively monitoring provider performance across the PPS. Recurring task aspirational start date July 2016 through the end of the DSRIP program March 31, 2020.


**Milestone 5.1** -- PPS Wide RHIO Connectivity Complete 3/31/2018.

*The target completion date of this milestone is dependent on several sub-tasks that are still being finalized. As a result this date may be changed depending on the outcome of the sub tasks. Example of some of the sub-tasks include:

- Hub specific business and technical decisions regarding the deployment of each Hub’s Enterprise Data Warehouse
- Completion of the DOH Opt Out process, delivery of the associated SSPs and rollout of 2 Factor authentication SCC EDW users.