Longitudinal Coordination of Care

Interoperable Care Plan Exchange
Use Case v2.0

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1.0 Preface and Introduction

To fully realize the benefits of health information technology (HIT), the Office of the National Coordinator for Health Information Technology (ONC), as part of the Standards and Interoperability (S&I) Framework, is developing Use Cases that define the interoperability requirements for high priority health care data exchange, maximize efficiency, encourage rapid learning, and protect patients' privacy in an interoperable environment. These Use Cases address the requirements of a broad range of communities of interests including patients, their significant others and family members, providers, payers, vendors, standards organizations, public health organizations, and federal agencies.

These Use Cases describe the following:

- The operational context for the data exchange
- The stakeholders with an interest in the Use Case
- The information flows that must be supported by the data exchange
- The types of data and their specifications required in the data exchange

These Use Cases are the foundation for identifying and specifying the standards required to support data exchange as well as develop reference implementations and tools to ensure consistent and reliable adoption of the data exchange standards.

2.0 Initiative Overview

Improving transitions of patients across acute and post-acute care settings has been a key driver of recent healthcare reform initiatives and regulations. Ineffective care transitions are widely recognized as major contributors to poor quality and waste.[1] Gaps in treatment and poor communication among provider groups and between providers and patients have been shown to diminish patient health and increase costs. The Meaningful Use (MU) Electronic Health Record (EHR) Incentive Program addresses this gap by introducing two new measures to improve care coordination during Transitions of Care (ToC): 1) medication reconciliation during ToC and 2) Summary of Care record for ToC/referrals.[2]

The ONC S&I ToC Initiative emerged to identify and develop the standards that would enable the electronic exchange of core clinical information among providers, patients and other authorized entities so that Stage 1 and Stage 2 MU ToC requirements could be met. The ToC Initiative standards target specific provider groups or disciplines—eligible providers (EPs) and eligible hospitals (EHs)—and the software developers and vendors who would design or upgrade EHR systems to enable the exchange. Absent from these scenarios are the exchange requirements for interdisciplinary interventions and care planning across the continuum of care, regardless of setting or service provider. This limitation highlights a critical gap in both the provider and patient populations targeted by the MU Program. For example, each year an average of fifteen million medically complex and/or functionally impaired individuals receive care services not only from eligible provider groups, but also from nursing facilities (NFs), home health agencies (HHAs), long-term care hospitals (LTCHs), inpatient rehabilitation facilities (IRFs) and a wide array of social services and supports. The quantity of service delivery encounters required by these individuals, as well as the failure to deliver and coordinate needed services, are significant sources of frustration and errors, and thereby drivers of healthcare expenditures.

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[1] Buron, R. (2012). Improving Care Transitions. Health Affairs, 32 (4).

[2] Centers for Medicare & Medicaid Services. (2013). EHR Incentive Programs. Retrieved 2013 from cms.gov: http://www.cms.gov/Regulations-and-Guidance/Legislation/EHRIncentivePrograms/index.html?redirect=/EHRIncentivePrograms/01_Overview.asp

The S&I Longitudinal Coordination of Care (LCC) Initiative builds on the ToC Initiative standards and aims to address identified gaps in transitions of care and care planning.

2.1 Initiative Challenge Statement

Efficient health information exchange to support coordination of care across multiple clinicians and sites of service—regardless whether these sites receive MU incentive payments—requires more than medication reconciliation and care summary exchange. The availability and adoption of standards to support and inform care delivery without regard to setting are essential to alleviating fragmented, unsafe, duplicative and costly care for those patient populations that need it most.

Individuals of all ages are living longer with chronic illness and disability. As the number and complexity of their health conditions increase over time and episodes of acute illness are superimposed, the number of care providers contributing to the care of these individuals increases as well. It becomes significantly more difficult to align and coordinate care among diverse provider groups across multiple sites.

Without a process to reconcile potentially conflicting plans created by multiple providers, it is impossible to avoid unnecessary and potentially harmful interventions. Without such a process, it is also difficult to shift the perspective of providers from the management of currently active issues to consideration of future goals and expectations. Similarly, the challenge of establishing a consensus driven process across multiple disciplines and settings is confounded by a fragmented system of policies, technologies and services to support the process and thereby enable longitudinal coordination of care.

3.0 Use Case Scope

The scope of this Use Case is to define the necessary requirements that will drive the identification and harmonization of standards which will support and advance patient-centric interoperable Care Plan exchange for medically complex and/or functionally impaired individuals across multiple settings.

This Use Case will identify the functional requirements for EHRs so that clinical and administrative information related to a patient's Care Plan or Plan of Care can be exchanged across multiple settings and disciplines. Although the terms "Care Plan" and "Plan of Care" have been used interchangeably within the healthcare industry, neither term is used precisely enough to convey the difference between a Treatment Plan for a specific condition, a Plan of Care proposed by an individual clinician to address several conditions, or a Care Plan that integrates multiple interventions proposed by multiple providers for multiple conditions. The management of medically complex and/or functionally impaired individuals requires all of these different types of plans. This Use Case serves to highlight the components that are common to Care Plans and Plans of Care: health concerns, goals, instructions, interventions, outcomes and Care Team Members. These components are defined in subsequent sections of this Use Case.

Table 1 summarizes key differentiators among the three types of plans used in patient care. This Use Case will focus on the functional requirements to enable interoperable Care Plan exchange.

Term/Concept	Description	Main Users
Care Plan	A consensus-driven dynamic plan that represents all of a patient's and Care Team Members' prioritized concerns, goals, and planned interventions. It serves as a blueprint shared by all Care Team Members, including the patient, to guide the patient's care. A Care Plan integrates multiple interventions	Care Team Members (including Patients, their caregivers, providers and clinicians)

Term/Concept	Description	Main Users
	proposed by multiple providers and disciplines for multiple conditions. A Care Plan represents one or more Plan(s) of Care and serves to reconcile and resolve conflicts between the various Plans of Care developed during the continuum of care for a specific patient. Unlike the Plan of Care, a Care Plan includes the patient's life goals and enables Care Team Members to prioritize interventions. The Care Plan also serves to enable longitudinal coordination of care.	
Plan of Care	A clinician driven plan that focuses on a specific health concern or closely related concern. It represents a specific set of related conditions that are managed or authorized by a clinician or provider or certified by a clinician or provider. The Plan of Care represents a single set of information that is generally developed independently. When two or more Plans of Care exist, these plans are reconciled into a Care Plan. Examples: Home Health Plan of Care	Clinicians / Providers
Treatment Plan	A domain-specific plan managed by a single discipline focusing on a specific treatment or intervention. Examples: Physical Therapy Treatment Plan, Nutrition Treatment Plan, Invasive Line Treatment Plan	Provider and Patient / Caregiver

Table 1: Types of Patient Care Plans

3.1 Background

Care planning and coordination of care delivery over time and across multiple settings and disciplines has long challenged the health care community. As electronic clinical data capture and exchange replaces paper, the gaps in document standards and clinical processes in silos are more pronounced. This lack of standardization in technologies and processes highlights the major barriers to development of care plans that fully engage patients, families and care providers, set realistic and achievable goals, optimize services, and create accountability for community based and institutional care.

As the population ages and accumulates chronic conditions, there is an increase in the number and types of interventions required to address acute illness and to restore and maintain health and function. These interventions involve more participants and more sites of care, thus putting a premium on communication and integration. As complexity increases, so does the requirement to align site-specific goals and interventions across multiple sites and participants in order to avoid gaps in care, duplicate or conflicting interventions, and deviation from the individual's goals of care.

In parallel, healthcare payment models that put a premium on coordination of care across multiple sites and providers are evolving. For example, a pillar of the Affordable Care Act (ACA) is the establishment of Accountable Care Organizations (ACOs) where providers are incentivized by the Centers for Medicare & Medicaid (CMS) to work across care settings—including primary care offices, hospitals and long-term care facilities—in the effort to reduce healthcare costs and improve quality of patient care. The ACO model calls for "shared care planning" across participating health organizations and is particularly relevant for patients with complex medical and functional needs. These individuals make up

approximately 10% of patients and account for 70% of health care expenditures.[3] For these individuals, the Care Plan provides the blueprint for aligning interventions to improve quality and efficiency of care. Most individuals—the other 90%—do not regularly require such a detailed level of coordination or communication to receive efficient, high quality care. They receive most of their care from one clinician or one Care Team and their Plan of Care is coordinated among Care Team Members including one or more of a small group of collaborating providers and the patient.

It should be noted that the team of individuals creating a Care Plan may or may not be of the exact same composition as the team of clinicians rendering care in a sending or receiving institution. Ordinarily, individuals such as the Discharge Planning Nurse, the Nurse Case Manager or the Social Work Case Manager may or may not participate in actual hands-on rendering of care; however, these individuals are often pivotal members of the Care Team that performs care planning services that should culminate in completion of the structured document labeled the Care Plan (or Plan of Care) described elsewhere in this document.

In addition, Individuals with more than one significant health problem may have specific Care Teams dedicated to their management. There are currently many different processes in place that create effective integrated Plans of Care for individuals from different subgroups (e.g., Program of All-Inclusive Care for the elderly—PACE, Hospice). The complexity of patient's health problems, competing health care sector goals/objectives and patient preferences all add to the intricacy of Care Plan creation and exchange and highlights the need to reconcile, harmonize and align evolving Care Plans across disciplines and sectors on the care continuum. The core content and exchange of key information that the patient and his or her caregivers and providers need to optimize assistance to the patient is the focus of the Use Case described herein.

3.1.1 Care Plan Component Definitions and References

A key issue in the identification of technical standards for Care Plan exchange comes from the interchangeable use of "Care Plan" and "Plan of Care" across healthcare organizations, academic institutions, professional associations, HIT vendors, payers and policies. Existing regulatory requirements (e.g. CMS Conditions of Participation for Home Health Agencies, CMS Requirements for States and Long Term Care Facilities, and JCAHO Ambulatory Accreditation Program) use the terms synonymously and sometimes interchangeably. Most recently, the ONC Health Information Technology Policy Committee (HITPC) addressed this barrier by proposing the expansion of Care Plan requirements in Stage 3 and future stages of Meaningful Use. The November 2012 Stage 3 Request for Comment (RFC) solicited public input on care coordination objectives, measures and certification criteria directly related to transitions of care and shared Care Plans. Public comments summarized as part of the February 2012 meeting clearly highlighted the need for policy makers to better define an approach for Care Plan exchange and clarify related terms and terminologies.[4]

As part of its scope of work, the S&I Longitudinal Coordination of Care Workgroup (LCC WG) has developed standardized definitions for Care Plan components in support of data elements for the

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[3] Medicare Payment Advisory Commission (June 2011). A Data Book: Health Care Spending and the Medicare Program. Retrieved from http://www.medpac.gov/documents/Jun11DataBookEntireReport.pdf

[4] Health Information Technology Policy Committee. (2013, Feb 06). HIT Policy Committee (February 6th Meeting). Retrieved 2013 from healthit.gov: http://www.healthit.gov/policy-researchers-implementers/hit-policy-committee-13

creation and exchange of a Care Plan for a medically complex and functionally impaired individual.[5] Definitions are summarized in the following table.

Care Plan Term/ Component	Definition
Health Concern	Reflect the issues, current status, risks and barriers to care as well as "likely course" identified by the patient or other Care Team Members that require intervention(s), including education or monitoring, to increase the likelihood of achieving the patient's or provider's Goals of care.
Goal	A defined outcome or condition to be achieved in the process of patient care. Includes patient defined Goals (e.g., longevity, function, comfort) and clinician specific Goals to achieve desired and agreed upon outcomes.
Instructions	Information or directions to the patient and other providers including how to care for the individual's condition, what to do at home, when to call for help, any additional appointments, testing, and changes to the medication list or medication instructions, clinical guidelines and a summary of best practice. Instructions are a detailed list of actions intended to help to achieve the patient's Goals of care and are considered a type of, or part of, interventions.
Interventions	Actions taken to maximize the prospects of achieving the patient's or providers' Goals of care, including the removal of barriers to success. Instructions and the performance of monitoring are subsets of Interventions.
Outcomes	Also known as "Health Status Evaluation." Status, at one or more points in time, that evaluates or measures the results of activities defined in Care Plan Goals and/or Interventions.
Care Team Member	Persons who manage and/or provide care or service as specified and agreed to in the applicable Care Plan, including: clinicians and/or providers, other paid and informal caregivers, and the patient.

Table 2: Care Plan Component Definitions

The definitions and data sets presented in the following sections of this Use Case detail the information required for the exchange of a Care Plan from a sending entity to a receiving entity. The definitions and data inform the selection of standards for the content, format and definitions of information to support the interoperable exchange of Care Plans across all relevant sites and to all involved parties.

3.2 In Scope

The following list outlines what is in scope for the Use Case to include the type of transactions, the information/data to be exchanged, and specific aspects that need to be in place to enable the Care Plan information to be sent, received and understood the same at both ends of the transmission.

- Care Plan information and the exchange of this information among providers across multiple settings and between providers and patients. This includes Care Plan information to support the shared services approach for healthcare reimbursement as part of the CMS Accountable Care Organization (ACO) care coordination quality reporting requirements[6]

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[5] S&I Longitudinal Coordination of Care Workgroup. (2012, 12). *Longitudinal Coordination of Care (LCC).* Retrieved from http://wiki.siframework.org/file/view/Care%20Plan%20Glossary_v25.doc/404538528/Care%20Plan%20Glossary_v25.doc

[6] HealthCare.gov. (2013). *Accountable Care Organizations: Improving Care Coordination for People with Medicare.* Retrieved from http://www.healthcare.gov/news/factsheets/2011/03/accountablecare03312011a.html

- The Home Health Plan of Care (HHPoC) information and the exchange of this information necessary to perform the initial and recertification functions. This includes interim orders in the Home Health Agency (HHA) setting which inform patients and care givers of patient status as well as clinical course updates and expectations. This also includes the HHPoC electronic and/or digital signature requirements for reimbursement by CMS that will be developed and balloted through the CMS electronic submission of Medical Documentation (esMD) Initiative
- Metadata and attributes necessary to tag and bind Care Plan components to support queries and the response to queries

3.3 Out of Scope

The following list outlines what is out of scope for the Use Case. These points may highlight dependencies on the feasibility, implementability, and usability that result in limitations of the Use Case. At a high level, whatever is not declared "In Scope," is by definition, "Out of Scope." Note: There may be some items that are out of scope for the Use Case and Functional Requirements Development, as well as the Standards Harmonization activities, that can be included as part of a Pilot.

- The comprehensive EHR or any functional aspects of the end-point systems other than to identify referring and receiving systems
- Financial Information, except for basic insurance and financial responsibility information
- Query Transactions of Transition of Care (Transfer of Care) documents (addressed in LCC Use Case 1.0 and Improving Massachusetts Post-Acute Care Transfers (IMPACT) Project Implementation Guide)
- Sharing of Care Plans for purposes other than defined in this Use Case (e.g. claims submission)
- Transmission protocols describing the most efficient means of transport of Care Plan information from sender to receiver
- Exchange of a Care Plan or its components between entities within a shared EHR
- Defining or modifying existing clinical medicine, nursing, and allied health practices
- The exchange of Long Term Post-Acute Care (LTPAC) Summary Documents for Outcome and Assessment Information Set (OASIS) and Minimum Data Set (MDS), as defined by the Keystone Beacon Community and balloted by HL7 in September 2012
- Identification of national standards for functional assessments—these requirements and standards have been identified and published as national standards as part of the work completed under the S&I LCC Patient Assessment Summary (PAS) Sub Work Group (SWG)
- The process(es) by which the Care Plan is reconciled, populated and governed
- Differentiators among the Care Plan, Plan of Care and Treatment Plan, to include those specific to care setting and Care Team Member role and responsibilities, the processes for determining input data for these plans, and discipline-related specifics of these plans
- The face to face certification process and documents, including whether the face to face certification process is to be done by a different physician than the one who signed the Care Plan
- The conversion of clinical assessment data such as abnormal clinical findings, lab results, and other clinical observations into the input data set required for a Care Plan
- The translation of Care Plan instructions into required assessments, orders, and treatment
- Data transport or end user site activity (specifically for Scenario 2)
- Incorporation of Care Plan data elements into an EHR
- The packaging of Care Plan data elements into a specified form or template for submission from one EHR system to another Health Information system

- The integration of patient generated data, for example from a Patient Health Record (PHR) application into the EHR system or the Care Plan
- Transformation of the Care Plan into a patient-friendly format

3.4 Communities of Interest

Communities of Interest are public and private stakeholders who are directly involved in the business process, in the development and use of interoperable implementation guides, and/or in actual implementation. Communities of Interest may directly participate in the exchange; that is, they are business actors or are affected indirectly through the results of the improved business process.

The following list of Communities of Interest and their definitions are used as role guidance in Clinical Information Exchange.

Member of Communities of Interest	Definition
Patient	Member of the public who requires healthcare services from acute care and ambulatory facilities, emergency department, Physician's office, and/or the public health agency/department and LTPAC sites of care.
Consumer	Member of the public that includes a patient as well a caregiver, patient advocate, surrogate, family member, and other party who may be acting for, or in support of, a patient receiving or potentially receiving healthcare services.
Care Coordinator / Care Manager	Individual who supports a patient and/or other consumer by coordinating with clinicians in the management of health and disease conditions, physical and cognitive functioning, and issues related to health and human services. This includes case manager and others.
Caregiver	A caregiver typically focuses on helping the patient carry out Activities of Daily Living (ADLs) and Instrumental Activities of Daily Living (IADLs). The caregiver can also assist the patient in carrying out medication self-administration and/or treatments intended to help heal or palliate health condition(s) and convey information about the patient's response to Treatment Plans, Plans of Care, or the Care Plan to the patient and/or providers. This individual may be authorized by the patient to receive Personal Health Information (PHI) that is used to inform the type, methods, and frequency of care activities provided in the home in keeping with the patient's wishes and/or directions.
Surrogate	Individual designated as a legal default decision-maker or health care proxy or agent for the patient when the patient is unable to make decisions or speak for himself or herself about personal health care. This individual may be selected by the patient and/or patient's caregiver or family members.
Clinician	Healthcare provider with patient care responsibilities, including physician, advanced practice nurse, physician assistant, nurse, psychologist, pharmacist, therapists (including physical and occupational therapists, and speech language pathologists), medical social workers and other licensed and/or credentialed personnel involved in treating patients.

Use Case Development and Functional Requirements for Interoperability

Longitudinal Coordination of Care (LCC) Initiative

Member of Communities of Interest	Definition
Laboratory	Setting where specimens are sent for testing and analysis are resulted, and then results are communicated back to the requestor. Patients may be sent to laboratories to have samples drawn. The types of laboratories may include clinical/medical, and environmental, and may be both private and/or public.
Pharmacy	Entity that exists as an expert on medication therapy and is the primary health professional that optimizes medication use to provide patients with positive health outcomes.
Care Team Member	Party who manages and/or provides care or service as specified and agreed to in the Care Plan, including clinicians, other paid and informal caregivers, communication sponsor and the patient. Note: In some settings the Care Team is a separate group of people whose responsibility it is to formalize a Care Plan and possibly even to implement or coordinate its implementation. This group of people may or may not include any or all members of the patient's rendering team of healthcare professionals. Members of the Care Team are typically selected because of their comprehensive knowledge of the patient's condition(s) and/or due to their knowledge of the healthcare business rules governing aspects of patient care or its financing. For this reason the term Care Team is capitalized to indicate the specific group of individuals who create the content of the structured document referred to as Care Plan.
Provider	Provider of medical or health services and any other person or organization who furnishes, bills, or is paid for health care in the normal course of business. This includes a licensed/certified and/or credentialed person who provides health and/or human services, who is authorized to implement a portion of the Care Plan and who has patient care responsibilities (e.g., physicians, advanced practice nurses, physician assistants, nurses, nurse care managers, psychologists, therapists, pharmacists, dieticians, etc.). This also includes organizations including, but not limited to hospitals including short-term acute care hospitals and specialty hospitals (e.g., long-term care hospitals, rehabilitation facilities, and psychiatric hospitals, etc.), ambulatory centers, provider practices, nursing facilities, home health providers, home and community-based service providers (e.g., home-based care, hospice, adult daycare centers, etc.), and human and social service providers (e.g., behavioral health, transportation, etc.).
Healthcare Payer	Any private or public entity that finances heath care delivery or organizes health financing. This includes commercial for-profit health insurers, non-profit health insurers, ERISA self-insured, state and federal department agencies that oversee Medicaid and Medicare health services delivery.

Use Case Development and Functional Requirements for Interoperability

Longitudinal Coordination of Care (LCC) Initiative

Member of Communities of Interest	Definition
Healthcare Administrator and Manager	Individual with patient information and medical records management responsibilities including Health Information Management (HIM) personnel, Registered Health Information Administrator (RHIA), Registered Health Information Technicians (RHIT) , Inpatient/Outpatient Clinical Coding Specialists, Medical Transcription Specialists, Medical Records Safety and Security staff, Quality Assurance and Improvement personnel, Physician Practice Managers, Pharmacy Benefit Managers, Nurse Discharge Planner, Nurse Care Manager, and other management personnel or entities involved in managing patient information.
Agent (Clearing Houses and other entities as defined by Health Insurance Portability and Accountability Act (HIPAA) including Health Information Handlers)	Any organization that handles health information on behalf of a provider as a covered entity or under a Business Associate Agreement (BAA). Many providers already use Agents to submit claims, provide electronic health record systems, etc. Organizations that are Agents include but are not limited to Claim Clearinghouses, Release of Information vendors, Health Information Exchanges, Electronic Health Record vendors, etc.
EHR/PHR and HISP Vendor	Entity that provides specific EHR/PHR solutions to clinicians such as software applications and software services. These suppliers may include developers, service providers, resellers, operators, and others who may provide these or similar capabilities.
Other Healthcare Vendor	Vendor that provides health care solutions other than EHR/Electronic Medical Record (EMR)/Personal Health Record (PHR) solutions such as software applications and services. Examples include integration vendors, data providers, medical device vendors, Remote Monitoring Management System (RMMS) vendors, diagnostic imaging service providers, clinical order system supply vendors, transcription service vendors, clearinghouses, drug knowledge suppliers, network infrastructure providers, Clinical Decision Support (CDS) resource systems, practice-based registry system suppliers, public health registry systems, immunization information system providers, clinical genetic database/repository system vendors, practice management systems, care management system vendors, and patient accounting systems, etc.
Health Information Exchange/Health Information Organization (HIE/HIO)	Organization dedicated to the mobilization of healthcare information electronically across organizations within a region, community or hospital system.
Regional Extension Center (REC)	Entity that supports and serves health care providers to help them quickly become adept and meaningful users of EHRs. RECs provide training and support services to assist doctors and other providers in adopting EHRs, offer information and guidance to help with EHR implementation, and give technical assistance as needed. Originally sponsored through ONC REC Grant Program.
Health Information Service Provider (HISP)	Entity that serves as a node on the National Health & Information Network to enable a private, secure and safe alternative method to send and receive sensitive health information.
Standards Organization	Organization whose purpose is to define, harmonize and integrate standards that will meet clinical and business needs for sharing information among organizations and systems.

Member of Communities of Interest	Definition
Federal Agency	Organization within the federal government that delivers, regulates or provides funding for health care, long-term care, and/or human services.

Table 3: Communities of Interest

4.0 Value Statement

As information moves across settings in the longitudinal care space, Care Team Members need more information than standard chart summaries typically provide. Care Team Members, including patients, benefit from shared patient assessments as well as from Care Plan/Plan of Care exchanges.

Meaningful Use Stage 3 is poised to identify the requirements for care coordination and sharing of information across multiple provider groups—from long-term care and post-acute care to behavioral health and other allied services. There is growing recognition of the need for and benefits of fully interoperable Health Information Technology (HIT) capabilities across these provider groups. Of importance are the information or data needs of the medically complex and/or functionally impaired individuals these provider groups service. Effective, collaborative partnerships among service providers and these individuals are necessary to ensure that individuals have the ability to participate in planning their care and that their wants, needs, and preferences are respected in health care decision making.[7] The identification and harmonization of standards for the longitudinal coordination of care will improve efficiencies and promote collaboration by:

- Improving provider's workflow by enabling secure, single-point data entry for ToC and Care Plan exchange
- Eliminating the large amount of time wasted in phone communication and the frustrations on the side of the receiving provider in not always obtaining care transition and care planning information in a timely manner
- Reducing paper and fax, and corresponding manual processes during a ToC or Care Plan exchange
- Supporting the timely transition of relevant clinical information at the start of homecare and as the patient's condition changes
- Enabling sending and receiving provider groups to initiate and/or recommend changes to patient interventions more promptly

5.0 Use Case Assumptions

The Use Case Assumptions section outlines what needs to be in place to meet or realize the requirements of the Use Case. These points are more functional in nature and state the broad overarching concepts related to the Longitudinal Coordination of Care Initiative. The Use Case assumptions will serve as a starting point for subsequent harmonization activities.

Assumptions for this Use Case are the following:

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[7] Institute of Medicine. "Crossing the Quality Chasm: A New Health System for the 21st Century."
http://www.edu/~/media/Files/Report%20Files/2001/Crssing-theQuality-Chasm/Quality%20Chasm%202001%20%20report%20brief.pdf

Use Case Development and Functional Requirements for Interoperability

Longitudinal Coordination of Care (LCC) Initiative

- The term "Care Plan" will be used to define the information requirements to support planning and delivery of care for medically complex/functionally impaired persons.
- Care Plan and Plan of Care share universal components: Health Concerns, Goals, Instructions, Interventions, Outcomes and Care Team Members.
- The following Care Plan component associations are enabled:
    - Overarching Patient Goals and Health Concerns
    - Health Concerns and Interventions
    - Interventions and Problem-specific Goals/Outcomes
    - Interventions and Care Team Members
    - Problem-specific Goals/Outcomes and Health Concerns
    - Health Concerns and Care Team Members
    - Overarching Patient Goals and Care Team Members
- Care Plan information is human readable, and a patient-friendly format is available to the patient (e.g., patient can readily download a copy of the Care Plan to their device of choice or have access to hard-copy printout of Care Plan information).
- Interventions can include recommendations, instructions and orders, monitoring of health status, and documentation of Care Plan elements invoked, addressed, revised or resolved and/or removed.
- Care Plan component associations can be conveyed in the Care Plan.
- The EHR can identify the Care Plan components and the associated metadata (including attributes, associated Care Plan components, time/date of entry, identity of author).
- The EHR can populate the component associations (commonly referred to as "cross walks") (e.g., a specific Health Concern is mapped to or associated with a specific Intervention).
- The EHR can record new data added to component associations.
- The EHR can store, archive and retrieve Care Plan associations.
- The EHR can produce a prioritized list of Health Concerns, Goals and Interventions.
- The EHR can transform, transmit, receive and modify data to/from another non-affiliated EHR system.
- The PHR (and other non-EHR clinical information systems) can transform, transmit, receive and modify data from an EHR (view, download and transmit functionality).
- With respect to Care Team Members and their roles:
    - Organizations define and implement roles and associated obligations and restrictions differently
    - Hierarchies of roles are not implied
    - Roles are not prescriptive or restrictive (e.g. roles of caregiver and surrogate decision-makers may be carried out by one individual or more than one individual)
    - Embedded in these functions are activities traditionally performed by care managers, care coordinators, and case managers
- Interim orders can be handled by electronic exchange of complete or partial Care Plan documents
- The health system creates rules for the exchange of information (e.g., respond with information in a timely manner).
- Technology exists to utilize digital credentials for signing and encryption of documents and transactions.
- The signature on a document attests that the information submitted is an appropriate, complete (except as noted) and accurate response to the information requested.

- The EHR, other computer system, or PHR application is responsible for ensuring that content of the transactions in this Use Case (as exchanged) maintain fidelity to the source, as well as assured identity, provenance, completeness, audit/traceability, and full context. This includes relevant time and data stamps that accompany Care Plan exchange.
- Permissions and qualifications necessary for transmittal/disclosure (source/sending EHRs/PHRs/ other relevant clinical system) and for receipt (receiving EHRs/PHRs/ other relevant clinical systems) must accompany the Care Plan as defined by HIPAA or applicable state laws.
- A provider, group of providers, and hospital/health system is/are treated as a provider entity with the capability to receive and submit structured documents to provide information and guidance via structured document exchange to support delivery of coordinated care.
- All actors can create all transactions utilizing industry accepted standards, where available.
- All actors can ensure all transactions will have appropriate security to guarantee data is transmitted with integrity, confidentiality, and reliability.
- Transitions of care among acute and post-acute care settings involve the contributions of one or more providers to complete the required Care Plan dataset.
- Data collected electronically for reporting and assessment for the same patient are available for reuse in quality reporting, decision support tools, analytic processes and, as well, in subsequent Care Plans, interventions, and assessments.
- When possible and appropriate, the information from the transactions described in this Use Case will be used to populate and/or inform the relevant Care Plan components and patient assessment instruments at the Receiving Entity or site.
- The Sending Entity has an EHR system or other computer system capable of producing the required structured document(s) (e.g., Care Plan, Home Health Plan of Care (HHPoC)).
- Mechanism of transmitting data specified in this Use Case is supported by any HIPAA-compliant transport mechanism.
- When there are two or more separate EHR systems maintaining a "reconciled" Care Plan:
  - Care Plans
    - Synchronization interval and/or events are defined—rules for emergent, routine, periodic update;
  - Home Health Plan of Care
    - The HHA takes into account the Discharge Summary and Hospital Care Plan in the development of the HHA Plan of Care
    - After initiation of the Home Health Plan of Care (HHPoC) and replication in separate EHR systems, incremental updates based on interim changes to the HHPoC, are sent by the HHA in the form of a complete Care Plan document as the technology allows.
- Patients may securely access Care Plan information through a PHR application. The Care Plan information made available to the patient is governed by applicable law and institutional policy.
- Appropriate standards protocols, patient identification methodology, consent, privacy and security procedures, coding, vocabulary and normalization standards, as defined by ONC and/or other government agencies, have been agreed to by all relevant participants.
- Time and date stamps accompany all summaries and where available, reconciled components.

6.0 Pre-Conditions

Pre-conditions are those conditions that must exist for the implementation of the Care Plan interoperability information exchanges. These conditions describe the state of the system, from a technical perspective, that must be true before an operation, process, activity or task can be executed. It lists what needs to be in place before executing the information exchange.

- PHR, EHR and/or other relevant clinical systems are in place.
- The patient is registered in all relevant systems.
- The provider has treated, is currently responsible for treating the patient or has requested that another provider treat the patient (e.g. a discharge order is a de facto request that another provider treat the patient when care is coordinated using mechanisms described in this Use Case.
- Standardized and relevant clinical information for exchange is available in the Sending and Receiving Entity systems.
- There are methods in place to ensure the veracity of the author of data.
- Care Team Members can securely access and modify Care Plan information through an EHR system or other clinical system.
- The EHR system must be able to capture each Care Team Member's individual contribution to the overall Care Plan, including when appropriate a digital signature as described by the CMS esMD Author of Record Level 2 Use Case.
- The Sending Entity knows the electronic address of the Receiving Entity.
- Care Team Members can exchange Care Plan with other Care Team Members who don't share the same EHR, PHR or relevant clinical system whether they are part of the same or different organization(s).
- Security and privacy policies, procedures and practices are implemented to support acceptable levels of patient privacy and security; i.e. HIPAA, HITECH, applicable state laws, and EHR certification criteria.
- Legal and governance issues regarding data access authorizations, data governance, and data use are in effect.
- The Entities participating in direct information exchanges and/or in HISP-mediated exchange services have established network and policy infrastructure to enable consistent, appropriate, and accurate information exchange across clinical systems, EHRs, PHRs, data repositories (if applicable) and locator services. These include, but are not limited to the following:
    - Methods to identify and authenticate users
    - Methods to identify and determine providers of care
    - Methods to enforce data access authorization policies
- The Receiving entity has provisionally accepted the patient for transfer or referral with patient consent and, if necessary, has requested the Care Plan.
- The Receiving Entity has the capability of receiving and viewing the transmitted data, and potentially incorporating the structured transmission of data (with date/time stamps) into their local EHR system.
- The Sending Entity has the ability to assemble and electronically transmit the required documentation to the Receiving Entity in the required format to the required destination.
- The Sending Entity has the required identity materials to qualify for (be identity-verified), receive, and maintain the electronic signing credentials (may be a HISP function).

- The Sending Entity and Receiving Entity shall have completed any required onboarding processes.
- Sending and Receiving Entities have established a sufficient trust relationship necessary to allow for transmission of a Care Plan from the sender to the receiver (may be a HISP function).

7.0 Post-Conditions

Post-conditions are those conditions that exist after the Care Plan Information Exchange has occurred.

- Care Plan information is successfully reported and electronically transmitted between Sending Entity and Receiving Entity.
- Care Plan information is accessible by the Receiving Entity through an EHR/PHR system.
- Care Plan information is displayed in a human readable format.
- Care Plan information is accessible by the EHR application or other relevant clinical system.
- When the transition of the Care Plan is from an HHA to PCP, the Home Health Certification and Plan of Care (HHPoC) formerly known as the "CMS Form 485" document has been updated with the following datasets:
    - HHA name and HHA telephone number
    - Start of Care Date (when the patient started care in the HHA)
    - Medications
    - Principal and other pertinent diagnoses
    - Durable Medical Equipment (DME) and supplies
    - Safety measures
    - Nutritional requirements
    - Allergies
    - Functional limitations and activities permitted
    - Findings of any abnormal risk assessments (fall, depression, re-hospitalization)
    - Number of hospitalizations within the last year
    - Mental status
    - Overall Patient Prognosis
    - Orders
    - Rehab potential
    - Discharge plans
    - Patient and Care Goals
- Sending Entities have the capability to receive, view, modify, process, incorporate, and transmit structured data as part of their certified EHR system.
- Receiving Entities have the capability at a minimum of viewing structured data rendered as a human readable document to be authorized to receive electronic Care Plan information and transmitting modifications in a secure format to the original sender.

8.0 Actors and Roles

This section describes the Business Actors who are participants in the information exchange requirements for each scenario in this Use Case. It is not intended to represent all Actors that can participate in patient care transitions in the healthcare system. A Business Actor is an abstraction that is instantiated as an IT system application that a Stakeholder uses in the exchange of data needed to

complete Use Case action(s). A Business Actor may be a Stakeholder. Furthermore, the systems perform specific roles in this Use Case as listed below:

Business Actor - General	Business Actor- Specific	System	Role
Sending Entity Information System (EHR)	- Hospital - Home Health Agency - Provider - Primary Care Physician - Skilled Nursing Facility	EHR System	- Send Care Plan
Receiving Entity Information System (EHR)	- Hospital - Home Health Agency - Provider - Primary Care Physician - Skilled Nursing Facility	EHR System	- Receive, Store, Display Care Plan For Home Health Plan of Care: - Receive, Store, Display HHPoC - Send HHPoC
Sending Entity Care Team	- Provider - Other Paid and Informal Caregiver - Patient	EHR System	- Manage and/or provide care or service as specified and agreed to in the Care Plan - Assemble Data for the Care Plan - Prioritize Data for the Care Plan - Identify Modifications to the Care Plan - Create the Care Plan - Sign Care Plan
Receiving Entity Care Team	- Provider - Other Paid and Informal Caregiver - Patient	EHR System	- Manage and/or provide care or service as specified and agreed to in the Care Plan - Create the Care Plan - Identify and Reconcile Modifications to the Care Plan - Sign Care Plan
Patient	- Individual - Healthcare Agent - Surrogate	PHR Application	- Receive Healthcare Services - Identify Modifications to the Care Plan - Access and Review Care Plan
Personal Health Record (PHR) Application		PHR Application	- Provide secure access to a Personal Health Record - Receive, Store, Display Care Plan
Home Health Agency (HHA)		EHR System	Same as Sending Entity and Receiving Entity plus: - Extract Data Elements from Care Plan - Create HHPoC - Send HHPoC - Receive, Store, Display HHPoC
Home Health Agency (HHA) Care Team		EHR System	Same as Sending Entity Care Team and Receiving Entity Care Team plus: - Identify Modifications to the HHPoC - Update and Resend HHPoC - Sign off on HHPoC - Execute HHPoC

Table 4: Actors and Roles

9.0 Use Case Diagram

LCC Care Plan Exchange: Conceptual Workflow
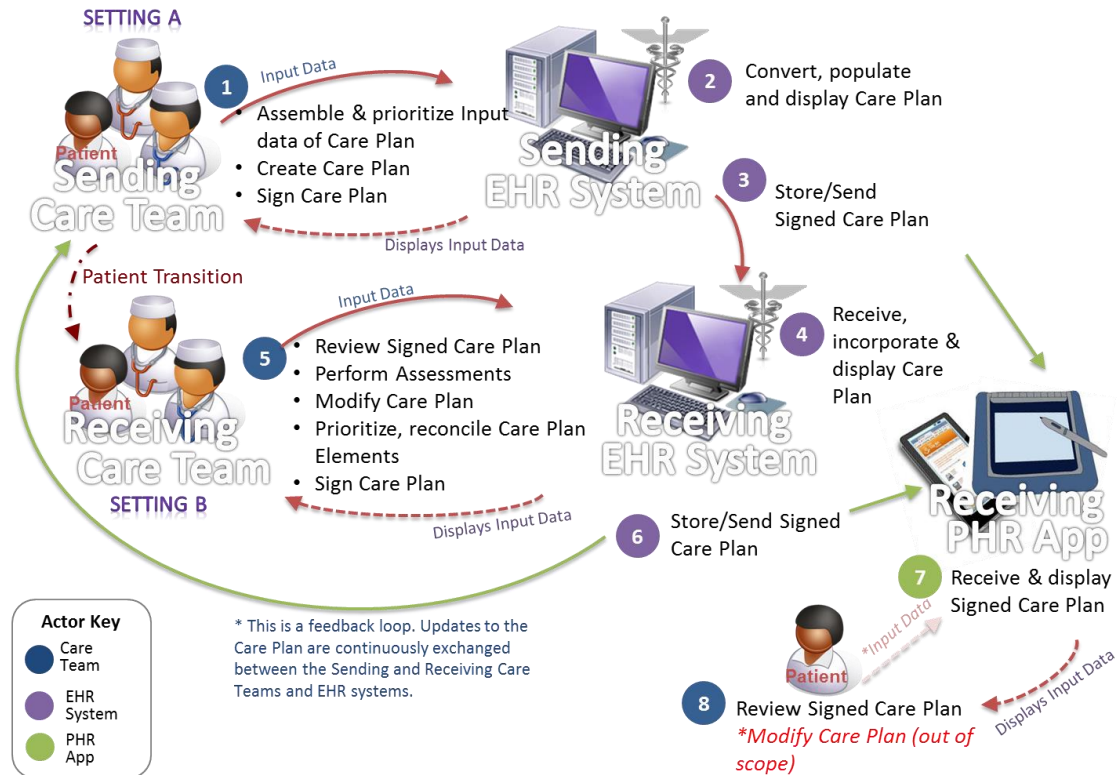
Figure 1: Use Case Conceptual Workflow

10.0 Scenario

Summary of User Scenarios

1. Scenario 1: Exchange of a Care Plan among Care Team Members
2. Scenario 2: Exchange of a Care Plan between a Care Team Member and the Patient

10.1 User Stories

A Care Team in Setting A creates a Care Plan for exchange with a second Care Team in Setting B as the patient transfers from, or care is shared between Setting A and Setting B. A Care Plan is prepared, reviewed and signed within the Setting A electronic health record (EHR) system and transmitted to the designated Setting B EHR system. Upon receipt of the Care Plan in Setting B, each Care Team Member reviews and modifies the Care Plan based on new assessments of the patient, and these changes are harmonized within Site B to create a Care Plan for use by the receiving Care Team.

The following examples demonstrate this base flow for the exchange of a Care Plan among teams at a complete transfer of care (Hospital to Skilled Nursing Facility (SNF)), exchange of a Care Plan among teams with ongoing collaboration and shared care (represented by exchange between PCP and HHA) and between Care Team Members and the patient or surrogate decision-maker.

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10.1.1 Scenario 1: Unidirectional Exchange of a Care Plan during a complete handoff of care from the sending Care Team to a receiving Care Team

During an acute hospital stay, it is determined by the patient and his/her institution-based Care Team that a Care Plan will be required at discharge to more fully address the complex, interrelated medical, behavioral, functional and environmental issues that will shape the patient's post-discharge care in another facility or at home. The Care Team prepares the Transition of Care information, assembles the components of the Care Plan and completes a final prioritization of the patient's health concerns, goals and proposed interventions in order to provide the receiving facility a Care Plan at the time of transfer.

The patient is discharged from the hospital and transported to another facility, where the receiving Care Team Members review the electronically sent Transition of Care and Care Plan documents via the receiving facility's information system. The Care Team Members assess the patient and update the Care Plan. The patient's care information has been transitioned.

10.1.2 Scenario 1 – Alternate Flow: Hospital to PCP and HHA

During an acute hospital stay, it is determined by the patient and his/her Care Team that a Care Plan will be required at discharge to more fully address the complex, interrelated medical, behavioral, functional and environmental issues that will shape the patient's post-discharge care assisted by a HHA. The Care Team prepares the Transition of Care information, assembles the components of the Care Plan and completes a final prioritization of the patient's Health Concerns, Goals and proposed Interventions in order to provide the receiving agency a Care Plan at the time of transfer.

The patient is discharged from the hospital and transported to the site at which they will receive home health care services. The HHA and PCP receive a copy of the hospital's electronically sent Transition of Care and Care Plan documents which are stored in the receiving HHA and PCP's information systems. The receiving HHA provisionally accepts the patient and conducts an assessment of the patient. The HHA creates a Home Health Certification and Plan of Care (HHPoC) (formerly known as the CMS form 485), signs it as the "Authenticator," and electronically sends it to the PCP's EHR system. The PCP reviews the HHPoC and determines if any changes are necessary. If no changes are necessary, the PCP uses their EHR system to affix an electronic and/or digital signature as the "Legal Authenticator" of the HHPoC and then electronically transmits this signed document back to the HHA. The HHA receives the legally authenticated HHPoC, verifies that no changes have been made, and proceeds to implement the HHPoC. If the PCP needs to modify or update the HHPoC, the PCP communicates those changes back to the HHA (either by phone, fax, secure email, etc.). The HHA makes these modifications and generates an updated HHPoC, which is then sent back to the PCP for modifications or acceptance and the process is repeated until consensus is reached. Upon consensus the HHPoC is executed by the receiving HHA.

10.1.3 Scenario 2: Exchanging a Care Plan between Care Team Members and a Patient

Note: The S&I Transitions of Care (ToC) Use Case Scenario 2 (exchange of clinical summaries between provider and patient in support of Transitions of Care) defines the base flow of information exchanged with the patient when the patient is discharged from Hospital or Emergency Department (ED). The following user story is specific to the exchange of the Care Plan with the patient outside of an acute care setting and between an enterprise EHR system and a PHR application. The scenario is relevant to the action of "transferring" or physically moving a patient from one setting to another and "referring" the patient from one Care Team Member in one setting to another Care Team Member in another setting. This also applies to the sending of information to an existing Care Team Member who is also functioning in another setting (e.g. patient's caregiver or a provider who is credentialed in both the sending and receiving entity settings).

Elements of the User Story that include functions not directly in the scope of the Use Case will be indicated in the following sections with *italicized, blue text*.

Setting 1: Hospital or Emergency Department where Patient is discharged from (sends Care Plan to Care Team)

A Care Team (including the patient) in Setting A (hospital or ED) creates a harmonized Care Plan document for exchange with a second Care Team in Setting B as the individual **transfers** from Setting A (Hospital or ED) to Setting B (non-acute care facility). The Care Plan exchange document is prepared, reviewed and signed within the Setting A EHR and forwarded to the designated Setting B. The electronic Care Plan message triggers a message to the patient (PHR). *A printed copy of the Care Plan is reviewed with the patient/surrogate by the individual on the Care Team the patient designates or who is designated by institutional policy before the patient leaves the sending entity care setting.*

Setting 2: Care Team (sends Care Plan to Patient)

A Care Team (including the patient) in Setting A creates a harmonized Care Plan in conjunction with the patient for exchange with a second Care Team in Setting B as the individual is **referred** from Setting A to Setting B. A Care Plan exchange message is prepared, reviewed and signed within the Setting A EHR and forwarded to the designated Setting B. The electronic Care Plan message triggers a message to the patient PHR. *A printed copy of the Care Plan is reviewed with the patient/surrogate.*

Setting 3: Patient (receives Care Plan)

The Care Plan exchange message is received into patient's Personal Health Record (PHR) application. *Depending on the specific PHR or patient information system, the patient may receive a notification to access their PHR as there is new information available.* The patient or surrogate accesses the PHR to review the Care Plan. *The patient or surrogate may respond to prior or new Care Teams with questions, proposed modifications or confirmation. The patient may select any section of the Care Plan to update. For example, the patient may upload any new health concerns for potential addition to the problem list, identify new over-the counter medications that they are taking, or make changes to their overarching goals.*

10.2 Activity Diagrams

Sending Entity Care Team	Sending Entity EHR System	Receiving Entity Information (EHR) System	Receiving Entity Care Team

ActivityInitial

1. Assemble data into the EHR for the Care Plan. These data are grouped into the following components: Health Concerns; Care Team Members; Interventions/Instructions; and Goals/Outcomes.

2. Prioritize Health Concerns and Goals, including overarching patient Goals

3. Reconcile and create the Care Plan consisting of the following components of the Care Plan: prioritized Health Concerns including appropriate Interventions/Instructions and expected Goals/Outcomes and the responsible Care Team Members

4. Sign the Care Plan by one or more Sending Entity Care Team Members. This identifies the responsible author(s) and optionally can be digitally signed.

5. Send Signed Sending Entity Care Plan to Receiving Entity Information System (EHR)

6. Receive, Store and Display Signed Care Plan from Sending Entity. NOTE: The stored Signed Care Plan is preserved intact.

7. Each member of the Receiving Entity Care Team (including patient) reviews relevant portions of the Signed Care Plan, performs relevant assessments, and identifies additions, deletions or other changes to the Care Plan. (cont'd)

8. Prioritize Health Concerns and Goals, including overarching Patient Goals.

9. Reconcile and create the Care Plan consisting of the components of the Care Plan: prioritized Health Concerns including appropriate Interventions/Instructions and expected Goals/Outcomes and the responsible Care Team Members

10. Sign Receiving Entity Care Plan showing approval or modification by responsible member(s) of the Receiving Entity Care Team, including the patient.

11. Store Signed Care Plan

ActivityFinal

Figure 2: Activity Diagram – Scenario 1 Base Flow

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Figure 3: Activity Diagram – Scenario 1 Alternate Flow

Figure 4: Activity Diagram – Scenario 2 Base Flow

10.2.1 Base Flows

10.2.1.1 Base Flow for Scenario1: Unidirectional Exchange of a Care Plan during a complete handoff of care from a sending Care Team to a receiving Care Team

Step #	Actor	Role	Event/Description	Inputs	Outputs	Interoperability or System Step
1	Sending Entity Care Team	Assemble Data for the Care Plan	Assemble data into the EHR for the Care Plan. These data are grouped into the following components: Health Concerns; Care Team Members; Interventions/Instructions; and Goals/Outcomes	Health information from patient, family, and EHR(s); Medical knowledge and guidelines	Input data of Care Plan	System
2	Sending Entity Care Team	Prioritize Data for the Care Plan	Prioritize Health Concerns and Goals, including overarching patient Goals	Health Concerns and Goals, including overarching patient Goals	Prioritized Health Concerns and Goals	System

Use Case Development and Functional Requirements for Interoperability

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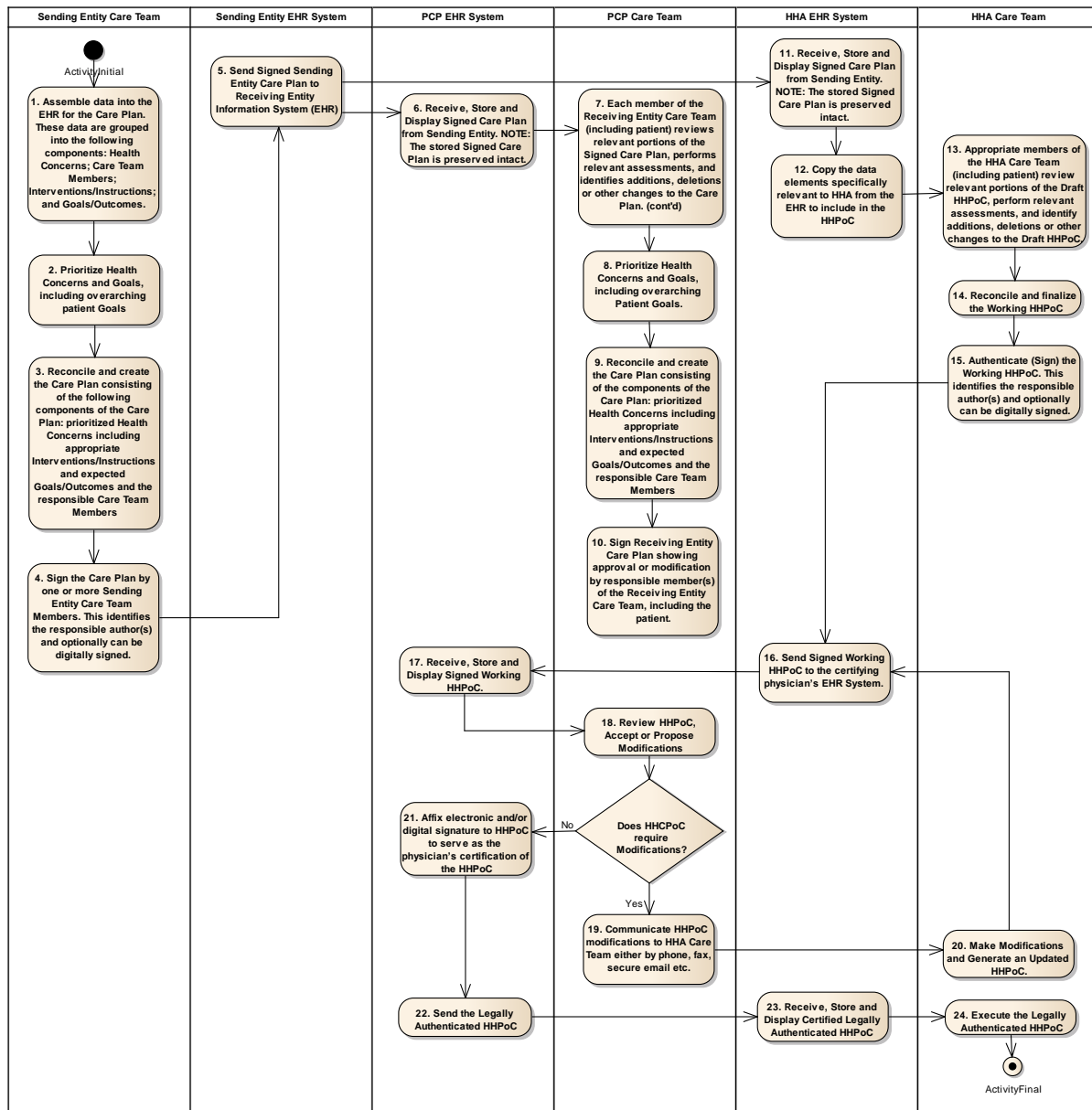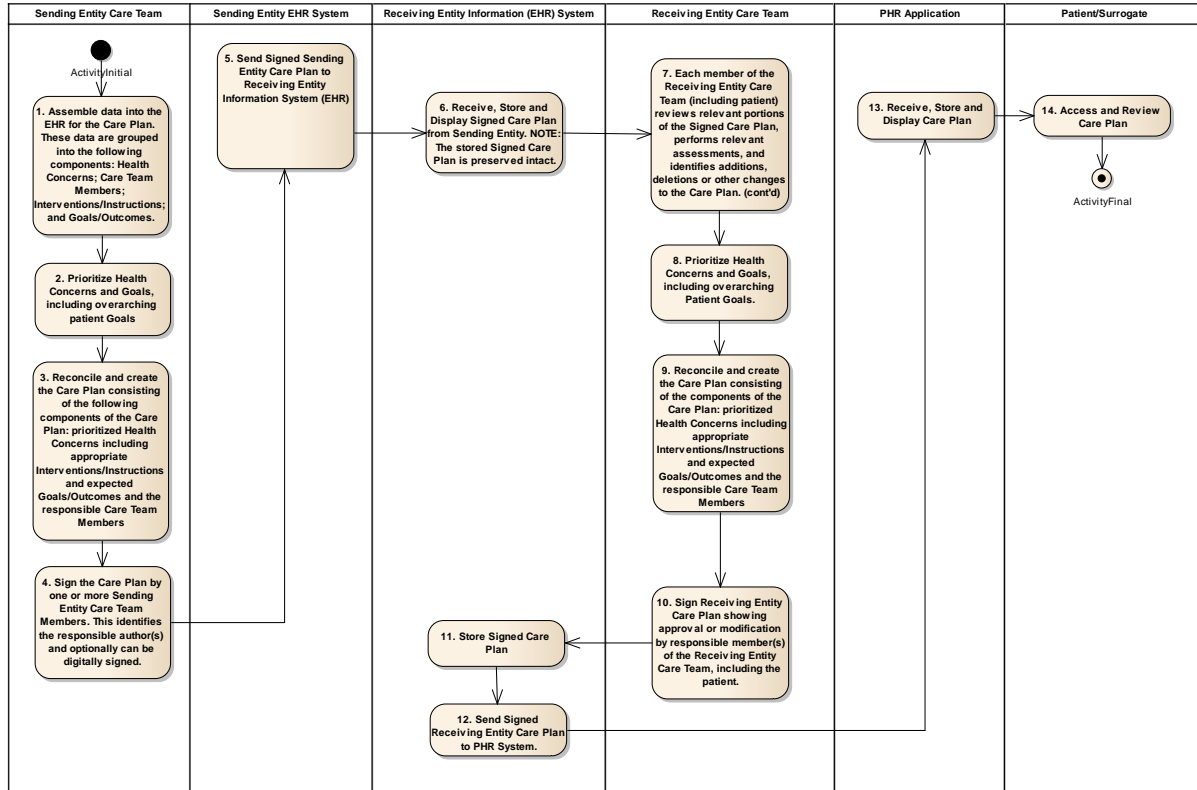| Step #	Actor	Role	Event/Description	Inputs	Outputs	Interoperability or System Step
3	Sending Entity Care Team	Create the Care Plan	Reconcile and create the Care Plan consisting of the following components of the Care Plan: prioritized Health Concerns including appropriate Interventions/Instructions and expected Goals/Outcomes and the responsible Care Team Members (including contact information)	Prioritized Health Concerns and Goals; medical knowledge and guidelines	Care Plan	System
4	Sending Entity Care Team	Sign Care Plan	Sign the Care Plan by one or more Sending Entity Care Team Members. This identifies the responsible author(s) and optionally can be digitally signed.	Care Plan	Signed Care Plan	System
5	Sending Entity Information System (EHR)	Send Care Plan	Send Signed Sending Entity Care Plan to Receiving Entity Information System (EHR)	Signed Care Plan	Signed Care Plan	Interoperability
6	Receiving Entity Information System (EHR)	Receive, Store and Display Care Plan	Receive, Store and Display Signed Care Plan from Sending Entity. NOTE: The stored Signed Care Plan is preserved intact.	Signed Care Plan	Signed Care Plan	System / Interoperability
7	Receiving Entity Care Team	Manage and/or provide care or service as specified and agreed to in the Care Plan Identify additions, deletions or other changes to the Care Plan	Each member of the Receiving Entity Care Team (including patient) reviews relevant portions of the Signed Care Plan, performs relevant assessments, and identifies additions, deletions or other changes to the Care Plan. These data are grouped into the following components: Health Concerns, Care Team Members, Interventions/Instructions, and Goals/Outcomes.	Signed Care Plan; Assessments; Health information from patient, family, and EHR(s); medical information and guidelines	Input data for the Receiving Entity Care Plan	System
8	Receiving Entity Care Team	Prioritize Data for the Care Plan	Prioritize Health Concerns and Goals, including overarching Patient Goals.	Health Concerns and Goals, including overarching Patient Goals	Prioritized Health Concerns and Goals	System

Step #	Actor	Role	Event/Description	Inputs	Outputs	Interoperability or System Step
9	Receiving Entity Care Team	Create the Care Plan	Reconcile and create the Care Plan consisting of the components of the Care Plan: prioritized Health Concerns including appropriate Interventions/Instructions and expected Goals/Outcomes and the responsible Care Team Members (including contact information).	Prioritized Health Concerns and Goals; medical information and guidelines.	Receiving Entity Care Plan	System
10	Receiving Entity Care Team	Sign Care Plan	Sign Receiving Entity Care Plan showing approval or modifications by responsible member(s) of the Receiving Entity Care Team, including the patient.	Receiving Entity Care Plan	Signed Receiving Entity Care Plan	System
11	Receiving Entity Information System (EHR)	Store Care Plan	Store Signed Care Plan	Signed Receiving Entity Care Plan	Signed Receiving Entity Care Plan	System

Table 5: Base Flow of Scenario 1

10.2.1.2 Base Flow for Scenario 2: Exchanging a Care Plan between Care Team Members and a Patient

Note: Steps in this base flow that are not directly in the scope of the Use Case are indicated in *italicized, blue text*.

Step #	Actor	Role	Event/Description	Inputs	Outputs	Interoperability or System Step
1-11	Sending Entity Care Team / EHR	Same as Scenario 1	Same as Scenario 1 for Setting 1 and 2	START	Signed Initial Care Plan	Same as Scenario 1
12	Receiving Entity Information System (EHR)	Send Care Plan	Send Signed Receiving Entity Care Plan to PHR Application (for Setting 1, 2, 3)			Interoperability
13	PHR Application	Receive, Store and Display Care Plan	Receive, Store and Display Care Plan in Setting 3	Signed Initial Care Plan	Signed Initial Care Plan	System / Interoperability
14	Patient / Surrogate	Access and review Care Plan	Access and review Care Plan. *Add questions, changes or acceptance, if necessary.*	Signed Initial Care Plan	*Patient Modified Initial Care Plan*	System

Step #	Actor	Role	Event/Description	Inputs	Outputs	Interoperability or System Step
15	*PHR Application*		*Send Patient Modified Initial Care Plan back to Sending Care Team EHR or to New Care Team's EHR*	*Patient Modified Initial Care Plan*	*Patient Modified Initial Care Plan*	*Interoperability*
16	*Receiving Entity Care Team*		*Review Patient Modified Initial Care Plan and create response(s) to questions, modifications or agreement, if necessary.*	*Patient Modified Initial Care Plan*	*Patient Modified Care Plan with Care Team response(s)*	*System*
17	*Receiving Entity Information System (EHR)*		*Sends Patient Modified Initial Care Plan with Care Team response(s) back to patient's PHR*	*Patient Modified Initial Care Plan with Care Team Members response(s)*	*Patient Modified Initial Care Plan with Care Team Members response(s)*	*Interoperability*
18			*Repeat steps 10-14 until concordance*			

Table 6: Base Flow of Scenario 2

10.2.2 Alternate Flow for Scenario 1: Hospital to PCP and HHA

Step #	Actor	Role	Event/Description	Inputs	Outputs	Interoperability or System Step
1-5	Sending Entity Care Team		Same as Scenario 1	Start	Signed Care Plan for HHA and PCP	System / Interoperability
6-10	PCP Care Team and PCP Information System (EHR)		Same as Scenario 1 for PCP	Signed Care Plan for PCP	Signed PCP Care Plan	System / Interoperability
11	HHA Information System (EHR)	Receive, Store and Display Care Plan	Receive, Store and Display Signed Care Plan from Sending Entity. NOTE: The stored Signed Care Plan is preserved intact.	Signed Care Plan for HHA	Signed Care Plan for HHA	System / Interoperability
12	HHA Information System (EHR)	Copy Data Elements from Care Plan Create HHPoC	Copy the data elements specifically relevant to HHA from the EHR to include in the HHPoC	Signed Care Plan for HHA	Draft HHPoC	System

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Step #	Actor	Role	Event/Description	Inputs	Outputs	Interoperability or System Step
13	HHA Care Team	Manage and/or provide care or service as specified and agreed to in the Care Plan Identify additions, deletions or other changes to the HHPoC	Appropriate members of the HHA Care Team (including patient) review relevant portions of the Draft HHPoC, perform relevant assessments, and identify additions, deletions or other changes to the Draft HHPoC	Assessments, Draft HHPoC	Draft HHPoC	System
14	HHA Care Team	Update HHPoC	Reconcile and finalize the Working HHPoC	Draft HHPoC	Working HHPoC	System
15	HHA Care Team	Sign HHPoC	Authenticate (sign) the Working HHPoC. This identifies the responsible author(s) and optionally can be digitally signed.	Working HHPoC	Signed Working HHPoC	System
16	HHA Information System (EHR)	Send HHPoC	Send Signed Working HHPoC to the certifying physician's EHR System.	Signed Working HHPoC	Signed Working HHPoC	Interoperability
17	PCP Information System (EHR)	Receive, Store and Display HHPoC	Receive, Store and Display Signed Working HHPoC	Signed Working HHPoC	Signed Working HHPoC	System / Interoperability
18	PCP Care Team	Identify additions, deletions or other changes to the HHPoC	Review HHPoC and either (i) accept and digitally sign plan (if accepted go to step 21), OR (ii) propose modifications (if modifications proposed go to step 19).	Working HHPoC	Working HHPoC	System
19	PCP Care Team	Propose modifications to Working HHPoC	Communicate HHPoC modifications to HHA Care Team either by phone, fax, secure email etc.	Working HHPoC	Working HHPoC and suggested changes to the draft HHPoC	System
20	HHA Care Team	Update HHPoC	Update Working HHPoC. Then return to step 16.	Working HHPoC	Revised Working HHPoC	System
21	PCP Care Team	"Legally Authenticate" HHPoC	Affix electronic and/or digital signature to HHPoC to serve as the physician's certification of the HHPoC	Working HHPoC	Legally Authenticated HHPoC	System
22	PCP Information System (EHR)	Send Legally Authenticated HHPoC	Send the Legally Authenticated HHPoC	Legally Authenticated HHPoC	Legally Authenticated HHPoC	Interoperability

Step #	Actor	Role	Event/Description	Inputs	Outputs	Interoperability or System Step
23	HHA Information System (EHR)	Receive Legally Authenticated HHPoC	Receive, Store and Display Legally Authenticated HHPoC	Legally Authenticated HHPoC	Legally Authenticated HHPoC	System / Interoperability
24	HHA Care Team	Execute Legally Authenticated HHPoC	Execute the Legally Authenticated HHPoC	Legally Authenticated HHPoC		System

Table 7: Scenario 1 Alternate Flow

10.3 Functional Requirements

10.3.1 Information Interchange Requirements

Initiating System	Action	Information Interchange Requirement Name	(describes action)	Receiving System
Sending Entity Information System (EHR)	Send	Care Plan	Receive	Receiving Entity Information System, including EHR, PHR

Table 8: Information Interchange Requirements – Base Flows

Initiating System	Action	Information Interchange Requirement Name	(describes action)	Receiving System
Sending Entity Information System (EHR)	Send	Care Plan	Receive	Receiving Entity Information System, including EHR, PHR
HHA Information System (EHR)	Send	Send Signed Working HHPoC	Receive	PCP Information System (EHR)
PCP Information System (EHR)	Create	Legally Authenticated HHPoC	Store	PCP Information System (EHR)
PCP Information System (EHR)	Send	Working HHPoC	Receive	HHA Information System (EHR)

Table 9: Information Interchange Requirements – Scenario 1 Alternate Flow

10.3.2 System Requirements

System	System Requirement
Sending Entity Information System (EHR)	Transmit Care Plan to Information System or Application (EHR, PHR)
Receiving Entity Information System (EHR, PHR)	Receive, Incorporate and Display Care Plan

Table 10: System Requirements – Base Flows

System	System Requirement
Sending Entity Information System (EHR)	Transmit Care Plan to Information System or Application (EHR, PHR)
Receiving Entity Information System: PCP Information System (EHR)	Receive, Store and Display Care Plan Receive, Store and Display HHPoC Transmit HHPoC

System	System Requirement
Receiving Entity Information System: HHA Information System (EHR)	Receive, Store and Display Care Plan Create and Store HHPoC Transmit Signed HHPoC Receive, Incorporate and Display HHPoC

Table 11: System Requirements – Scenario 1 Alternate Flow

10.4 Sequence Diagrams
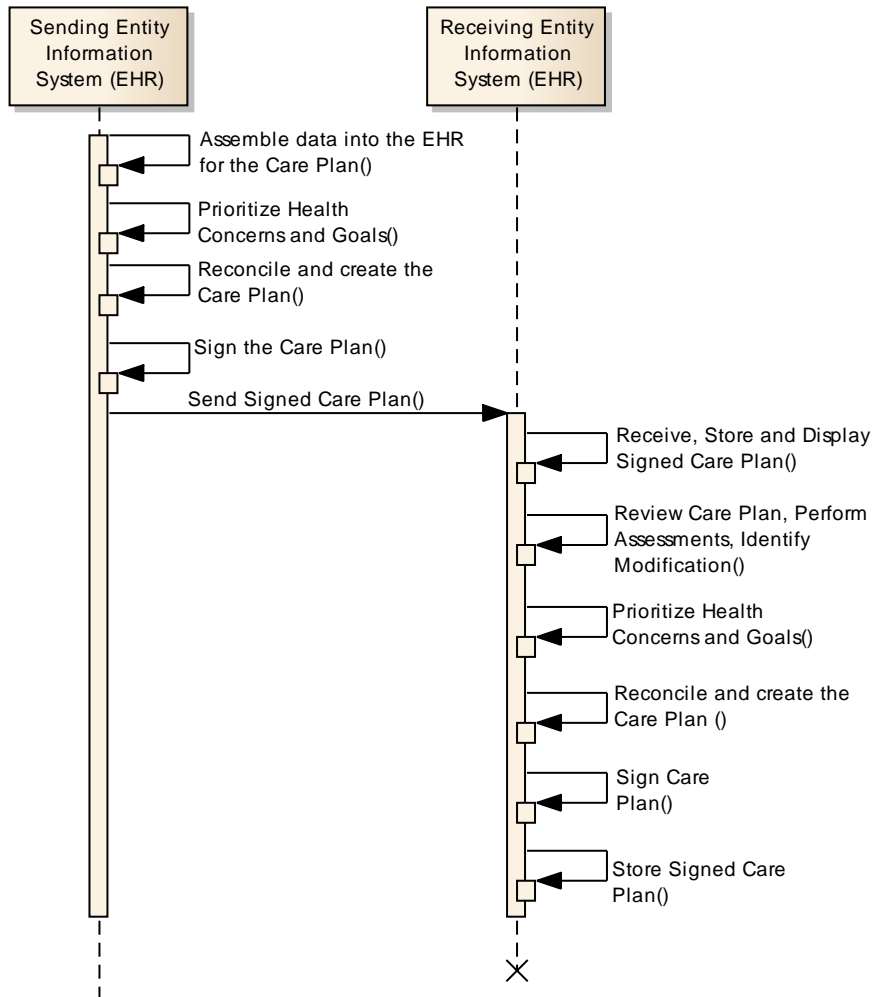
Figure 5: Sequence Diagram – Scenario 1 Base Flow
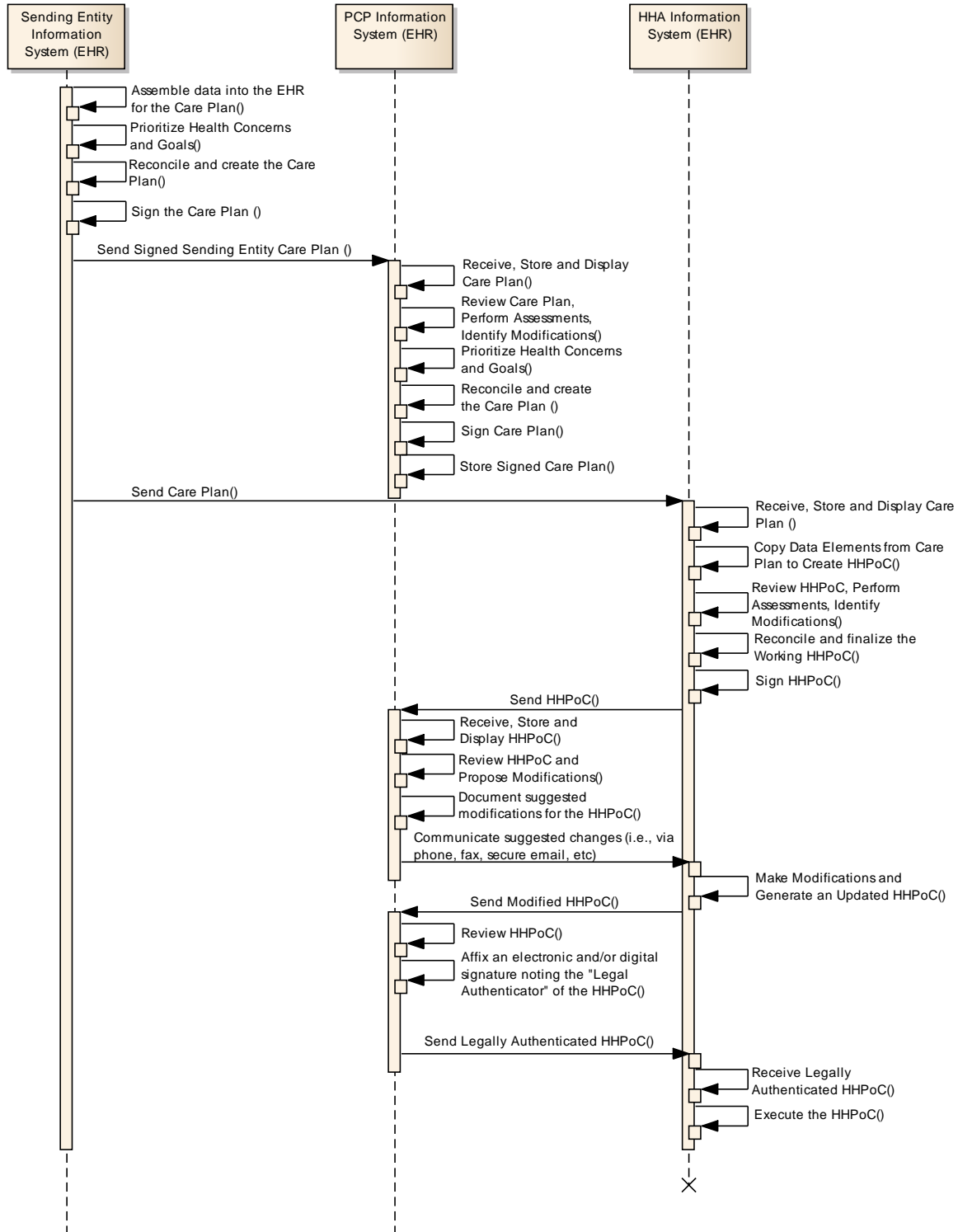
Figure 6: Sequence Diagram – Scenario 1 Alternate Flow
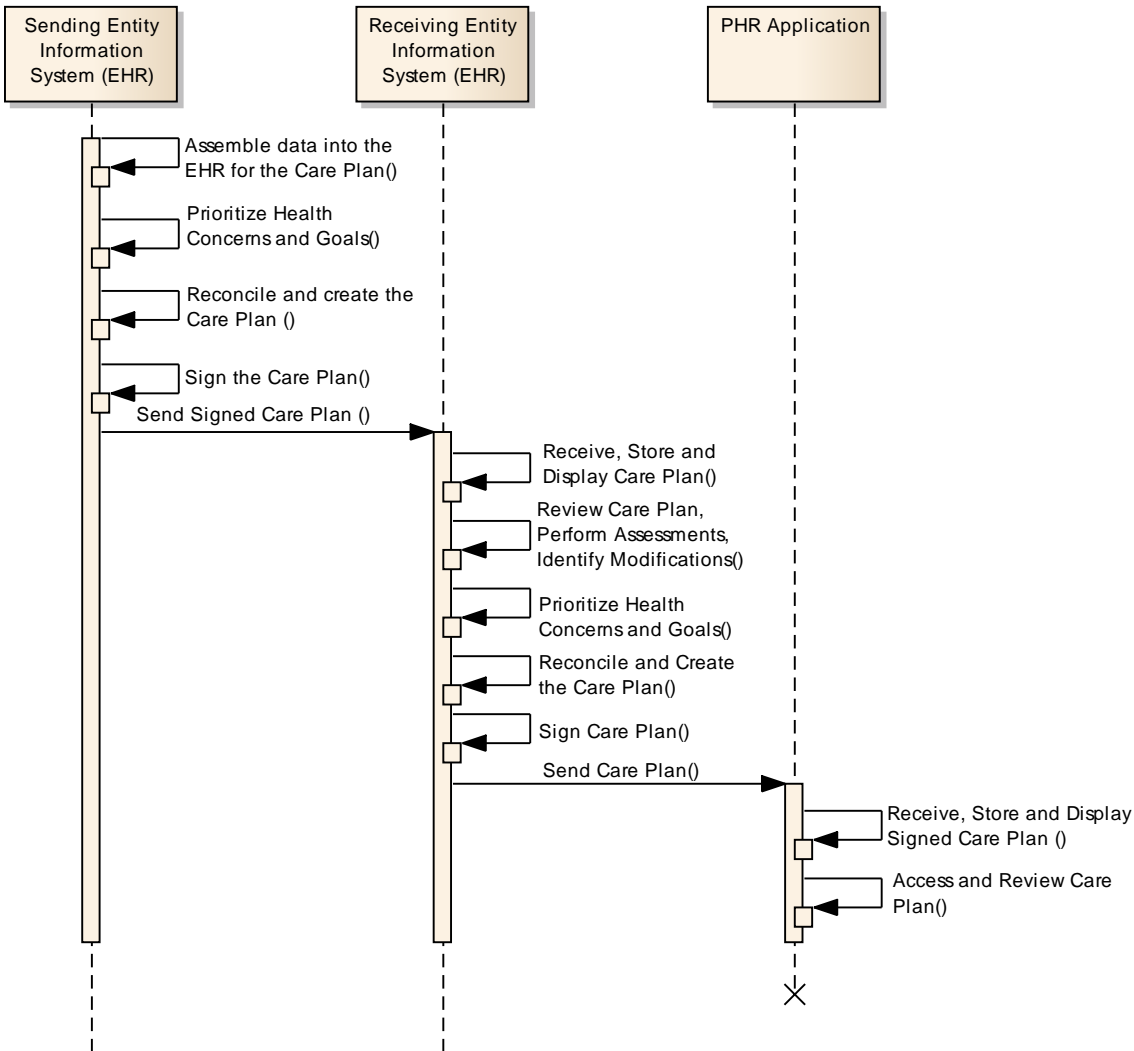
Figure 7: Sequence Diagram – Scenario 2 Base Flow

11.0 Risks, Issues, Obstacles and Barriers

In general, the absence of the pre-conditions or failure to meet the assumptions described earlier in this document presents risks, issues, obstacles and barriers to implementation of this Use Case.

Additional risks, issues, obstacles and barriers are provided below:

- Variations in local, state and national security and privacy regulations, and other pertinent laws. There are regulations concerning the storage, transmission, or destruction of electronic health information. These regulations are inconsistent across federal, state, and local jurisdictions. For example:
  - o The lack of State Laws regarding laboratory results
  - o Variations in governance models around information exchange and service providers
- Lack of widespread implementation of Health Information Exchange (HIE) governance policies (e.g., Data Segmentation) that enable electronic HIE across health and social service providers. This

includes regulated and unregulated issues for data such as HIV, alcohol and substance use, age-related restrictions, surrogacy, psychiatric information, etc.

- Lack of harmonization among and adoption of data interoperability standards including vocabulary and other messaging standards.
  - Without consistent standards, the viewing, accessing, or transmitting of electronic health information may be inhibited. This inhibits the ability to seamlessly upload discrete data from one EHR system to another.
- New level of risk introduced through integration with community based organizations and human and social service agencies:
  - Electronic medical systems/electronic applications are not often adopted
  - Uncertainty regarding the need for interoperable electronic exchange
  - Lack of clarity on data requirements
  - Uncertainty regarding availability of standards
  - Lack of certified EHR technologies
- Lack of broad adoption among providers of shared decision making (i.e., adoption of Patient-Centered Medical Home Model).
- Complexity of integrating multiple parties in this exchange with other parties of limited resources and limited supports for acquisition and use of technology solutions.
  - The care of frail and complex individuals is unconnected and systems (IT and clinical) adequate to meet the connection and functional requirements of these individuals do not exist or are evolving
  - Lack of standards and standard vocabulary across these multiple parties
  - Limited vendor products available; lack of adoption of standards in vendor products
  - The exchange activity is not widely used
  - The information that is being assembled to exchange is either incomplete or formatted in a way that makes the exchange impossible
  - Point of care and electronic documentation are not performed in real time
  - Limited funding is available in many cases and even if the funding were available, the information technology to support the organization typically does not exist
- Limited ability for Provider to: send electronic data, receive electronic data, and/or integrate the electronic data for reuse
- Lack of EHR, PHR or other clinical system adoption
- The input data for the Care Plan may not be closely connected to assessments
- Lack of a sustainable business model and pervasive infrastructure to enable electronic data exchange
- Policies may not exist for a patient's ability to understand and control clinical information when using a PHR application
- Limited integration of PHRs with provider workflows
- Limited policies in place concerning the use of digital signatures and the use of interpreting existing signature policies when dealing with digital signatures
- The variances at the state level, setting-specific and discipline-specific that generate different signature requirements
- Lack of standards for consistent patient identification and matching
- Data integrity issues created by offline and asynchronous documentation by the participating organization affecting the HHPoC
- Absence of policies to address unsigned electronic HHPoC

- Due to the concepts of synthesis and reconciliation of Care Plans, a Care Plan can get very complex or granular
- Incompatible goals, objectives, preferences, and priorities between participating sending and receiving entities
- Incompatibility between patient and providers determined goals, objectives, preferences and priorities
- Variability in practice guidelines, protocols and policies endorsed by different health care agencies participating in shared care of the patients
- Complexity of Care Plan exceeding the tracking and cognitive capabilities of individual health care provider/clinician
- Ongoing development of solutions and future ballot reconciliation of esMD digital signature work within HL7
- Lack of consensus from ongoing discussion and debate among Federal Advisory Committees—Health Information Technology Policy Committee (HITPC) and Health Information Technology Standards Committee (HITSC)—regarding the inclusion of Care Plan-related guidance in certification requirements or measures in future stages of Meaningful Use
- Variability in staffing and training use of PHR automation

12.0 Dataset Requirements

The following tables list the data elements and data sets that will be available within the Care Plan message or document. Each data element listed below is necessary for some aspect of the Use Case; however, the tables do not specify exactly how they may be used together. All data sets may contain multiple data elements unless otherwise stated. A data element is defined as the basic unit of data being collected in a database. It can also be a metadata descriptor. It can also be thought of as a question on a form.

This section contains tables that are specific to the content of the Care Plan Components (12.1) and tables that are specific to the representation of other Care Plan elements (12.2 through 12.4).

The items with a * are assessments of status at a moment in time, and can be the source for identifying new Health Concerns.

The items with a ** are proposed new or modified section level Consolidated Clinical Document Architecture (C-CDA) templates.

12.1 Care Plan Components

This section lists the sections and elements from the C-CDA that define or comprise each Care Plan component: Health Concerns, Interventions/Instructions, Goals, Health Status Evaluations/Outcomes, and Care Team Members.

A detailed list of candidate sources for the Care Plan components can be found in Appendix A: Care Plan Component Sources.

12.1.1 Health Concerns

The Health Concern component of the Care Plan identifies the issues, current status and "likely course" identified by patient or Care Team Members that require intervention(s) to increase the likelihood of achieving the patient's or providers' goals of care. Health Concerns are derived from a variety of sources within an EHR (such as Problem List, Family History, Social History, Social Worker Note, etc.) and can be reused in a variety of ways. The following tables identify the Health Concern categories (# = an Arabic numeral) as listed in the LCC Care Plan Glossary along with the C-CDA Section/Entry Level Templates where Health Concern elements can be pulled from (# = a lower case letter). The Health Concern Attributes table contains elements that pertain to both the Health Concern Category and C-CDA Section/Entry Level Template elements.

Health Concerns				
#	Category	Description	Cardinality	Additional Notes
1	Medical Concerns	Clinical conditions or diagnoses	Multiple	Such as ICD 10, SNOMED codes
2	Surgical Concerns	Clinical conditions associated with surgical procedures	Multiple	Such as ICD 10 plus CPT, SNOMED codes

3	Nursing Concerns	Nursing observations and diagnoses	Multiple	Such as Clinical Classification System (CCC), SNOMED codes
4	Allied Health Concerns	Observations and diagnoses from allied health professions.	Multiple	Such as DSM5, SNOMED codes
5	Patient-Reported Concerns	Concerns provided by the patient or caregiver.	Multiple	Such as SNOMED codes
#	**C-CDA Section/Entry Level Template**	**C-CDA Section Description**	**Additional Notes / IMPACT Item #**	
a	Allergies and Intolerance	This section lists and describes any medication allergies, adverse reactions, idiosyncratic reactions, anaphylaxis/anaphylactoid reactions to food items, and metabolic variations or adverse reactions/allergies to other substances (such as latex, iodine, tape adhesives) used to assure the safety of health care delivery. At a minimum, it should list currently active and any relevant historical allergies and adverse reactions.	Template to reference new HL7 Allergy and Intolerance Domain Analysis Model Such as RxNorm 10.9	
b	Assessment	The Assessment section (also referred to as "impression" or "diagnoses" outside of the context of CDA) represents the clinician's conclusions and working assumptions that will guide treatment of the patient. The assessment may be a list of specific disease entities or a narrative block.	Such as SNOMED codes	
c	Assessment and Plan	The Assessment and Plan sections may be combined or separated to meet local policy requirements. The Assessment and Plan section represents both the clinician's conclusions and working assumptions that will guide treatment of the patient (see Assessment Section above) and pending orders, interventions, encounters, services, and procedures for the patient (see Plan of Care Section below).	Such as SNOMED codes	
d	Chief Complaint	This section records the patient's chief complaint (the patient's own description).	May contain coded value(s) 10.1.1	
e	Complications	The Complications section records problems that occurred during the procedure or other activity. The complications may have been known risks or unanticipated problems.		
f	Family History	This section contains data defining the patient's genetic relatives in terms of possible or relevant health risk factors that have a potential impact on the patient's healthcare risk profile.		

h	Functional Status Finding*	The Functional Status section describes the patient's status of functioning at the time the Care Plan document is created. 1. A patient's **functional status** may include information regarding the patient relative to their general functional and cognitive ability, including: • Ambulatory ability • Activities of Daily Living (ADLs), including bathing, dressing, feeding, grooming • Instrumental Activities of Daily Living (IADLs) • Ability to care for self The patient's functional status may be expressed as a problem observation or as a result observation. A functional status problem observation describes a patient's problem, symptoms or condition. A functional status result observation may include observations resulting from an assessment scale, evaluation or question and answer assessment. Any deviation from normal function displayed by the patient and recorded in the record should be included. Of particular interest are those limitations that would interfere with self-care or the medical therapeutic process in any way. In addition, a note of normal function, an improvement, or a change in functioning status may be included.	
i	General Status Finding*	The General Status section describes general observations and readily observable attributes of the patient, including affect and demeanor, apparent age compared to actual age, gender, ethnicity, nutritional status based on appearance, body build and habitus (e.g., muscular, cachectic, obese), developmental or other deformities, gait and mobility, personal hygiene, evidence of distress, and voice quality and speech.	
j	Health Concerns**	*Proposed New*: Health concerns reflect the issues, current status and "likely course" identified by the patient or Care Team Member that require intervention(s) or monitoring to increase the likelihood of achieving the patient's or providers' goals of care.	10.2

k	Hospital Admission Diagnosis	The Hospital Admission Diagnosis entry describes the relevant problems or diagnoses at the time of admission.	
l	Hospital Discharge Diagnosis	The Hospital Discharge Diagnosis act wraps relevant problems or diagnoses at the time of discharge that occurred during the hospitalization or that need to be followed after hospitalization. This entry requires at least one Problem Observation entry.	
m	Medical Equipment	The Medical Equipment section defines a patient's implanted and external medical devices and equipment that their health status depends on, as well as any pertinent equipment or device history. This section is also used to itemize any pertinent current or historical durable medical equipment (DME) used to help maintain the patient's health status. All pertinent equipment relevant to the diagnosis, care, and treatment of a patient should be included.	
m 1	High Risk Devices, Catheters, Stents**	*Proposed New:* Identifies equipment that presents higher health and safety risks to patient, requiring special care and additional information such as high-risk devices, catheters and stents. Attributes include: the type of device, insertion location, date of first use, expiration date, use/care instructions, vendor/supplier (including contact information), ownership (rent vs. own), and ID number.	10.16
n	Medical (General) History	The Medical History section describes all aspects of the medical history of the patient even if not pertinent to the current procedure, and may include chief complaint, past medical history, social history, family history, surgical or procedure history, medication history, and other history information. The history may be limited to information pertinent to the current procedure or may be more comprehensive. The history may be reported as a collection of random clinical statements or it may be reported categorically. Categorical report formats may be divided into multiple subsections including Past Medical History, Social History.	
o	Mental Status**	*Proposed New:* Data about a patient's current state of mind, under the domains of appearance, behavior/psychomotor, mood/ affect, speech/language, thought process/ content, perception, cognition, insight/ judgment, level of consciousness, etc.	Typically done as part of the Physical Exam

p	Objective Finding*	The Objective section contains data about the patient gathered through tests, measures, or observations that produce a quantified or categorized result. It includes important and relevant positive and negative test results, physical findings, review of systems, and other measurements and observations.	
q	Physical Exam Finding*	The Physical Exam section includes direct observations made by the clinician. The examination may include the use of simple instruments and may also describe simple maneuvers performed directly on the patient's body. This section includes only observations made by the examining clinician using inspection, palpation, auscultation, and percussion; it does not include laboratory or imaging findings. The exam may be limited to pertinent body systems based on the patient's chief complaint or it may include a comprehensive examination. The examination may be reported as a collection of random clinical statements or it may be reported categorically. The Physical Exam section may contain multiple nested subsections: Vital Signs, General Status, and those listed in the Additional Physical Examination Subsections appendix.	
q1	Wound Status	*Proposed Modification:* Identifies the location, ID, type, description, and treatment of a wound.	10.4.1.3 Previously named "Pressure Ulcer Observation" entry-level template
r	Postoperative Diagnosis	The Postoperative Diagnosis section records the diagnosis or diagnoses discovered or confirmed during the surgery. Often it is the same as the preoperative diagnosis.	
s	Postprocedure Diagnosis	The Postprocedure Diagnosis section records the diagnosis or diagnoses discovered or confirmed during the procedure. Often it is the same as the pre-procedure diagnosis or indication.	
t	Preoperative Diagnosis	The Preoperative Diagnosis section records the surgical diagnosis or diagnoses assigned to the patient before the surgical procedure and is the reason for the surgery. The preoperative diagnosis is, in the opinion of the surgeon, the diagnosis that will be confirmed during surgery.	
u	Problem	This section lists and describes all relevant clinical problems at the time the document is generated. At a minimum, all pertinent current and historical problems should be listed.	

v	Procedure Findings*	The Procedure Findings section records clinically significant observations confirmed or discovered during the procedure or surgery.	
v1	Adverse Reaction Observation*	*Proposed Modification* This clinical statement represents an undesired symptom, finding, etc., due to an administered or exposed substance *or procedure*. A reaction can be defined with respect to its severity, and can have been treated by one or more interventions.	While this existing entry-level template has been part of the Medication Section, it should also be available to document complications of procedures
w	Procedures	This section defines all interventional, surgical, diagnostic, or therapeutic procedures or treatments pertinent to the patient historically at the time the document is generated. The section is intended to include notable procedures, but can contain all procedures for the period of time being summarized. The common notion of "procedure" is broader than that specified by the HL7 Version 3 Reference Information Model (RIM). Therefore this section contains procedure templates represented with three RIM classes: Act, Observation, and Procedure. Procedure act is for procedures that alter the physical condition of a patient (Splenectomy). Observation act is for procedures that result in new information about a patient but do not cause physical alteration (EEG). Act is for all other types of procedures (dressing change).	
x	Reason for Referral	A Reason for Referral section records the reason the patient is being referred for a consultation by a provider. An optional Chief Complaint section may capture the patient's description of the reason for the consultation.	Such as SNOMED Codes
y	Reason for Visit	This section records the patient's reason for the patient's visit (as documented by the provider). Local policy determines whether Reason for Visit and Chief Complaint are in separate or combined sections.	Such as SNOMED Codes
z	Result Finding*	The Results section contains the results of observations generated by laboratories, imaging procedures, and other procedures. The scope includes observations such as hematology, chemistry, serology, virology, toxicology, microbiology, plain x-ray, ultrasound, CT, MRI, angiography, echocardiography, nuclear medicine, pathology, and procedure observations. The section often includes notable results such as abnormal values or relevant	

		trends, and could contain all results for the period of time being documented. Laboratory results are typically generated by laboratories providing analytic services in areas such as chemistry, hematology, serology, histology, cytology, anatomic pathology, microbiology, and/or virology. These observations are based on analysis of specimens obtained from the patient and submitted to the laboratory. Imaging results are typically generated by a clinician reviewing the output of an imaging procedure, such as where a cardiologist reports the left ventricular ejection fraction based on the review of a cardiac echocardiogram. Procedure results are typically generated by a clinician to provide more granular information about component observations made during a procedure, such as where a gastroenterologist reports the size of a polyp observed during a colonoscopy.	
aa	Review of System Finding*	The Review of Systems section contains a relevant collection of symptoms and functions systematically gathered by a clinician. It includes symptoms the patient is currently experiencing, some of which were not elicited during the history of present illness, as well as a potentially large number of pertinent negatives, for example, symptoms that the patient denied experiencing.	
bb	Social History*	This section contains data defining the patient's occupational, personal (e.g. lifestyle), social (including cultural and religious practices, and environmental history (e.g., Housing and transportation; Availability of support, relationships, caregiver characteristics; Financial issues (e.g. insurance, eligibility for disability); Safety Hazards) and health risk factors (e.g. exercise, tobacco use, alcohol use, recreational drug use, toxic exposures, and nutritional issues), as well as administrative data such as marital status, race, ethnicity and religious affiliation. Social history can have significant influence on a patient's physical, psychological and emotional health and wellbeing so should be considered in the development of a complete record.	

| cc | Vital Signs Finding* | The Vital Signs section contains relevant vital signs for the context and use case of the document type, such as blood pressure, heart rate, respiratory rate, height, weight, body mass index, head circumference, and pulse oximetry. The section should include notable vital signs such as the most recent, maximum and/or minimum, baseline, or relevant trends.
Vital signs are represented in the same way as other results, but are aggregated into their own section to follow clinical conventions. | |

Table 12: Health Concern Categories and C-CDA Templates

The Health Concern Attributes table below contains elements that can be used to describe elements contained in the Health Concerns tables above.

Health Concern Attributes				
#	Name	Description	Cardinality	Additional Notes / IMPACT Item #
A	Risk/Barrier	A clinical or socioeconomic condition experienced by the patient that can prevent the patient from benefitting from advice, instructions, treatment, and the level of concern such that an intervention and/or monitoring are needed.	Single	Should only be used as an attribute where the concept itself doesn't already denote it being a risk. E.g. Don't use this attribute for SNOMED-CT term 129839007 "At risk for falls" but do use it for SNOMED-CT term 43339004 "Potassium Deficiency" to denote "At risk for potassium deficiency"
B	Status	Active or inactive	Single	
C	*Priority*	A relative ranking of health concerns, goals and interventions by importance to a patient or provider. Not to be confused with a physician "order."	Single	
D	Heads Up/Special Alerts	Health concerns that are special circumstances or risks that require increased attention.	Single	10.17

Table 13: Health Concern Attributes

12.1.2 Goals

The Goals component of the Care Plan is a defined outcome or condition to be achieved in the process of patient care. Includes patient-defined goals (e.g., prioritization of health concerns, interventions, longevity, function, comfort) and clinician-specific goals to achieve desired and agreed upon outcomes. This section also includes a Goals Attributes table containing elements that pertain to each Goal Category.

Goals				
#	**Care Plan Glossary Category**	**Description**	**Cardinality**	**Additional Notes**
1	Patient Over-Arching Goals of Care	An encompassing desired outcome or condition as defined by the patient and/or caregiver. Reflects the patient's values, preferences, expectations for care, and religious and cultural beliefs.	Multiple	Include provenance.
2	Provider Over-Arching Goals of Care	An encompassing desired outcome or condition for a patient as defined by a provider	Multiple	Include provenance.
3	Concern/Intervention-Specific Goals	Desired outcome or condition specific to a health concern or intervention.	Multiple	Include provenance.
Goals Attributes				
#	**Name**	**Description**	**Cardinality**	**Additional Notes/IMPACT Item #**
A	Desired Outcomes	Focus on how patients and their health care concerns are affected by interventions. They represent the desired consequences or effects of interventions that result in changes in patient's symptom experience, functional status, risk status, safety, psychological distress, wellness, longevity, costs, etc.	Multiple	8.8.5
B	Milestones	A significant patient event or stage in the life, progress, development, or incremental progress towards ultimate goal.	Multiple	8.8.6
C	Prognosis	A forecasting of the probable course and outcome of a disease (i.e. likelihood of achieving goal: poor, guarded, fair, good, excellent)	Multiple	8.8.1.2
D	Progress	The movement a patient is making toward achievement of a goal (e.g., progression, regression, remission, stability). It represents the current status compared to a prior status, as determined by Health Status evaluations	Multiple	10.7.6
E	Related Health Concern(s)	Health concern(s) that are associated with a goal	Multiple	10.7.3
F	Related Intervention(s)	Intervention(s) that are associated with a goal	Multiple	10.7.4

G	Patient readiness for change	The patient's stage in the process of making the changes necessary to achieve the goal (e.g. Precontemplative, Contemplative, Preparation, Action, Maintenance)	Multiple	
H	Patient priority for goal	Relative ranking of goal by importance to patient compared to other goals	Multiple	
I	Provider priority for goal	Relative ranking of goal by importance to a provider compared to other goals	Multiple	

<div align="center">Table 14: Goal Categories and Descriptive Data</div>

12.1.3 Interventions/Instructions

Interventions are planned and ordered actions taken to maximize the prospects of achieving the patient's or provider's goals of care, including the removal of barriers to success. Instructions are Information or directions to the patient and other providers including how to care for the individual's condition, what to do at home, when to call for help, any additional appointments, testing, and changes to the medication list or medication instructions, clinical guidelines and a summary of best practice. Interventions include actions that may be ongoing (e.g. maintenance medications that the patient is taking, or monitoring the patient's health status or the status of an intervention).

Instructions are a subset of interventions and may include self-care instructions.

The following table identifies the C-CDA Section/Entry Level Templates where Interventions/Instructions elements can be pulled from.

Interventions / Instructions			
Available/ Needed C-CDA Section/Entry Level Template Source			
#	**C-CDA Section/Entry Level Template Name**	**C-CDA Section Description**	**Additional Notes / IMPACT Item #**
a	Advance Directives	This section contains data defining the patient's advance directives and any reference to supporting documentation. The most recent and up-to-date directives are required, if known, and should be listed in as much detail as possible. This section contains data such as the existence of living wills, healthcare proxies, and CPR and resuscitation status. If referenced documents are available, they can be included in the CCD exchange package. **NOTE**: The descriptions in this section differentiate between "advance directives" and "advance directive documents." The former are the directions whereas the latter are legal documents containing those directions. Thus, an advance directive might be "no cardiopulmonary resuscitation," and this directive might be stated in a legal advance directive document.	Instruction relevant for Provider.

Interventions / Instructions

#	C-CDA Section/Entry Level Template Name	C-CDA Section Description	Additional Notes / IMPACT Item #
		Available/ Needed C-CDA Section/Entry Level Template Source	
b	Assessment and Plan	Refer to definition in section 12.1.1 Health Concerns.	Instruction relevant for Provider. 10.4 10.6
c	Nutritional Recommendations**	This section records a narrative description of the expectations for diet and nutrition to include: • Nutritional requirements (e.g. fluids, calories, protein, sodium, etc.) • Oral diet recommendations (including food, fluids, nutrition, type of diet/NPO, texture, foods to encourage, foods to discourage, supplements, etc.) • Enteral (non-oral) nutrition recommendations (including formula/recipe, route of administration (e.g. per NG tube, PEG tubes, J-tube, etc.), mode of administration (pump, gravity, injection, etc.), quantity, rate of administration, frequency of administration, etc.) • Parenteral nutrition recommendations (including type (IVs, TPN, etc.), formula/recipe, route of administration (central line, peripheral line), quantity, rate of administration, frequency of administration) • Nutrition education and counseling • Nutritional Status	Instruction relevant for Provider. (Proposed rename for Discharge Diet)
f	Hospital Discharge Instructions	The Hospital Discharge Instructions section records instructions at discharge.	Instruction relevant for Provider.
g	Hospital Discharge Medications	The Hospital Discharge Medications section defines the medications that the patient is intended to take (or stop) after discharge. The currently active medications must be listed. The section may also include a patient's prescription history and indicate the source of the medication list, for example, from a pharmacy system versus from the patient.	Instruction relevant for Provider.
h	Immunizations	The Immunizations section defines a patient's current immunization status and pertinent immunization history. The primary use case for the Immunization section is to enable communication of a patient's immunization status. The section should include current immunization status, and may contain the entire immunization history that is relevant to the period of time being summarized.	Instruction relevant for Provider. 10.10

Interventions / Instructions

Available/ Needed C-CDA Section/Entry Level Template Source

#	C-CDA Section/Entry Level Template Name	C-CDA Section Description	Additional Notes / IMPACT Item #
i	Instructions	The Instructions section records instructions given to a patient. List patient decision aids here.	Instruction relevant for Patient or Caregiver. 10.14
j	Interventions	The Interventions section contains information about the specific interventions provided during the healthcare visit. Depending on the type of intervention(s) provided (procedural, education, application of assistive equipment, etc.), the details will vary but may include specification of frequency, intensity, and duration.	Intervention relevant for Provider and Patient or Caregiver. 10.12
k	Medical Equipment	Refer to definition in section 12.1.1 Health Concerns.	Intervention relevant for Provider and Patient or Caregiver.
k1	High Risk Devices, Catheters, Stents**	Refer to definition in section 12.1.1 Health Concerns.	Instruction relevant for Provider 10.16 - Include Standard Response Data set
l	Medications	The Medications section defines a patient's current medications and pertinent medication history. At a minimum, the currently active medications are to be listed, with an entire medication history as an option. The section may also include a patient's prescription and dispense history. This section requires that there be either an entry indicating the subject is not known to be on any medications, or that there be entries summarizing the subject's medications.	Intervention relevant for Provider and Patient or Caregiver. 10.8 -Include Standard Medication Data set -Include Standard Data set for High Risk Medications for High Risk meds
m	Medications Administered	The Medications Administered section defines medications and fluids administered during the procedure, encounter, or other activity excluding anesthetic medications. This guide recommends anesthesia medications be documented as described in the section on Anesthesia.	Intervention relevant for Provider and Patient or Caregiver/date/time/providence.

		Interventions / Instructions	
		Available/ Needed C-CDA Section/Entry Level Template Source	
#	**C-CDA Section/Entry Level Template Name**	**C-CDA Section Description**	**Additional Notes / IMPACT Item #**
n	Planned Interventions**	The Planned Interventions section contains data that defines pending orders, interventions, encounters, services, and procedures for the patient. It is limited to prospective, unfulfilled, or incomplete orders and requests only, which are indicated by the @moodCode of the entries within this section. All active, incomplete, or pending orders, appointments, referrals, procedures, services, or any other pending event of clinical significance to the current care of the patient should be listed unless constrained due to privacy issues. The plan may also contain information about ongoing care of the patient and information regarding clinical reminders. Clinical reminders are placed here to provide prompts for disease prevention and management, patient safety, and health-care quality improvements, including widely accepted performance measures. The plan may also indicate that patient education will be provided.	Intervention relevant for Provider and Patient or Caregiver.
o	Planned Procedures	The Planned Procedure section records the procedure(s) that a clinician thought would need to be done based on the preoperative assessment. It may be important to record the procedure(s) that were originally planned for, consented to, and perhaps pre-approved by the payer, particularly if different from the actual procedure(s) and procedure details, to provide evidence to various stakeholders that the providers are aware of the discrepancy and the justification can be found in the procedure details.	Intervention relevant for Provider.
p	Procedures	Refer to definition in section 12.1.1 Health Concerns.	Intervention relevant for Provider / 10.5
q	Procedure Implants	The Procedure Implants section records any materials placed during the procedure including stents, tubes, and drains.	Intervention relevant for Provider.
r	Surgical Drains	The Surgical Drains section may be used to record drains placed during the surgical procedure. Optionally, surgical drain placement may be represented with a text element in the Procedure Description Section.	Intervention relevant for Provider.

Table 15: Interventions/Instructions C-CDA Templates

12.1.4 Health Status Evaluation

Also known as "Outcomes." Status, at one or more points in time, related to health concerns and established care plan goals and/or interventions. The following table highlights some of the CDA section templates that may be the source of health status evaluations.

Health Status Evaluation			
Available/ Needed C-CDA Section / Entry Level Template Source			
#	C-CDA Section/ Entry Level Template Name	C-CDA Section Description	Additional Notes / IMPACT Item #
a	Chief Complaint	Refer to definition in section 12.1.1 Health Concerns.	10.1.1
b	Complications	Refer to definition in section 12.1.1 Health Concerns.	
c	Findings	Refer to definition in section 12.1.1 Health Concerns.	
d	Functional Status Finding	Refer to definition in section 12.1.1 Health Concerns.	
e	General Status Finding	Refer to definition in section 12.1.1 Health Concerns.	
f	History of Present Illness	The History of Present Illness section describes the history related to the reason for the encounter. It contains the historical details leading up to and pertaining to the patient's current complaint or reason for seeking medical care.	
g	Hospital Consultations	The Hospital Consultations section records consultations that occurred during the admission.	
h	Hospital Course	The Hospital Course section describes the sequence of events from admission to discharge in a hospital facility.	
i	Hospital Discharge Physical	The Hospital Discharge Physical section records a narrative description of the patient's physical findings.	
j	Hospital Discharge Studies Summary	This section records the results of observations generated by laboratories, imaging procedures, and other procedures. The scope includes hematology, chemistry, serology, virology, toxicology, microbiology, plain x-ray, ultrasound, CT, MRI, angiography, echocardiography, nuclear medicine, pathology, and procedure observations. This section often includes notable results such as abnormal values or relevant trends, and could record all results for the period of time being documented. Laboratory results are typically generated by laboratories providing analytic services in areas such as chemistry, hematology, serology, histology, cytology, anatomic pathology, microbiology, and/or virology. These observations are based on analysis of specimens obtained from the patient and submitted to the laboratory. Imaging results are typically generated by a clinician reviewing the output of an imaging procedure, such as where a cardiologist reports the left	

	Health Status Evaluation		
	Available/ Needed C-CDA Section / Entry Level Template Source		
#	**C-CDA Section/ Entry Level Template Name**	**C-CDA Section Description**	**Additional Notes / IMPACT Item #**
		ventricular ejection fraction based on the review of an echocardiogram. Procedure results are typically generated by a clinician wanting to provide more granular information about component observations made during the performance of a procedure, such as when a gastroenterologist reports the size of a polyp observed during a colonoscopy. Note that there are discrepancies between CCD and the lab domain model, such as the effectiveTime in specimen collection.	
k	Mental Status	Refer to definition in section 12.1.1 Health Concerns.	
l	Nutritional status**	*Proposed New:* The assessment of the state of nourishment of a patient.	
m	Objective	The Objective section contains data about the patient gathered through tests, measures, or observations that produce a quantified or categorized result. It includes important and relevant positive and negative test results, physical findings, review of systems, and other measurements and observations.	
n	Physical Exam	Refer to definition in section 12.1.1 Health Concerns.	
o	Procedure Findings	Refer to definition in section 12.1.1 Health Concerns.	
p	Reason for Referral	Refer to definition in section 12.1.1 Health Concerns.	
q	Reason for Visit	Refer to definition in section 12.1.1 Health Concerns.	
r	Results	Refer to definition in section 12.1.1 Health Concerns.	
s	Review of Systems	Refer to definition in section 12.1.1 Health Concerns.	
t	Social History	Refer to definition in section 12.1.1 Health Concerns.	
u	Subjective	The Subjective section describes in a narrative format the patient's current condition and/or interval changes as reported by the patient or by the patient's guardian or another informant.	
v	Vital Signs	Refer to definition in section 12.1.1 Health Concerns.	
w	Wound Status	Refer to definition in section 12.1.1 Health Concerns.	

	Health Status Evaluation		
	Available/ Needed C-CDA Section / Entry Level Template Source		
#	**C-CDA Section/ Entry Level Template Name**	**C-CDA Section Description**	**Additional Notes / IMPACT Item #**
x	Patient-Generated Health Documentation**	*Proposed New:* Enables collection of information as reported by the patient or caregiver outside the scope of the EHR.	

<div align="center">Table 16: Observation/Review of Health Status C-CDA Templates</div>

12.1.5 Care Team Members/Context

The Care Team Members component of the Care Plan may include but is not limited to parties who manage and/or provide care or service as specified and agreed to in the Care Plan, including: clinicians (including providers), other paid and informal caregivers, and the patient. Care Team Members may include individuals who do not provide direct care such as a Care Manager. The table below also includes elements that identify the source of the Care Plan document submission and the type of provider setting in which the Care Plan will be updated/completed.

	Care Team Members/Context			
#	**Data Elements**	**Data Element Descriptions**	**Cardinality**	**Additional Notes / IMPACT Item #**
1A	Sending Organization Name	The entity sending the document	Single	3.1
1B	Sending Organization Provider ID (NPI)	The National Provider Identifier of the sending organization	Single	
1C	Sending Organization ID	Other Identifier(s) for the organization sending the document	Multiple	
1D	Sending Organization Address	Physical address, phone, Direct address, and email for the sending organization	Multiple	3.2, 3.3
2A	Sending Person Name	Person sending the document	Single	3.5
2B	Sending Person Provider ID (NPI)	The National Provider Identifier of the sending person	Single	
2C	Sending Medicare/Medicaid Provider ID	The Medicare/Medicaid identifiers of the sender	Multiple	
2D	Sending Person ID	Other Identifier(s) of the person sending the document	Multiple	
2E	Sending Person Role	Type of Care Team Member sending the document, e.g., patient, principal care physician, Care Plan manager, principal health care provider, principal caregiver, others (specialist, therapist, etc)	Multiple	9.1, 9.2, 9.3, 9.4, 9.5

		Care Team Members/Context		
#	**Data Elements**	**Data Element Descriptions**	**Cardinality**	**Additional Notes / IMPACT Item #**
2F	Sending Person Specialty	The specialty of the sending person, if appropriate (e.g. cardiology, rheumatology, physical therapy, etc.)	Multiple	
2G	Sending Person Address	Physical address, phone, Direct address, and email for the sending person	Multiple	
3A	Sending Care Setting Type Description	Name of the type of care setting where the document is initiated	Multiple	3.4
3B	Sending Care Setting Type Code	Code for the type of care setting where the document is initiated	Multiple	
4A	Receiving Organization Name	Facility where the document will be received and updated	Single	
4B	Receiving Organization Provider ID (NPI)	The National Provider Identifier of the receiving organization	Single	
4C	Receiving Organization ID	Other Identifier(s) for the receiving organization	Multiple	
4D	Receiving Organization Address	Physical address, phone, Direct address, and email for the receiving organization	Multiple	
5A	Receiving Person Name	Care Team Member who will be receiving the document	Single	
5B	Receiving Person Provider ID (NPI)	The National Provider Identifier of the receiving person	Single	
5C	Receiving Medicare/Medicaid Provider ID	The Medicare/Medicaid identifiers of the receiver	Multiple	
5D	Receiving Person ID	Other Identifier(s) for the receiving person	Multiple	
5E	Receiving Person Role	Type of Care Team Member who will updating the document, e.g., patient, principal care physician, Care Plan manager, principal health care provider, principal caregiver, others (specialist, therapist, etc)	Multiple	9.1, 9.2, 9.3, 9.4, 9.5
5F	Receiving Person Specialty	The specialty of the receiving person, if appropriate (e.g. cardiology, rheumatology, physical therapy, etc.)	Multiple	
5G	Receiving Person Address	Physical address, phone, Direct address, and email for the receiving person	Multiple	
6A	Receiving Care Setting Type Description	Name of the type of care setting where the document will be received and updated	Multiple	
6B	Receiving Care Setting Type Code	Code for the type of care setting where the document will be received and updated	Multiple	

Care Team Members/Context				
#	Data Elements	Data Element Descriptions	Cardinality	Additional Notes / IMPACT Item #
7A	Task Context Name	The name of the task that the Receiving user will be performing when they are filling out the form (in this case the Care Plan or Home Health Plan of Care)	Multiple	
7B	Task Context Code	Code representing the task	Multiple	
8	Encounter Type	Identifies the sender's type of encounter with as much specificity as available, or as required by a template. E.g., outpatient encounter, outpatient cardiology encounter.	Single	
9	Purpose of Communication	Describes purpose for the sending entity to initiate Care Plan exchange	Multiple	Can be defined as Initiation of Care Plan or Modification of Care Plan
10A	Recipient Language	Language in which the response should be sent	Multiple	
10B	Recipient Language Code	Code representing the language	Multiple	
11	Document Completion Date	The date which the document was completed		
11A	Document Completer Organization ID	Identifies the organization where the document was completed	Single	
11B	Document Completer Organization Address	Physical address, phone, and email for the organization where the document was completed	Single	
15A	Document Completer Person	Care Team Member who completed the document	Multiple	
15B	Document Completer Person ID	Identifier of the Care Team Member completing the document	Single	
15C	Document Completer Person License, Certification, or Role	Type of Care Team Member completing the document, e.g., physician, nurse (e.g. RN, CCM), patient's personal caregiver	Single	
15D	Document Completer Person Address	Physical address, phone, and email for the initiating person	Single	

Table 17: Care Team Member/Context Categories

12.2 Care Plan Document

This section contains items that describe the document (e.g., Document Name, Document Identifier), and the fields it contains (Document owner, Document type, Field names). It also includes versioning and presentation items.

Care Plan Document					
Section Name & Description	**#**	**Data Elements**	**Data Element Descriptions**	**Cardinality**	**Additional Notes / IMPACT Item #**
Name: Care Plan Document Description **Description:** Things that describe the document (e.g., Document Name, Document Identifier), and the fields it contains (Document owner, Document type, Field names)	1A	Document ID	The identification code of the Care Plan document	Single	1.1
	1B	Document Description	The description of the Care Plan document	Single	
	1C	Document Type	The type of Care Plan document (Plan of Care; Care Plan; Home Health Plan of Care)	Single	
	1D	Document Version	Version of the Care Plan being sent	Single	10.20.1
	1E	Date Document Reconciled	Date when document was reconciled based on previous version	Single	10.20.2
	1F	Reconciler Name	Name of Care Team Member who reconciled document	Single	10.20.3
	1G	Related Document ID	The identification code of the document (e.g., Plan of Care) related to the Care Plan document	Multiple	
	1H	Related Document Description	The description of the document (e.g., Plan of Care) related to the Care Plan document	Multiple	
	2A	Section ID	The identification code of a section	Multiple	
	2B	Section Name	The name of a section in the document	Multiple	
	2C	Section Type	The type of a section in the document	Multiple	
	2D	Section Description	The description of a section in the document	Multiple	
	3	Status	The status of the document (e.g., Active, Inactive)	Single	
	4	Effective Date/Time	Date and time when the document is in effect	Single	
	4	Document Format	The format that the Care Plan document is sent back in	Single	
	5	Media element	A non-computable image or other media element to be displayed with the document	Multiple	
Name: Document Change Elements **Description:** Elements modified in previous versions of Care Plan Document	6	Sections Modified	Lists sections updated document last version	Multiple	10.20.5.2
	7	Significance of Changes	Identifies severity of changes in terms of H/M/L	Multiple	10.20.5.3
Name: Presentation elements	8	Descriptor text	Non-computable text block to be displayed with the document	Multiple	

Care Plan Document					
Section Name & Description	**#**	**Data Elements**	**Data Element Descriptions**	**Cardinality**	**Additional Notes / IMPACT Item #**
Description: Elements displayed on the document (not computable)	9	Question field	A field providing a question within the document	Multiple	
Name: Question elements	10	Input field	A field to prompt for input within the document	Multiple	

Table 18: Care Plan Document Elements

12.3 Privacy & Security

The Privacy and Security table below contains elements needed to support the query for and exchange of patient consents.

Privacy & Security				
#	**Data Elements**	**Data Element Descriptions**	**Cardinality**	**Additional Notes / IMPACT Item #**
1A	Requester ID	The unique identifier for the person or organization requesting the Consent Directive	Single	
1B	Requester Name	Name of the person requesting the Consent Directive	Single	
1C	Requester Organization	Organization that the requester is associated with or the organization that is requesting the consent.	Single	
1D	Requester Address	Address of the person or organization requesting the data	Single	
1E	Requested User(s)	Person, organization, or role permitted to use the data	Single	
1F	Requested Purpose(s)	Purpose for which the data may be used	Single	
2	Information Requested	Information for which is being requested (query you want answered)	Single	
3	Requester Role	Role of individual requesting Patient data	Single	
4A	Consent Originator ID	Unique identifier for the organization that is responsible for the consent	Single	
4B	Consent Originator Organization	Name of the organization that is responsible for the consent	Single	
5	Community ID	How you request documents across HIE's	Single	
6	Document ID	An identifier for the Patient consent directive for Release of Information document	Single	
7	Consent ID	The unique identifier associated with the Consent Directive	Single	

Privacy & Security			
#	**Data Elements**	**Data Element Descriptions**	**Cardinality**	**Additional Notes / IMPACT Item #**
8	Consent Directive Location	Identifier or other information that will allow the requester to determine where to send the query for the Consent Directive	Single	
9	Denial of Receipt Code	An indicator that the query recipient is unable to respond to the query	Single	The content of this field should not indirectly expose additionally protected Patient data
10	Type of Consent Requested	A code indicating the type of Consent Directive that is of interest to the requester	Single	
11A	Consent Directive ID	Unique identifier that refers to a specific privacy Consent Directive instance	Single	
11B	Consent Directive Type	New/Update	Single	
11C	Consent Directive Status	Active/Inactive	Single	
12	Revocation Reason	Code that indicates the reason that Consent Directive was revoked.	Single	
13	Purpose of Use	The types of activities or services that the Consent Directive allows	Single	
14A	Obligation Code	Obligations that the recipient must adhere to	Multiple	
14B	Obligation Text	Text that describes the obligations that the recipient must adhere to	Multiple	Includes Prohibition on Re-Disclosure
15	Document Image	Copy of the signed Consent Directive document	Single	
16	Custodian	Organization that has the official record of the Consent Directive	Single	
17	Patient/Subject	Person whose records are covered by the Consent Directive	Single	
18	Originator	Organization that is responsible for the Patient Consent Directive	Single	
19A	Allowed Recipient	Persons, organizations, roles that are permitted to use the data		Repeating dataset
19B	Allowed Purpose	The types of activities or services that the Consent Directive allows		Repeating dataset
20A	Allowed Information	Types of data that are permitted to be disclosed		Repeating dataset
20B	Allowed Information Instance	Identifiable data that are permitted to be disclosed: disclosure may be specific to an instance, e.g., a particular encounter or treatment.		Repeating dataset
21	Signature	Electronic signature or image of signature	Single	
22	Signer	Name of person who signed the Consent Directive	Single	

		Privacy & Security		
#	**Data Elements**	**Data Element Descriptions**	**Cardinality**	**Additional Notes / IMPACT Item #**
23	Relationship of signer to Patient	Relationship of the person who signed the Consent Directive to the subject of the Consent Directive	Single	
24	Witness	Person who attested to the Consent Directive signature	Single	
25	Signature date	Date the Consent Directive was signed	Single	
26	Effective date/time	First date and time when the Consent Directive is in effect	Single	
27	Expiration date/time	Last date and time when the Consent Directive is in effect	Single	
28	Expiration Condition	Status that would cause the Consent Directive to expire	Single	
29	Expiration event	Event that would cause the Consent Directive to expire	Single	
30	Insurance Type	Source of payment for the services covered by the Consent Directive	Single	
31A	Policy ID	Unique identifier for a privacy policy	Single	
31B	Policy Description	Text description of the privacy policy	Single	
31C	Policy Type	Reference to the law or policy that governs the Consent Directive	Single	
32	Security Label	The means used to associate a set of security attributes with a specific information object as part of the data structure for that object.	Multiple	
33	Document/Template Completer Identity	Documentation if the document/template completer wants to remain anonymous with subsequent disclosure (yes or no)	Single	

Table 19: Privacy & Security Elements

12.4 Patient Data

The Patient Data table includes demographic and clinical data used for any document.

		Patient Data		
#	**Data Elements**	**Data Element Descriptions**	**Cardinality**	**Additional Notes / IMPACT Item #**
1	Patient ID	The evaluated Patient's unique identifier normally used for internal implementation tracking purposes. Does not need to be the evaluated Person's "real" identifier, although it may be used for that purpose. May reference the organization that assigned the patient ID.	Multiple	
2	Patient Name	Name of Patient. May include metadata tags qualifying the type of name.	Single	5.1

#	Data Elements	Data Element Descriptions	Cardinality	Additional Notes / IMPACT Item #
	Patient Data			
3	Address	Location information for the evaluated person. Includes physical address, phone, email and Direct addresses	Multiple	5.5
4	Birth date/time	Specific or ranges of birth dates and times of evaluated persons	Single	5.2
5	Gender	One or more gender categories of evaluated persons	Single	5.4
6	Current Age	Specific age or age range of evaluated persons (May need to be expressed in minutes, days, months, and years.)	Single	5.4
7	Preferred Language	One or more languages used by evaluated persons including native language (as applicable)	Multiple	
8	Ethnicity	One or more ethnicities of evaluated persons	Multiple	5.4
9	Race	One or more racial categories of evaluated persons	Multiple	5.4
10	Patient Support Identification	Lists individuals that support patients who cannot provide consent on their own (i.e. medically complex patients, children, etc.) (Includes Healthcare Agent, Alternative Healthcare Agent, Primary Care Giver at Home)	Multiple	6
11	Patient Preferences	Describes Patient preferences for care	Multiple	8.9.1
12	Patient Expectations of Care	Lists patient expectations for care provided	Multiple	8.9.2
13	Patient Religious/Cultural Issues in Care	Describes specific religious and/or cultural issues with respect to care received	Multiple	8.8.3

Table 20: Patient Data Elements

Appendix A: Care Plan Component Sources

Health Concerns (including Risks and Barriers, Active and Inactive)

Candidate Sources for Health Concerns		

• Age/Gender
• Chief complaint/Reason for Visit/Reason for Referral
• History of Present Illness
• Review of Systems
• Medical History/History of Past Illnesses
• Pregnancy History
• Surgical History/Anesthesia History
• Family History/Race and Ethnicity
	• Social History/Environmental factors
	  o Setting, Housing and transportation
	  o Availability of support, relationships, caregiver characteristics
	  o Financial issues (e.g. insurance, eligibility for disability)
	  o Religious practices
	  o Educational Achievement
	  o Occupation(s)
	  o Diet
	    – Exercise
	    – Exposures
	      ▪ Substance Use/Abuse (tobacco, alcohol, recreational drugs)
	      ▪ Infectious (e.g. related to Sexual Behaviors)
	      ▪ Radiation
	      ▪ Airborne
	      ▪ Ingested (e.g. contaminated water or food)
	  o Safety hazards (e.g. use of helmet, seatbelts, throw rugs, etc.)
		• Allergies/Intolerances
		• History of response to prior interventions/treatments
		• Medications
		• Immunization Status
		• Medical Equipment, High Risk Devices, Catheters, Stents
		• Vital Signs
		• Physical Exam
		• Procedures
		• Pre/Post-Procedure Diagnosis
		• Pre/Post-Op Diagnosis
		• Complications
		• Results
		• Assessment and Plan
		• Hospital Admission/Discharge Diagnosis
		• Problems
		• Heads Up/Special Alerts
		• Wellness
		• Health Concerns (not listed elsewhere)

Goals

Candidate Sources for Goals	

• Over-Arching Patient goals, values, preferences, and expectations, from the point of view of the:
  o Patient
  o Provider (including Healthcare Organization/System)
	• Concern/Intervention-Specific Goals
	  o Desired Outcomes
	  o Milestones
	  o Patient Readiness for Change
	  o Patient Priority for Goal
	  o Provider(s) Priority for Goal
	  o Expected Outcome/Prognosis (i.e. likelihood of achieving Goal: poor, guarded, fair, good, excellent)
	  o Health Concern(s) addressed by Goal
	  o Targeted Intervention(s) to achieve Goal

Current and Future Interventions/Instructions (including setting, dates, responsible parties, contact info, expected outcomes, and related health concerns and goals)

Use Case Development and Functional Requirements for Interoperability

Longitudinal Coordination of Care (LCC) Initiative

Candidate Sources for Interventions/ Instructions
• Follow-up Plans • Patient/Caregiver education • Instructions to the patient/caregiver (including behavioral changes, symptoms/findings to monitor and appropriate response to those symptoms/findings) • Advance Directives • Diet • Medications • Medical Equipment • Support services • Planned Procedures/Treatments (including wound, catheter care and injectable medications/immunizations, PT/OT/ST) • Planned Encounters/Consultations • Planned Assessments (including tests)

Health Status Evaluation Insight & Judgment

Candidate Sources for Health Status Evaluation		

• Age
• Chief complaint/Reason for Visit/Reason for Referral
• History of Present Illness
• Review of Systems
• Hospital Consultations
• Hospital Course
• Medical History
• Pregnancy History
• Surgical History
• Family History
• Social History/Environmental factors
  o Setting, Housing and transportation
  o Availability of support, relationships, caregiver characteristics
  o Financial issues (e.g., insurance, eligibility for disability)
  o Religious practices
  o Educational Achievement
  o Occupation(s)
  o Diet
  o Exercise
  o Exposures
    – Substance Use/Abuse (tobacco, alcohol,
	• Allergies/Intolerances
	• History of response to prior interventions/treatments
	• Medications
	• Immunization Status
	• Medical Equipment, High Risk Devices, Catheters, Stents
	  o Vascular
	  o Enteral
	  o Urinary
	  o Cardiac
	  o Pulmonary
	  o Neurological
	  o Other
	• Direct Observation of the Patient
	  o Vital Signs
	  o General Status
	  o Physical Findings (e.g. Skin, Head, Eye, Ear, Nose, Ears & Nose & Mouth & Throat, etc.)
	  o Mental Status Behavior including Cognition and Mood / Behavioral Health Diagnoses and Observations
	    – Level of Consciousness (overlaps with Neuro and General)
	    – Appearance
	    – Behavior / Psychomotor
	    – Mood and affect
	    – Speech / Language
	    – Cognition (e.g. orientation, memory, literacy, calculations, etc.)
	    – Thoughts (Content, Process)
	    – Perception
		• Nutritional status
		• Procedures
		• Post-Procedure Diagnosis
		• Post-Op Diagnosis
		• Complications
		• Results

Candidate Sources for Health Status Evaluation		

recreational drugs)
– Infectious (e.g. related to Sexual Behaviors)
– Radiation
– Airborne
– Ingested (e.g. contaminated water or food)
o Safety hazards (e.g. use of helmet, seatbelts, throw rugs, etc.)
	– Dissociative symptoms
	– Illusions
	– Hallucinations
	– Insight & Judgment
	o Functional Status
	o Excretion/Secretion Inspection
	    – Urine
	    – Stool
	    – Sputum
	    – Other	

Appendix B: Related Use Cases

- ONC, S&I Longitudinal Coordination of Care Initiative Elements in Transitions of Care and Plan of Care for LTPAC Use Case
- ONC, S&I Transitions of Care Use Case V1.1
- ONC, S&I Electronic Submission of Medical Documentation (esMD) Author of Record Level 2 Use Case
- Visiting Nursing Services of New York; Developing Interoperability Standards for Homecare Plan of Care Exchange: Use Case
- AHIC Consultations and Transfers of Care
- AHIC Consumer Empowerment; Consumer Access to Clinical Information
- AHIC Common Data Transport
- AHIC Personalized Healthcare
- NHIN Direct Primary Care Provider refers patient to specialist including summary care record
- NHIN Direct Primary Care Provider refers patient to hospital including summary care record
- NHIN Direct Specialist sends summary care information back to referring provider
- NHIN Direct Hospital sends discharge information to referring provider
- IHE Patient Care Coordination (PCC) Technical Framework Supplement: Patient Plan of Care (PPOC)

Appendix C: Previous Work Efforts

1. Health Information Technology Standards Panel Specification (HITSP) IS03: The Consumer Empowerment and Access to Clinical Information via Networks Interoperability Specification defines specific standards needed to assist patients in making decisions regarding care and healthy lifestyles (e.g., registration information, medication history, lab results, current and previous health conditions, allergies, summaries of healthcare encounters and diagnoses). This Interoperability Specification defines specific standards needed to enable the exchange of such data between patients and their caregivers via networks.

2. Health Information Technology Standards Panel Specification (HITSP) IS09: The Consultations and Transfers of Care Interoperability Specification describe the information flows, issues and system capabilities that apply to a provider requesting and a patient receiving a consultations from another provider.

3. Health Information Technology Standards Panel Specification (HITSP) C32: The Summary Documents Using HL7 Continuity of Care Document (CCD) Component describes the document content summarizing a consumer's medical status for the purpose of information exchange. The content may include administrative (e.g., registration, demographics, insurance) and clinical (problem list, medication list, allergies, test results, etc.) information. This Component defines content in order to promote interoperability between participating systems such as Personal Health Record Systems (PHRs), Electronic Health Record Systems (EHRs), Practice Management Applications and others.

4. Health Information Technology Standards Panel Specification (HITSP) C83: The CDA Content Modules Component defines the content modules for document based HITSP constructs utilizing clinical information. These Content modules are based on the Integrating the Healthcare Enterprise –Patient Care Coordination (IHE PCC) Technical Framework Volume II, Release 4. That technical framework contains specifications for document sections that are consistent with all implementation guides for clinical documents currently selected for HITSP constructs.

5. Health Information Technology Standards Panel Specification (HITSP) IS107: This Interoperability Specification consolidates all information exchanges and standards that involve an EHR System amongst the thirteen HITSP Interoperability Specifications in place as of the February 13, 2009 enactment of the American Recovery and Reinvestment Act (ARRA). This Interoperability Specification is organized as a set of HITSP Capabilities, with each Capability specifying a business service that an EHR system might address in one or more of the existing HITSP Interoperability Specifications (e.g., the Communicate Hospital Prescriptions Capability supports electronic prescribing for inpatient prescription orders).

6. Health Level 7: The CDA Release 2.0 provides an exchange model for clinical documents (such as discharge summaries and progress notes) and brings the healthcare industry closer to the realization of an electronic medical record. By leveraging the use of XML, the HL7 Reference Information Model (RIM) and coded vocabularies, the CDA makes documents both machine readable, so they are easily parsed and processed electronically, and human-readable, so they can be easily retrieved and used by the people who need them. CDA documents can be displayed using XML-aware Web browsers or wireless applications such as cell phones. While Release 2.0 retains the simplicity of rendering and clear definition of clinical documents formulated in Release 1.0 (2000), it provides state-of-the-art interoperability for machine-readable coded semantics. The product of 5 years of improvements, CDA R2 body is based on the HL7 Clinical Statement model, is fully RIM-compliant and is capable of driving decision support and other sophisticated applications while retaining the simple rendering of legally authenticated narrative.

Appendix D: References

- American Health Information Community, AHIC: http://www.phdsc.org/health_info/american-health-info.asp
- American Health Information Management Activities (AHIMA); Opportunities for Engaging Long-Term and Post-Acute Care Providers in Health Information Exchange Activities. The Opportunities Report was an HHS/ASPE report produced under contract and in collaboration with AHIMA. http://wiki.siframework.org/file/view/Finall+Opportunities+Report+_3-15.pdf
- Centers for Medicare & Medicaid Services; Outcome and Assessment Information Set (OASIS): http://www.cms.gov/Medicare/Quality-Initiatives-Patient-Assessment-Instruments/OASIS/index.html?redirect=/oasis/

- Conditions of Participation: http://www.ecfr.gov/cgi-bin/text-idx?c=ecfr&SID=e69a1be2bf01584c28a9948ca4c508a8&tpl=/ecfrbrowse/Title42/42cfr484_main_02.tpl (See 484.18 for Plan of Care requirements)
- Health Level Seven, HL7: http://www.hl7.org/
- Home Health Certification and Plan of Care (CMS Form 485) Instructions: http://www.med-quest.us/pdfs/appendix05/e4-e8485homehealthcertandplanofcaread8230_.pdf
- Kaiser Family Foundation: http://kff.org/
- Meaningful Use Stage 1 Final Rule; Department of Health and Human Services: http://edocket.access.gpo.gov/2010/pdf/2010-17207.pdf
- Meaningful Use Stage 2 NPRM; Department of Health and Human Services: http://www.gpo.gov/fdsys/pkg/FR-2012-03-07/pdf/2012-4443.pdf
- Nationwide Health Information Network, NHIN: http://www.healthit.gov/policy-researchers-implementers/nationwide-health-information-network-nwhin
- ONC-SI-UC-Simplification Spreadsheet (Current Version) http://wiki.siframework.org/Cross+Initiative+-+Use+Case+Simplification+SWG
- Sabacare.com; The Clinical Care Classification (CCC) System: http://www.sabacare.com
- State Operation's Manual Guidance to Surveyors: http://www.cms.gov/Medicare/Provider-Enrollment-and-Certification/SurveyCertificationGenInfo/Downloads/SCLetter11_11.pdf
  - **Note:** Goals, outcomes, and objectives are used interchangeably but not defined. The SOM Exhibits is the only place where outcomes/goals are addressed in detail: http://www.cms.gov/Regulations-and-Guidance/Guidance/Manuals/downloads/som107_exhibit_103.pdf
- The American National Standards Institute (ANSI) Healthcare Information Technology Standards Panel; HITSP: http://www.HITSP.org
- Unofficial Compilation of the Older Americans Act of 1965 Part B—Supportive Services and Senior Centers Program Authorized: http://www.aoa.gov/AoA_programs/OAA/oaa_full.asp#_Toc153957690

Appendix E: Privacy and Security Assumptions

Security attributes include the capabilities needed to establish trust between systems, provide confidentiality while in transit, ensure authenticity of the data, and ensure that only authorized individuals have access to the data.

Feature	Feature Applicability
Audit Logging	X
Authentication (Person)	X
Authentication (System)	X
Data Integrity Checking	X
Error Handling	X
HIPAA De-Identification	X
Holding Messages	
Non-repudiation	X
Pseudonymize and Re-Identify	
Secure Transport	X
Transmit Disambiguated Identities	X
User Login	X

Table 21: Common Transactions (not displayed as part of the sequence diagram)

Appendix F: Glossary

These items are included to clarify the intent of this Use Case. They should not be interpreted as approved terms or definitions but considered as contextual descriptions. There are parallel activities underway to develop specific terminology based on consensus throughout the industry.

Activities of Daily Living (ADL): ADLs are activities related to personal care. They include bathing or showering, dressing, getting in and out of bed or a chair, walking, using the toilet, and eating. If a sample person has difficulty performing an activity by himself/herself and without special equipment, or does not perform the activity at all because of health problems, the person is deemed to have a limitation in that activity. The limitation may be temporary or chronic at the time of the survey. (CMS, 2008. https://www.cms.gov/Research-Statistics-Data-and-Systems/Research/MCBS/downloads/2008_Appendix_B.pdf)

Care Coordination: Care coordination is a function that helps ensure that the patient's needs and preferences for health services and information sharing across people, functions, and sites are met over time. Coordination maximizes the value of services delivered to patients by facilitating beneficial, efficient, safe, and high-quality patient experiences and improved healthcare outcomes. (National Quality Forum, 2006. "NQF Quality Connections: Care Coordination." https://www.qualityforum.org/Home.aspx)

Care Coordinator: Individual who supports clinician(s) in the management of health and disease conditions. These can include case managers and others.

Care Plan: A consensus-driven dynamic plan that represents all of a patient's and Care Team Members' prioritized concerns, goals, and planned interventions. It serves as a blueprint shared by all Care Team Members, including the patient, to guide the patient's care. A Care Plan integrates multiple interventions proposed by multiple providers and disciplines for multiple conditions.

A Care Plan represents one or more Plan(s) of Care and serves to reconcile and resolve conflicts between the various Plans of Care developed during the continuum of care for a specific patient. Unlike the Plan of Care, a Care Plan includes the patient's life goals and enables Care Team Members to prioritize interventions. The Care Plan also serves to enable longitudinal coordination of care.

Care Plan Manager: Individual who supports a patient and/or consumer by coordinating with clinicians in the management of health and disease conditions, physical and cognitive functioning, and issues related to health and human services.

Care Team: The set of persons who manage and/or provide care or service as specified and agreed to in the Care Plan, including clinicians, other paid and informal caregivers, communication sponsor and the patient.

Care Team Member: Persons who manage and/or provide care or service as specified and agreed to in the applicable Care Plan, including: clinicians and/or providers, other paid and informal caregivers, and the patient.

Clinical Support Staff: Individuals who support the workflow of clinicians.

Communication Sponsor: An individual from the sending team that knows which individual (role or person) to contact for each piece of the Care Plan.

Consumer: Member of the public that includes patients as well as caregivers, patient advocates, surrogates, family members, and other parties who may be acting for, or in support of, a patient receiving or potentially receiving healthcare services.

Electronic Health Record (EHR): An electronic, cumulative record of information on an individual across more than one healthcare setting that is collected, managed, and consulted by professionals involved in the individual's health and care. This EHR description encompasses similar information maintained on patients within a single care setting (a.k.a., Electronic Medical Record (EMR)).

Electronic Medical Record: See EHR definition above.

Geographic Health Information Exchange/Regional Health Information Organization: A multi-stakeholder entity, which may be a freestanding organization (e.g., hospital, healthcare system, partnership organization) that supports health information exchange and enables the movement of health-related data within state, local, territorial, tribal, or jurisdictional participant groups. Activities supporting health information exchanges may also be provided by entities that are separate from geographic health information exchanges/Regional Health Information Organizations including integrated delivery networks, health record banks, and others.

Goal: A defined outcome or condition to be achieved in the process of patient care. Includes patient defined Goals (e.g., longevity, function, comfort) and clinician specific Goals to achieve desired and agreed upon outcomes.

Health Concern: Reflect the issues, current status, risks and barriers to care as well as "likely course" identified by the patient or other Care Team Members that require intervention(s), including education or monitoring, to increase the likelihood of achieving the patient's or provider's Goals of care.

Health Information Exchange (HIE): An electronic network for exchanging health and patient information among healthcare delivery organizations, according to specific standards, protocols, and other agreed criteria. These functional capabilities may be provided fully or partially by a variety of organizations including freestanding or geographic health information exchanges (e.g., Regional Health Information Organizations (RHIOs)), integrated care delivery networks, provider organizations, health record banks, public health networks, specialty networks, and others supporting these capabilities. This term may also be used to describe the specific organizations that provide these capabilities such as RHIOs and Health Information Exchange Organizations.

Health Information Technology for Economic and Clinical Health (HITECH) Act: Enacted as part of the American Recovery and Reinvestment Act (ARRA) of 2009, was signed into law on February 17, 2009, to promote the adoption and meaningful use of health information technology. Subtitle D of the HITECH Act addresses the privacy and security concerns associated with the electronic transmission of health information, in part, through several provisions that strengthen the civil and criminal enforcement of the HIPAA rules.

Health Insurance Portability and Accountability Act (HIPAA): The Administrative Simplification provisions of the Health Insurance Portability and Accountability Act of 1996 (HIPAA, Title II) require the Department of Health and Human Services (HHS) to adopt national standards for electronic health care transactions and national identifiers for providers, health plans, and employers. To date, the implementation of HIPAA standards has increased the use of electronic data interchange. Provisions under the Affordable Care Act of 2010 will further these increases and include requirements to adopt: operating rules for each of the HIPAA covered transactions; a unique, standard Health Plan Identifier (HPID); and a standard and operating rules for electronic funds transfer (EFT) and electronic remittance advice (RA) and claims attachments. (CMS 2014 HIPAA Definition: http://www.cms.gov/Regulations-and-Guidance/HIPAA-Administrative-Simplification/HIPAAGenInfo/index.html?redirect=/hipaageninfo/)

Healthcare Information Technology Standards Panel (HITSP): A body created in 2005 in an effort to promote interoperability and harmonization of healthcare information technology through standards

that would serve as a cooperative partnership between the public and private sectors. HITSP's contract ended in April 2010. A similar role standards harmonization, served by HITSP, is now performed within the ONC Standards and Interoperability Framework.

Healthcare Payer: Insurer, including health plan, self-insured employer plan, and third party administrator, providing healthcare benefits to enrolled members and reimbursing provider organizations.

Home Health Certification and Plan of Care (HHPoC): The document formally known as CMS Form 485. Form CMS-485 meets the regulatory requirements (state and federal) for both the physician's home health Plan of Care and home health certification and recertification requirements.

Instruction: Information or directions to the patient and other providers including how to care for the individual's condition, what to do at home, when to call for help, any additional appointments, testing, and changes to the medication list or medication instructions, clinical guidelines and a summary of best practice.
Instructions are a detailed list of actions intended to help to achieve the patient's Goals of care and are considered a type of, or part of, interventions.

Instrumental Activities of Daily Living (IADL): IADLs are activities related to independent living. They include preparing meals, managing money, shopping for groceries or personal items, performing light or heavy housework, and using a telephone. If a sample person has any difficulty performing an activity by himself/herself, or does not perform the activity at all, because of health problems, the person is deemed to have a limitation in that activity. The limitation may be temporary or chronic at the time of the survey. Sample persons who are administered a community interview answer health status and functioning questions themselves, unless they are unable to do so. A proxy, such as a nurse, always answers questions about the sample person's health status and functioning for long-term care facility interviews. Facility interviewers do not ask about the sample person's ability to prepare meals or perform light or heavy housework since they are not applicable to the sample person's situation; however, interviewers do question proxies about the sample person's ability to manage money, shop for groceries of personal items, or use a phone. (CMS, 2008. https://www.cms.gov/Research-Statistics-Data-and-Systems/Research/MCBS/downloads/2008_Appendix_B.pdf)

Interim Order: For Home Health, refers to an order received for a patient after the initial start of care orders. (https://advhomecare.org/patients-caregivers/home-care-glossary.html)

Intervention: Actions taken to maximize the prospects of achieving the patient's or providers' Goals of care, including the removal of barriers to success.
Instructions and the performance of monitoring are subsets of Interventions.

Medically and Functionally Impaired Individual: Individuals identified as clinically and organizationally complex with comorbidities compounded by social, financial and environmental issues. These individuals require and receive health care services from multiple sites of care (including home), over long periods of time, from many clinicians and social support providers.

Office of the National Coordinator (ONC): Office of the National Coordinator for Health Information Technology; serves as the Secretary's principal advisor on the development, application, and use of health information technology in an effort to improve the quality, safety, and efficiency of the nation's health through the development of an interoperable harmonized health information infrastructure.

Others: Individuals or entities other than Principal Care Physician, Principal Health Care Provider, Principal Care Giver, or Care Plan Manager as defined. Can include but is not limited to relevant Specialists, Therapists, SW, etc.

Outcome: Also known as "Health Status Evaluation." Status, at one or more points in time, that evaluates or measures the results of activities defined in Care Plan Goals and/or Interventions.

Patient: Member of the public who receives healthcare services from, but not limited to, ambulatory medical and/or surgical departments, emergency department, physician's and/or Non-Physician Provider's (NPP) office, Inpatient hospitals including Critical Care Hospitals and the VAH, Medical Home Care Models, Home Health and Hospice (HHH) entities that provide care within the patient's home environment and/or a public health agency/department, including services provided within the criminal justice system.

Patient Status: User-defined code representing the status of the episode of care: for instance, Active Inpatient, Discharged. (AHRQ 2014.
http://ushik.ahrq.gov/ViewItemDetails?system=mdr&itemKey=74596000)

Personal Health Record (PHR): a health record that is initiated and maintained by an individual. It can be accessed via a computer or mobile application (i.e. Healthvault) or through the web (i.e. patient portal). An ideal PHR would provide a complete and accurate summary of the health and medical history of an individual by gathering data from many sources and making this information accessible online to anyone who has the necessary electronic credentials to view the information. Because a patient's record can be made available through a variety of applications with authorized use to display the patient information, the PHR is referred to as an application. PHRs can be delivered in various platforms or systems. Most prominent are electronic and web-based.

PHR Application: May be a local computer, thumb drive or through an online service.

Plan of Care: A clinician driven plan that focuses on a specific health concern or closely related concern. It represents a specific set of related conditions that are managed or authorized by a clinician or provider or certified by a clinician or provider.

The Plan of Care represents a single set of information that is generally developed independently. When two or more Plans of Care exist, these plans are reconciled into a Care Plan.

Provenance: The inputs, entities, systems, and processes that influence data of interest, in effect providing a historical record of the data and its origins (Systems and Internet Infrastructure Security (SIIS), 2013).

Captures where data came from, how it was derived, manipulated, and combined, and how it has been updated over time (PANDA, 2013).

Regional Health Information Organization (RHIO): A type of health information exchange organization (HIO) that brings together stakeholders within a defined geographic area and governs health information exchange among them for the purpose of improving health and care in that community. (HRSA, 2014.
http://www.hrsa.gov/healthit/toolbox/RuralHealthITtoolbox/Collaboration/whatisrhio.html)

Treatment Plan: A domain-specific plan managed by a single discipline focusing on a specific treatment or intervention.