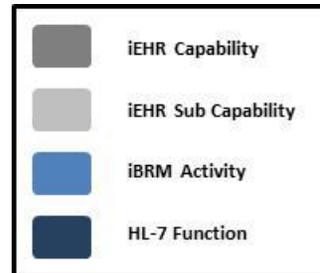


## Business Functional Requirements

The following sections outline the current iEHR Capability Definitions and Diagrams, providing the definition in current use at the time of this version of the iPLRD; forming the basis for the decisions concerning assignment of requirements. The iEHR Capability Diagrams are graphical representations of the iEHR capabilities (including sub capabilities) and their associated functions and business activities. The diagrams display the content of the draft Integrated Program Level Requirements Document (iPLRD) spreadsheet as of April 27, 2012. The diagrams depict the mapping of the iEHR capabilities and sub capabilities to the integrated Business Reference Model (iBRM) and the functions of the Health Level Seven EHR-System Functional Model (HL7 EHR-S FM) following the review by the interagency team, which provided the initial consensus on these program level requirements.

Each diagram depicts one capability, presented in priority order as agreed upon by the Interagency Clinical Informatics Board (ICIB) in December 2011. The Pharmacy capability (see slides 16-19, 31-32) is the sole exception. Given the complexity of this capability, separate diagrams are presented for each of its sub capabilities. These depictions clearly represent the individual sub capabilities' iBRM activities and HL7 functions as they relate to the capability as a whole.

Color-coding differentiates key aspects of the data, namely the iEHR capabilities, iEHR sub capabilities, iBRM activities, and HL7 activities. A dark grey box at the top of each diagram represents the iEHR capabilities. This information correlates to the "iEHR Capability" column (Column D) of the aforementioned spreadsheet. Where applicable, a light grey box or boxes below the capability are used to represent the iEHR sub capability or sub capabilities. This information is from the "iEHR Capability Sub Capability" field (Column E) of the spreadsheet. Light blue boxes represent the iBRM activities associated with the sub capability and describe the common functional workflows and needs of the Department of Defense (DoD) and Department of Veterans Affairs (VA). This data is from the "iBRM Activity Name" field (Column G) of the spreadsheet. The dark blue boxes represent HL7 activities. The HL7 activity information was taken from the "HL7 Name" field (Column J) of the spreadsheet. A dark blue box connected by a solid line to a light blue box indicates HL7 activities that are incorporated through an iBRM activity. The dark blue boxes grouped together by a dashed line and connected by a solid line to the capability box indicate HL7 activities that are tied to the capability, but do not relate directly to an iBRM activity. For ease of reference, this color-coding information is summarized in the key to the right.

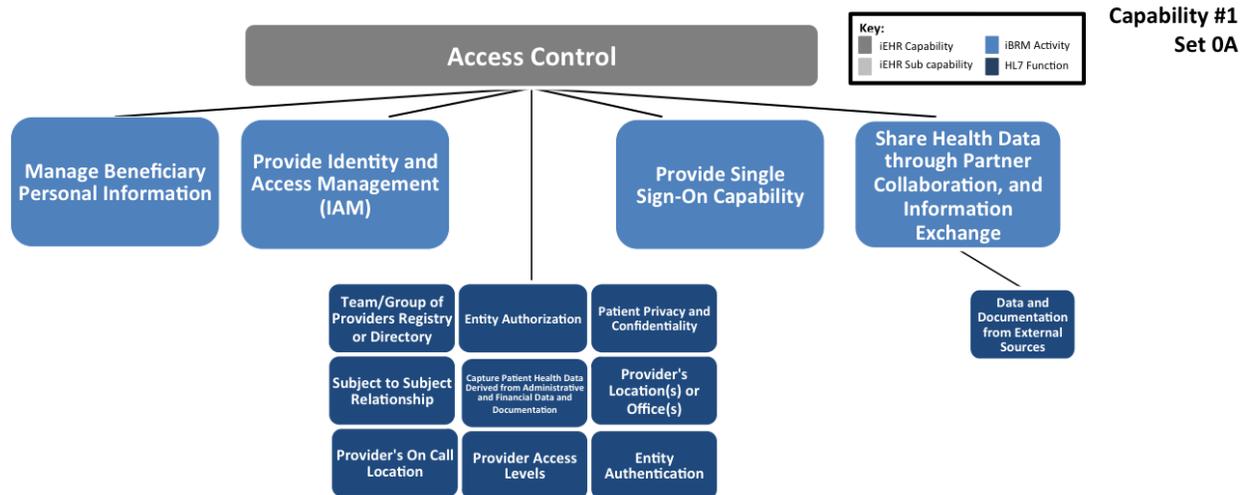


### Access Control (Capability 1, Set 0A)

The Access Control capability identifies patients in an electronic health record (EHR) system and controls access to the resources in that system. Its goal is to limit, control, and provide appropriate access to health data and information. The capability authenticates users and grants or denies access to information based upon user role-profile attributions and access authorization level. The Access Control capability safeguards and manages individuals' personal and health information and provides the ability to create and update sets of access control permissions granted to specific users. This information includes beneficiaries' medical history, test and laboratory results, insurance information, demographic information, and other data.

The Access Control capability includes the functions of a single sign-on application, which verifies users' credentials once in a session but provides access to multiple applications. Other functions of Access Control include properly identifying clinical organizations, departments, patients, health employees, and care providers and authorizing access to health information systems and networks. This enables the sharing of subsets of information with certain customers, vendors, and partners as needed, such that the information available can be adapted to particular users or groups. Care teams will be able to access results and output from ancillary services, enabling the flow and accessibility (across multiple sites) of standardized information within the integrated Departments of Defense (DoD) and Veterans Affairs (VA) system.

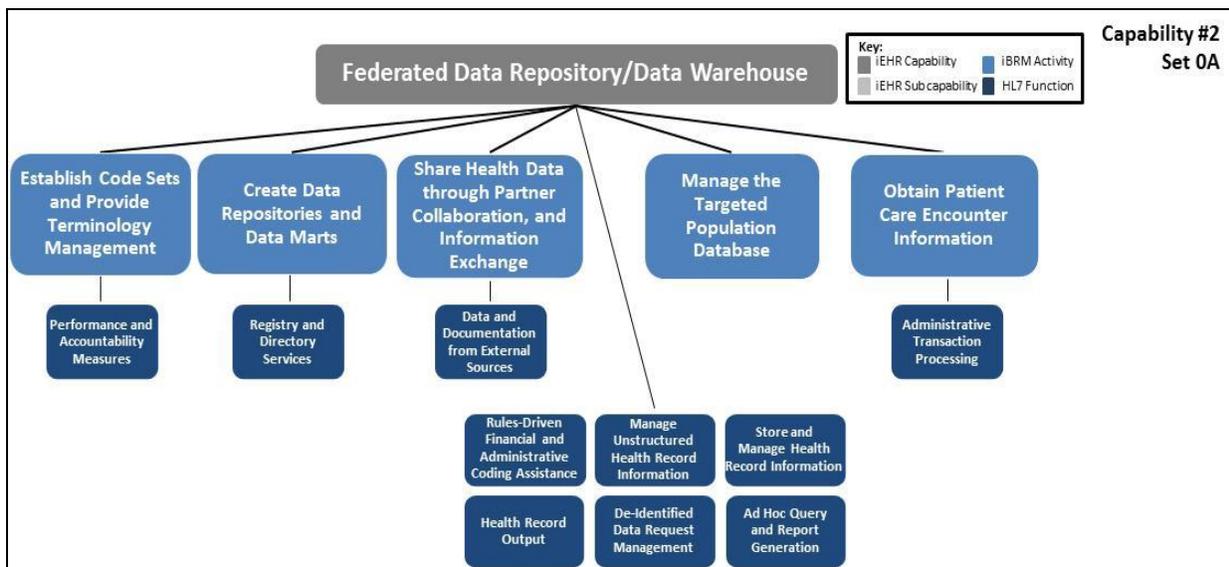
Access Control also includes an organization's ability to manage a patient's potential to view his or her EHR based on scope of practice, organization policy, or jurisdictional law. Typically, a patient has the right to view his or her EHR and the right to place restrictions on who can view a part or the whole of that EHR. Views of the information are tailored to the user's security level and access need. Provider information may include any credentials, certifications or any other information that may be used to verify that a practitioner is permitted to use or access authorized data.



## Federated Data Repository/ Data Warehouse (Capability 2, Set 0A)

Federated Data Repository seeks to integrate various heterogeneous systems/databases within DoD/VA. Federated Data Repository provides collaboration between partner organizations. It employs a common clinical data repository and common medical data codes combined with infrastructure sharing opportunities, in order to seamlessly share data.

It will provide a unified, federated view of data repositories within DoD/VA. Clinicians will be able to see the same data codes in the repository and not have to do translation(s). For example, it eliminates confusions like “Is Gender referred to as M/F or 1/0?” - Everyone sees the same data code/value.

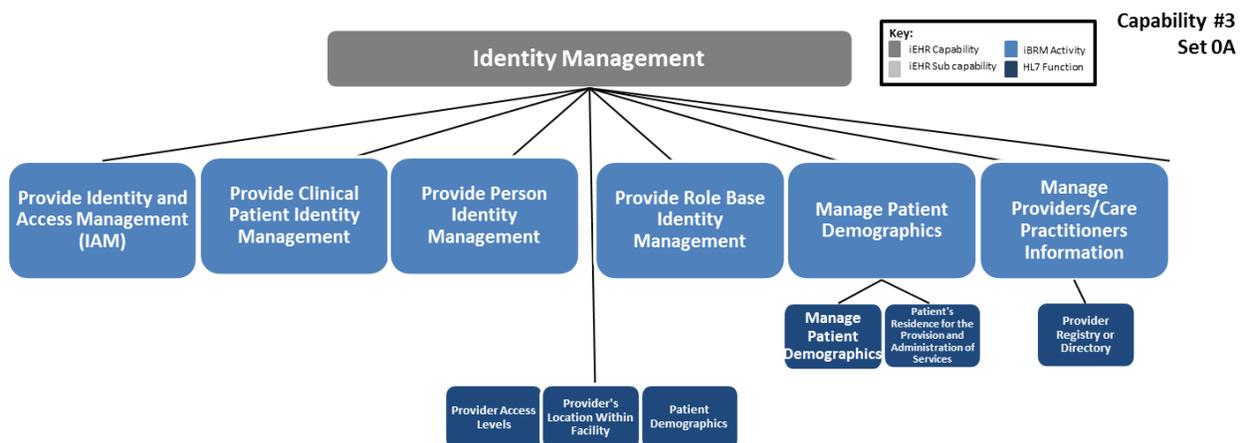


## Identity Management (Capability 3, Set 0A)

The Identity Management capability is defined as the ability to uniquely identify an individual and restrict his or her access to resources in the iEHR system based on his or her established identity. The functions of Identity Management include identifying individuals in a system, controlling access to the resources in that system, authenticating users and granting or denying access permissions based upon user role-profile attributions and access authorization levels. This capability provides for the safeguarding and managing of individuals' personal and health information. The capability includes:

**Clinical Patient Identity Management:** A set of business processes and a supporting infrastructure to create, maintain, and use digital identities, uniquely identifies patients, and resolve prevent identity problems via matching. **Person Identity Management:** A set of business processes and a supporting infrastructure to create, maintain, and use digital identities and uniquely identify persons other than patients (doctors, nurses, employees, etc.) to prevent identity problems.

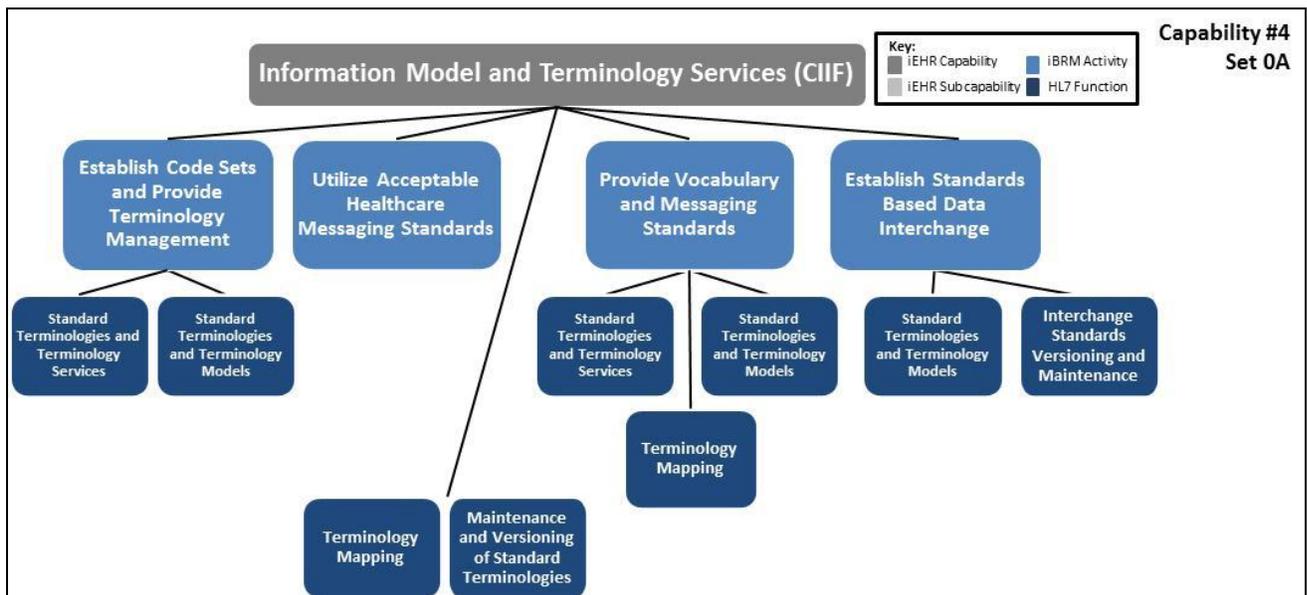
**Role-Based Identity Management:** A set of business processes and supporting infrastructure to properly identify clinical organizations, departments, patients, health employees, and care providers to authorize access to health information systems and networks. This type of access management provides the ability to share subsets of this information with certain customers, vendors, and partners as needed, so the information available can be adapted to the particular user or group.



## Information Model and Terminology Services (CIIF) (Capability 4, Set 0A)

The Information Model and Terminology Services capability encourages the use of standardized structures and vocabularies to facilitate machine-to-machine information exchanges on both the syntactical and semantic levels. The integration of information modeling and terminology is an important step in ensuring interoperability. In the absence of such interoperability, heterogeneous systems have the potential to cause integration difficulties and possible misinterpretation of information during data exchange.

Terminology management, the establishment of code sets, and the use of an agreed-upon health care lexicon in note documentation describe the core functions of the Information Model and Terminology Services capability. Terminology management and the development and use of code sets involves adopting medical data code sets and a common medical lexicon to record medical diagnoses, procedures, or terms. To adhere to these criteria, the system provides the ability to use standard terminologies to communicate with other systems and validate that clinical terms and coded data exists in a current standard terminology. The system also provides the ability to capture clinical and free text documentation and provide documentation templates for data exchange.



## Network and Security Architecture (Capability 5, Set 0A)

The Network Security Architecture capability encompasses the planning and design of the organization's network to reduce security risks in accordance with the organization's risk analysis and security policies. It describes the network segmentation (i.e., security zones) and security layers (i.e., access control, intrusion prevention, content inspection, etc.). It details which security services are needed in a particular system.

Network and Security Architecture includes authorization, access, and identity management requirements and functions for the system, and how and where these requirements are implemented. This is based on expected risks or scenarios and how and where those risks or scenarios may be encountered. The capability establishes security standards that can be leveraged in a useful fashion over a long period of time.

The system's security architecture should be adaptable and should take into consideration the trade-offs between achieving system goals and mitigating risk. It focuses on reducing security risks and enforcing policy through the construction of firewalls, routers and other network equipment. This capability provides the means to enforce all DoD and VA's security policies and procedures in order to protect their information.

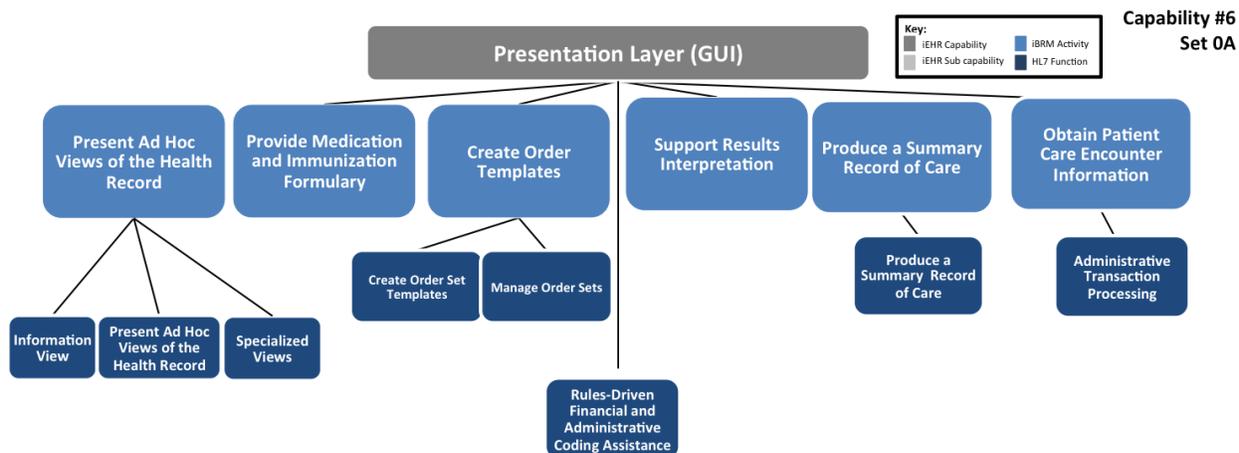


## GUI (Capability 6, Set 0A)

The Presentation Layer or Graphical User Interface (GUI) capability provides a single point of computer entry that will interface with all desired iEHR capabilities for the end users. Information from different applications within the iEHR is synchronized and will be available together as a single record. The GUI capability provides an interface so that users can access automated tools used for results interpretations from lab, radiology, or other medical diagnostic tests. It also provides an interface to create order set templates based on recognized criteria.

A key feature of a presentation layer is its ability to support the delivery of care by enabling prior information to be found and displayed meaningfully. EHR systems should facilitate search, filtering, summarization, and presentation of available data needed for patient care. Systems should enable views to be customized; for example, specific data may be organized chronologically, by clinical category, or by consultant, depending on need. Jurisdictional laws and organizational policies that prohibit certain users from accessing certain patient information must be supported.

Users can also tailor the way they view information and set default views based on their function and the type of information they typically require. This function takes into account laws and policies that restrict which users have access to certain data. Users have tools to locate specific information, such as mechanisms for searching, filtering, summarizing, and presenting data. The arrangement of data can be customized for specific situations, such as by date, provider, or service. Finally, the system allows users to select which data from the health record should be included in reports, either in hardcopy or in electronic output.

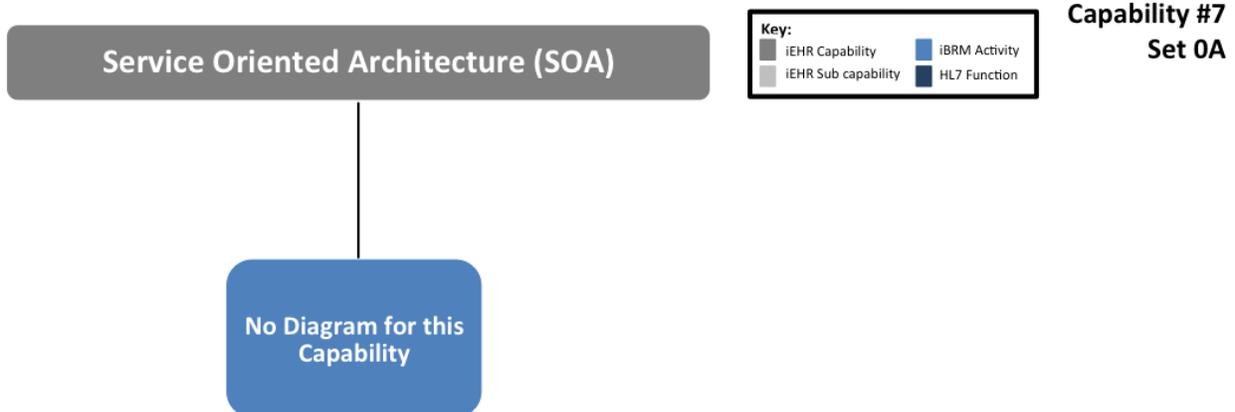


## Service Oriented Architecture (SOA) (Capability 7, Set 0A)

The Service Oriented Architecture capability includes a set of principles, frameworks and methodologies for designing and developing consumed sets of interoperable clinical services relevant to the service-consumer. These principles and methodologies enable clinical application functionality to be provided and define the interface in terms of protocols and functionalities. SOA allows services to be invoked, published and discovered, and are abstracted away from the implementation using a single, standards-based form of interface. These services are built as software components (discrete pieces of code and/or data structures) that can be reused for different purposes.

This architecture enables the various clinical applications to function and supports machine-to-machine interoperability over the network. These services are well-defined business functions that are built as software components. Once a service is created and published, any clinical application can re-use these services (software components), rather than re-creating them, thereby reducing redundancy, time, labor and cost. Since the same services are used by various clinical applications, it improves the consistency across the clinical applications.

SOA aims to allow users to string together large pieces of functionality to form ad hoc applications that are built almost entirely from existing software services. The larger the pieces, the fewer the interface points required to implement a functionality; however, very large pieces of functionality may not prove sufficiently granular for easy reuse. Each interface brings with it some amount of processing overhead, so there is a performance consideration in choosing the granularity of services.

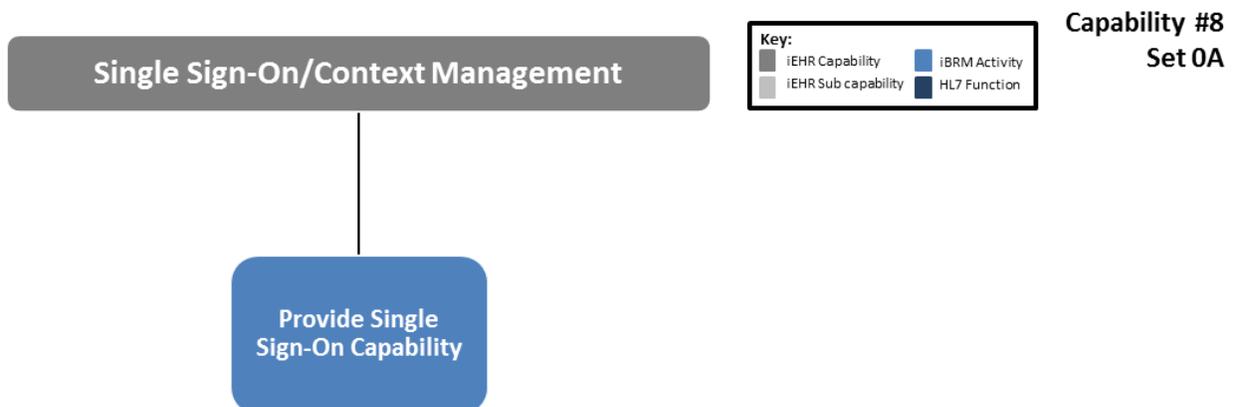


## Single Sign-On/ Context Management (Capability 8, Set 0A)

The Single Sign-On/Context Management capability enables a user to access multiple applications after signing in only once, for the first time. Single Sign-On (SSO) is directly related to access and control and identity management because when a user goes through the act of signing on, their identity is recognized, and they no longer need to sign in again to gain access to any of the connected systems.

Information from different applications within the iEHR is synchronized and is available together for a user to see. The user will need to provide a User-ID/password combination, a PIV card, or a CAC card for access to the system. Once a user has entered their credentials and the credentials have been verified, the user will not need to provide the credential again to open any of the clinical applications. Once users log out of the single sign-on application, all other open clinical applications will shut down gracefully.

The Context Management capability allows clinicians to choose a patient once in one application and have all other applications containing information on that same patient activate the data they contain. Context Management obviates the need to redundantly select the patient in the varying applications. When a clinician opens multiple applications, the applications open with the patient context of the first application that was open. The application prompts screen savers and logouts over a period of user inactivity.

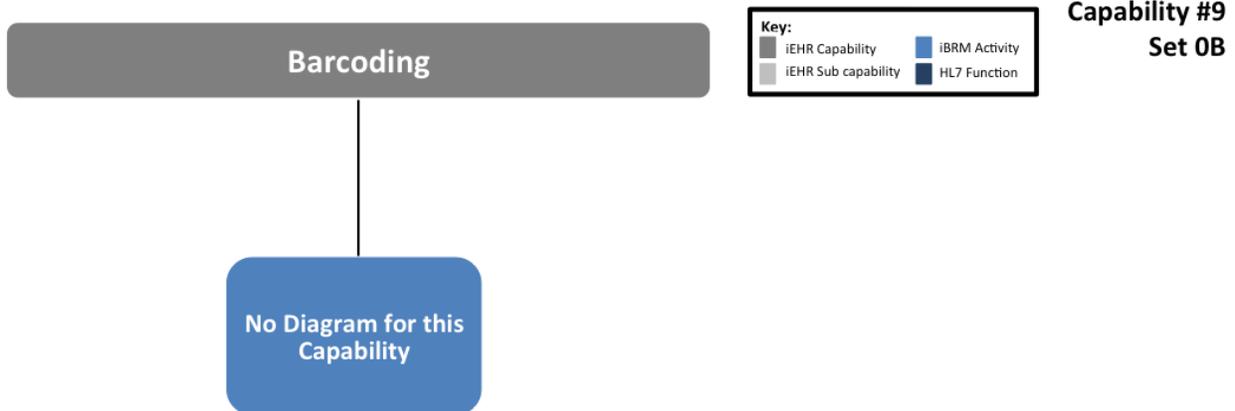


## Barcoding (Capability 9, Set 0B)

The Barcoding capability enables positive patient identification (PPI) and the labeling of blood and laboratory specimens. In addition, it mitigates vulnerabilities in medication administration and decreases patient misidentification. PPI is implemented at the point of care through scanning technology for specimen collection and blood product administration through the use of electronic devices compatible with organization standards. Information stored will include the patient's name, specimen type, specimen source, means of collection, and date and time. Once the barcode is read, variances in what specimen or test was ordered and what was received will be reported.

Barcoding decreases the duplication of work associated with patient care activities that exists in the current clinical system where clinicians must record vital signs information, intake and output records on paper, and then manually enter them into CPRS.

Barcoding is used for inventory management, whose functions ensure: desired stock levels of items, automatic generation of replenishment orders, dispersion of goods to supported services or end users, identification of items via bar code technology, and communication of inventory information between a secondary inventory point and its associated automated supply points and produces reports displaying inventory level, distributions and dollar values.

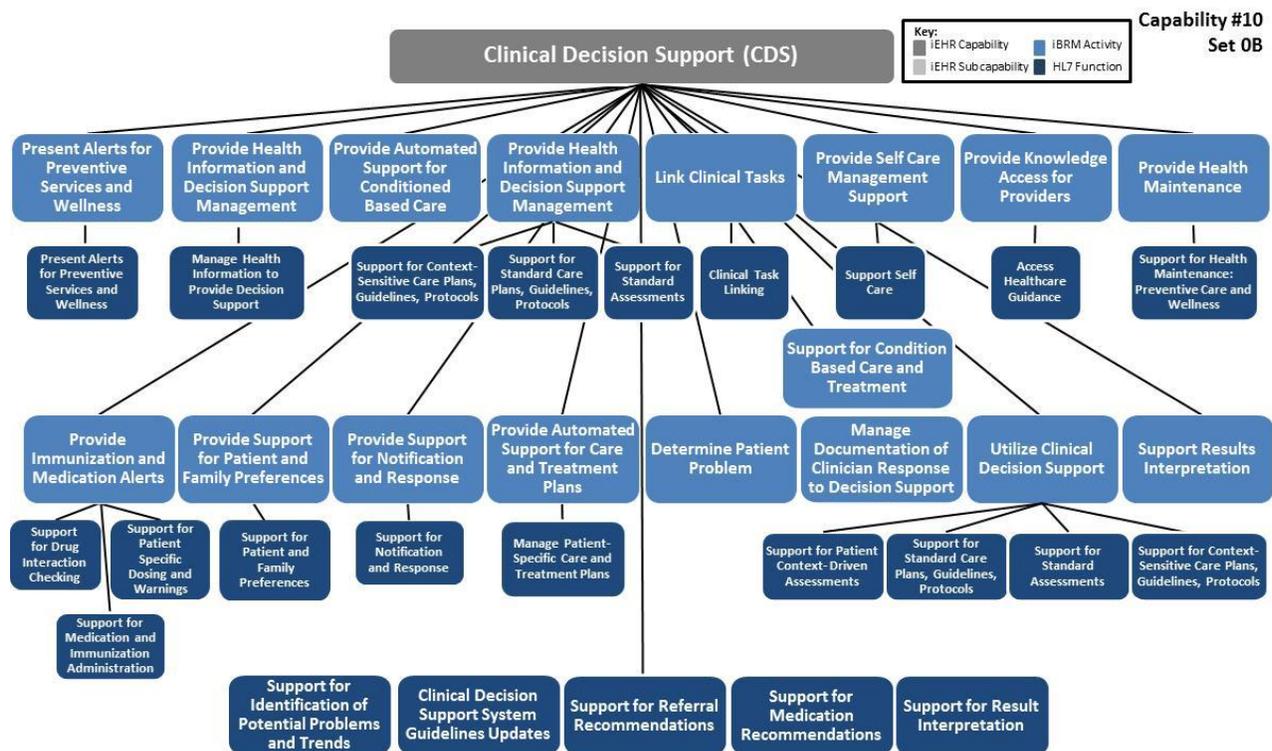


## Clinical Decision Support (CDS) (Capability 10, Set 0B)

The Clinical Decision Support (CDS) capability augments clinical decision-making by providing health care professionals with knowledge-enriched, disease-specific recommendations for treatments, tests, and referrals based on individual patient profiles. The CDS software integrates individual electronic patient records (EPR) with coded clinical data, global medical knowledge, and institutional protocols. This technology provides the power to reason and make clinical inferences across the patient record, using data from multiple sources within an institution's existing information systems. CDS assists the provider in determining the timing and sequencing of testing, orders, and other necessary clinical actions. This capability function allows the provider to evaluate the clinical need for a specific test and evaluate the type of testing to be conducted, based on standards of care and best medical practices.

Moreover, clinical decision support rules may be applied to the system using a manual process. As standards are developed to represent these rules, an automated update will be recommended. Any process to update decision support rules should include the verification of the appropriateness of the rules to the system. This may include but is limited to the authenticity of the source, the currency of the version, and any other necessary approvals before the updates can take place.

Additional functions of CDS include the ability to capture clinical decision support prompts and user decisions to accept or override those prompts, the ability to record the reason for variation from the decision support prompt, and the ability to display recorded variances upon request by authorized users of the EHR.

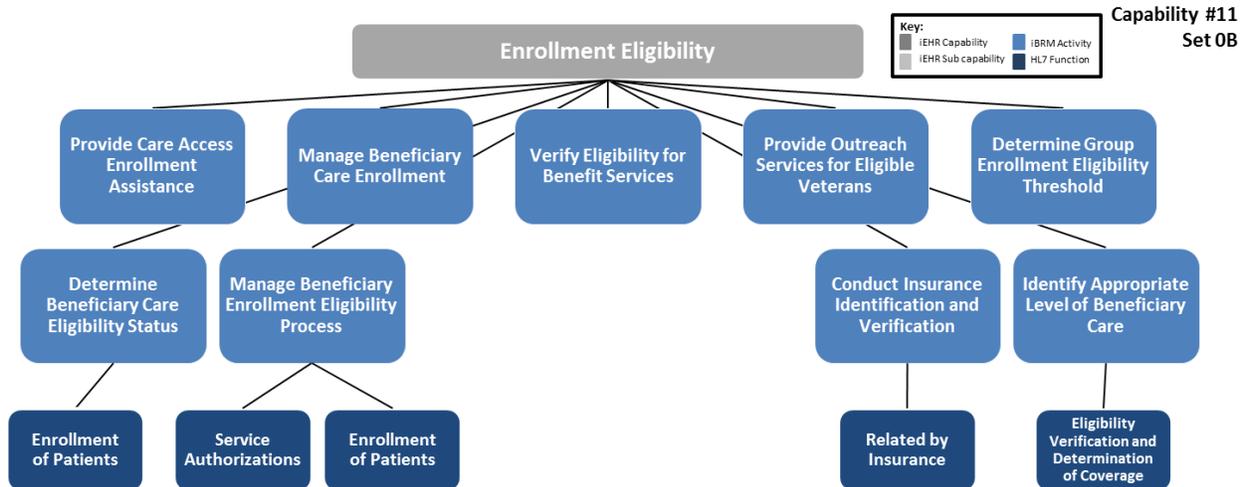


## Enrollment Eligibility (Capability 11, Set 0B)

The Enrollment Eligibility capability involves determining and provisioning the health care services through a beneficiary enrollment process, which collects and maintains a core set of information. This information is used to determine what services a beneficiary is entitled to receive. The system stores and maintains care services information and beneficiary information to aid in making this determination. The capability must be able to perform identification and verification processes, which includes establishing health care insurance and determining the eligibility for the claimed insurance, whether it be through a third party insurance company or not. The level of care provided to a beneficiary depends on their eligibility as defined by policies and regulations.

The Enrollment Eligibility capability involves establishing a process for providing both DoD and VA beneficiaries' access to health care benefits covered by their benefits packages. This involves establishing procedures to assist beneficiaries in filling out forms such as application, enrollment, and eligibility forms. Furthermore, this capability includes supporting outreach efforts to educate veterans on the benefits for which they and their beneficiaries are eligible. The capability will also explain how to apply for benefits.

Enrollment Eligibility is a managed approach for enrolling eligible beneficiaries applying for and obtaining hospital and outpatient medical care and treatment. This process involves determining Geographic Means Test (GMT) Income Threshold eligibility requirements within the beneficiary enrollment process. Each veteran or DoD beneficiary is assigned to a specific priority group during the enrollment process as determined by the Geographic Means Test. These groups help balance demand for care.



## Orders Service (Capability 12, Set 0B)

The Orders Service capability includes the ability to store and process a provider's instructions on the treatment of a patient under the provider's care. This includes managing medication orders, immunization orders and referrals, as well as non-medication orders such as dressings and equipment. Order set templates can be created based on practice concepts as well as diagnosis and symptoms. Clinical orders and procedure results will also be managed in the system and can come from various departments, such as the lab, pharmacy, and radiology.

Additional functions of the Orders Service Capability include:

Creating and managing order set templates:

This function provides a user interface to create order set templates based on current practice concepts. The order set templates allow a care provider to choose common orders for a particular circumstance or disease state according to standards or other criteria. Recommended order sets may be presented based on patient data or other contexts.

Providing interoperable orders management:

This function provides for interoperability between DoD and VA such that orders may be placed in either EHR system. This may include lab, pharmacy, radiology, and consults.

Managing clinical orders and results:

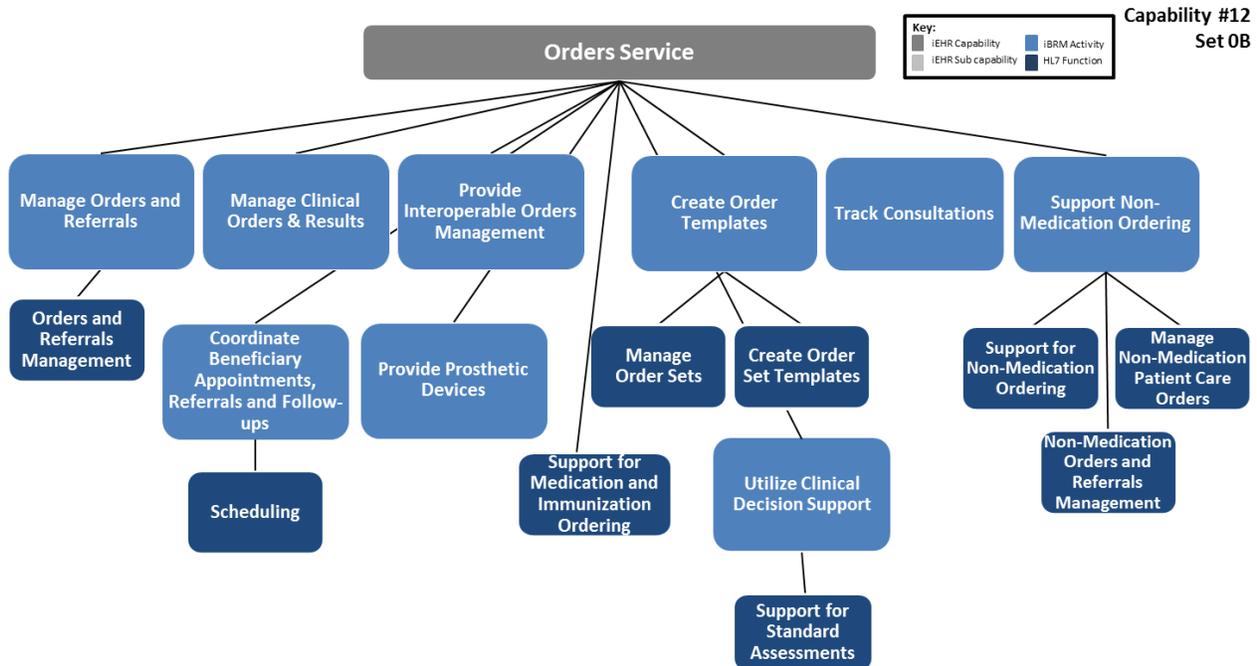
This capability includes managing clinical orders for procedures (lab x-ray, CT scan, and MRI orders and results), medications, non-medications, and immunizations.

Managing medication orders:

This capability includes creating prescriptions or other medication orders with detail adequate for correct filling and administration, and providing information regarding compliance with formularies.

Managing orders for diagnostic tests:

This capability captures and tracks orders for diagnostic tests, including new, renewal and discontinuation orders. Each order includes the appropriate details, such as order identification, instructions, and clinical information necessary to perform the test. Orders and supporting detailed documentation shall be communicated to the service provider for completion of the diagnostic test(s).



## Secure Messaging (Capability 13-14, Set 0B)

The Secure Messaging capability includes the ability to facilitate the confidential and authenticated patient-provider and provider-provider exchange of messages for clinical purposes. The iEHR requires secure communications among various participants: patients, doctors, nurses, chronic disease care managers, pharmacies, laboratories, payers, consultants, and others.

An effective iEHR supports communication across all relevant participants, reduces the overhead and costs of healthcare-related communications, and provides automatic tracking and reporting. The list of communication participants is determined by the care setting and may change over time. Because of concerns about scalability of the specification over time, communication participants for all care settings or across care settings are not enumerated here because it would limit the possibilities available to each care setting and implementation. However, communication between providers and between patients and providers will be supported in all appropriate care settings and across all care settings. In sum, the Secure Messaging capability enables new and more effective channels of communication, significantly improving efficiency and patient care. The communication functions of the iEHR change the way participants collaborate and distribute the work of patient care. This capability encompasses two sub-capabilities: Patient-Provider and Provider-Provider.

### Patient-Provider (Capability 13)

The Patient-Provider capability includes the ability for providers to initiate secure communications with their patients (or patient representatives), and patients (or patient representatives) to initiate secure communications with their providers. It is vital that these communications include the time and details of the communication, or the nature and content of the communication if such communication is electronic.

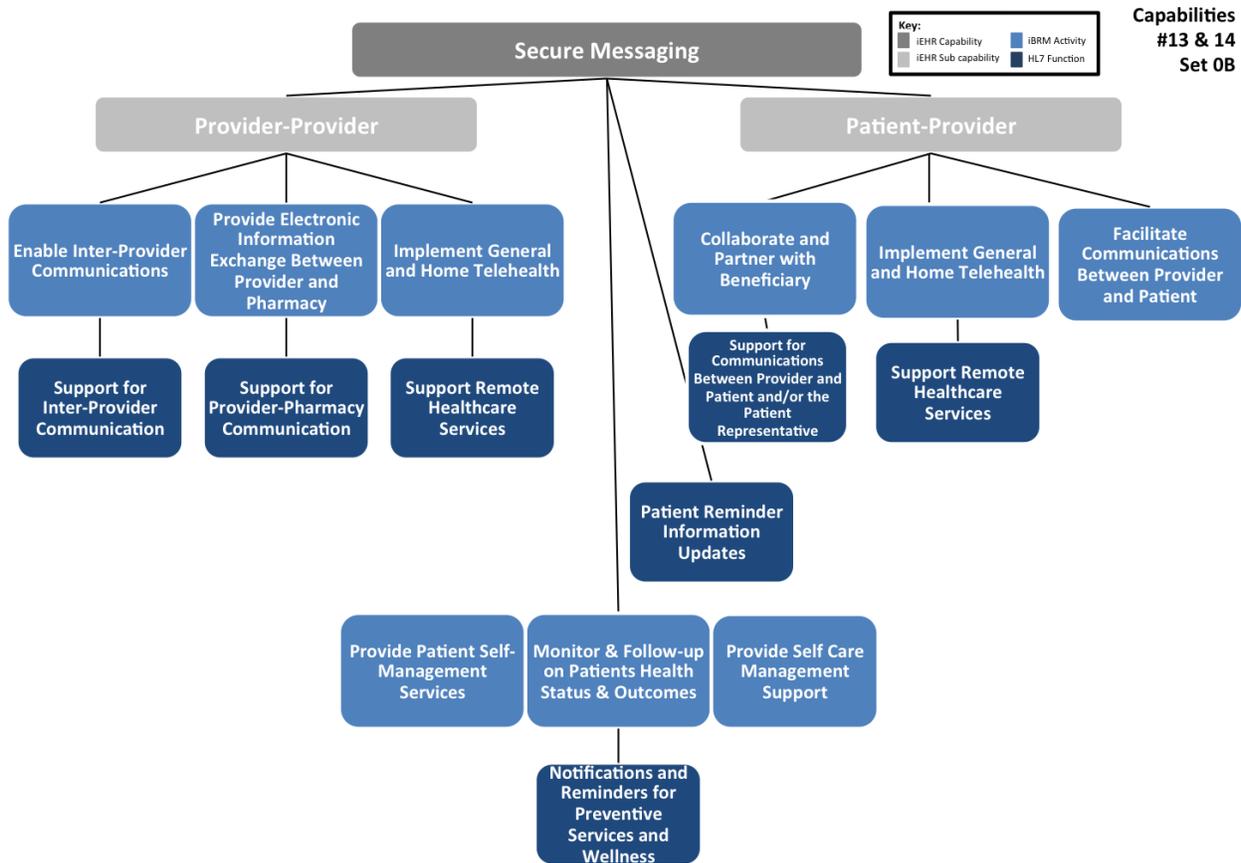
Examples of patient-provider secure messaging include:

When a blood test result arrives, the clinician wishes to email the patient that the test result was normal (so the capability captures the details of this communication).

When a patient wishes to request a refill of medication by emailing the physician (this information is also captured by the capability).

### Provider-Provider (Capability 14)

The Provider-Provider Secure Messaging capability includes the ability for providers to initiate secure communications with other providers in their facilities. It is vital that these communications include the time and details of the communication, if such communication is electronic.



### Consult and Referral Management (Capability 15, Set 1A)

The Consult and Referral Management capability includes the ability to request, document, and track referrals for specialist care and consults between providers or organizations, as well as the ability to coordinate appointments and follow-up procedures. This includes the origination of any consents or authorizations for disclosures that may be required.

This capability includes guiding the beneficiary to appropriate health care services and locations, and the communication of the referral(s) to internal and external providers (e.g., referral

processing). This process involves managing beneficiary referral requests (consults) requiring specialty care providers or additional testing. Managed referral requests will be reviewed and considered on behalf of patients when indicated by healthcare providers or primary care managers. Throughout the process, the Primary Care Manager (PCM) will remain the primary contact for the beneficiary and will act as the first point of consultation for patients.

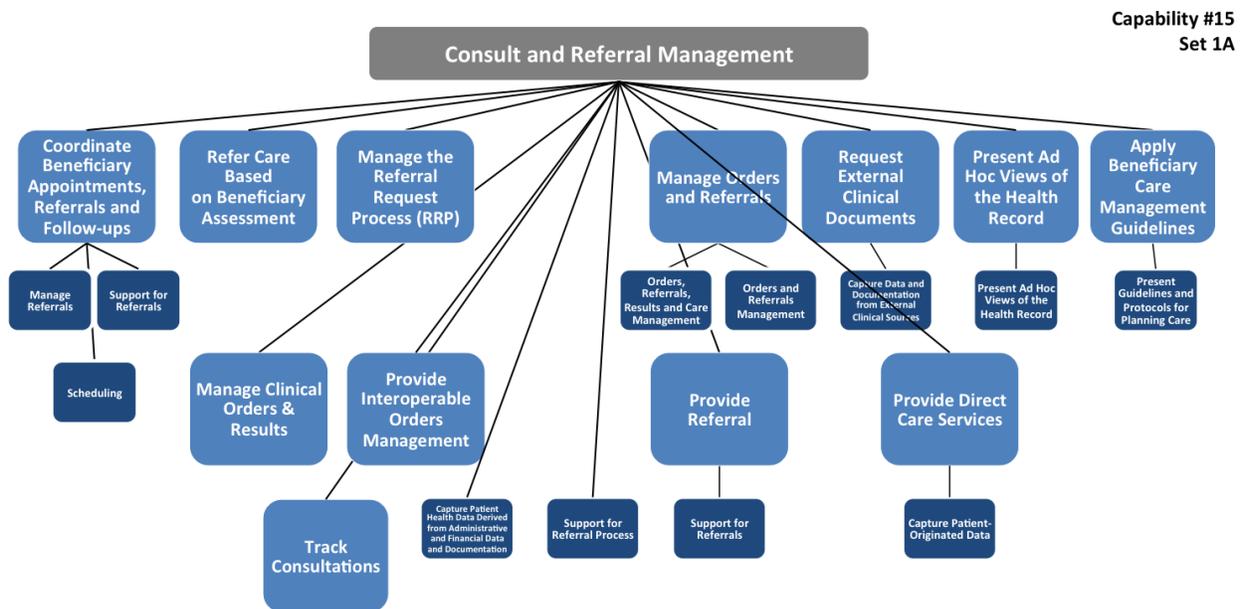
Additional functions of the Consult and Referral Management capability include:

- The ability to include clinical and administrative data (e.g. insurance information) as part of the referral process

- The ability to include test and procedure results with a referral

- The ability to include standardized or evidence-based protocols with the referral

The ability to capture and communicate referral(s) to other care provider (s), whether internal or external to the organization.



## Immunization (Capability 16, Set 1A)

The Immunization capability includes the ability to identify, administer, document, and monitor the appropriate immunizations and adverse events based on a beneficiary's stage of life or travel-related deployments. Each immunization is prescribed and administered by licensed medical personnel and accurate records are kept all immunizations administered. Records include information such as injection site, vital signs, pain assessments, and immunization product information. Any observations or details of medical decision-making are also recorded.

Immunizations may be administered through several different types of patient encounters, including an emergency department visit, a well-child exam, a pre-deployment readiness appointment, inpatient care, or a routine primary care visit. All immunizations administered will be tracked and monitored. The system will assist in the management of immunization administration and make immunization information available to healthcare providers. Additionally, the electronic medical record will provide the ability to assist the provider in decision support so that the correct immunization is given at the right time.

Additional functions of the Immunization capability include:

Create and maintain patient-specific immunization lists:

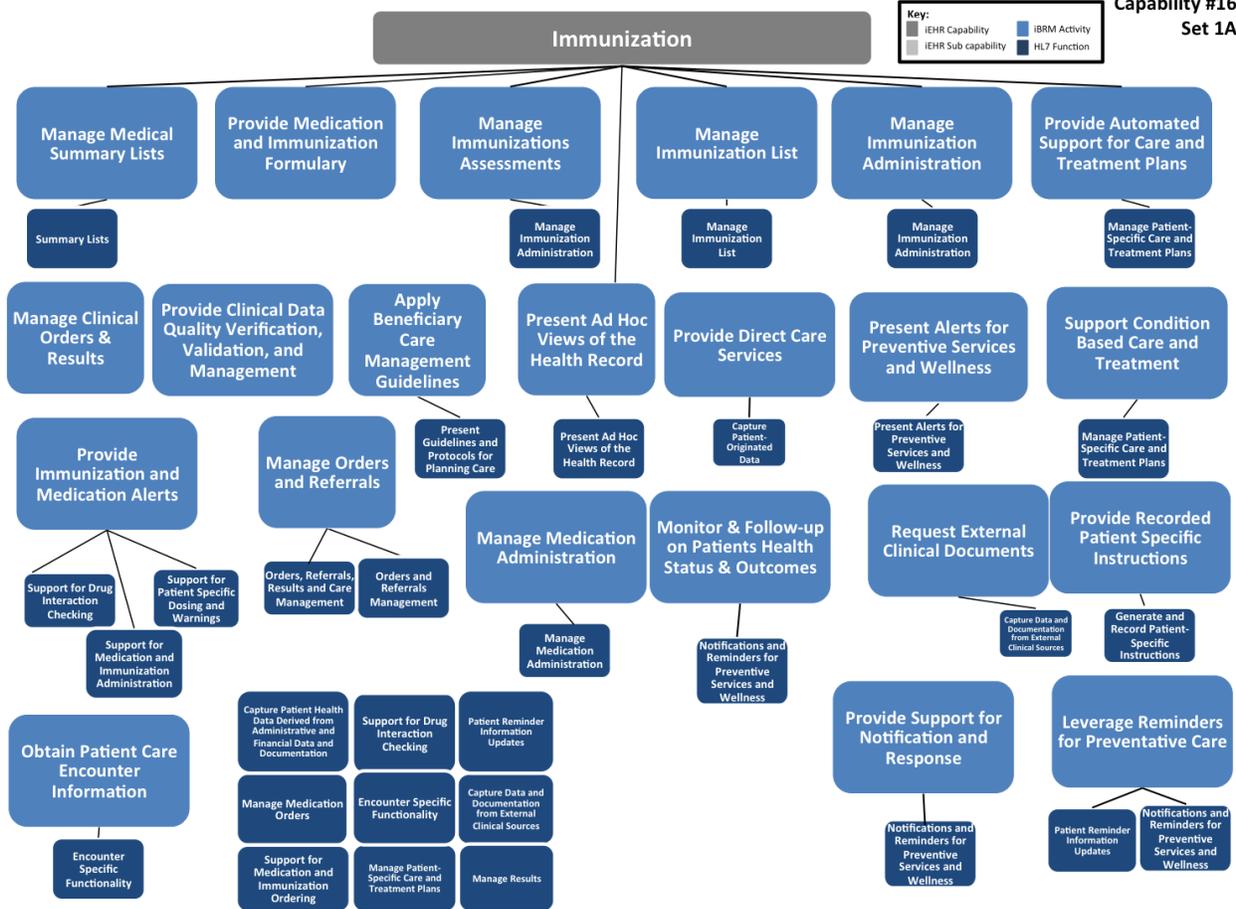
Immunization lists shall be managed over a period of time, including over the course of a visit or stay, and maintained for the lifetime of the patient. Details of immunizations administered shall be captured as discrete data elements and the entire immunization history shall be viewable.

Manage Immunization Administration:

The system shall capture and maintain discrete data concerning immunizations given to a patient including date administered, type, manufacturer, lot number, and any adverse reactions. It shall facilitate the interaction with an immunization registry to allow maintenance of a patient's immunization history

Provide Support for Medication and Immunization Administration:

The capability shall alert providers to potential administration errors (such as wrong patient, wrong drug, wrong dose, wrong route, and wrong time) in support of safe and accurate medication administration and the surrounding workflow.

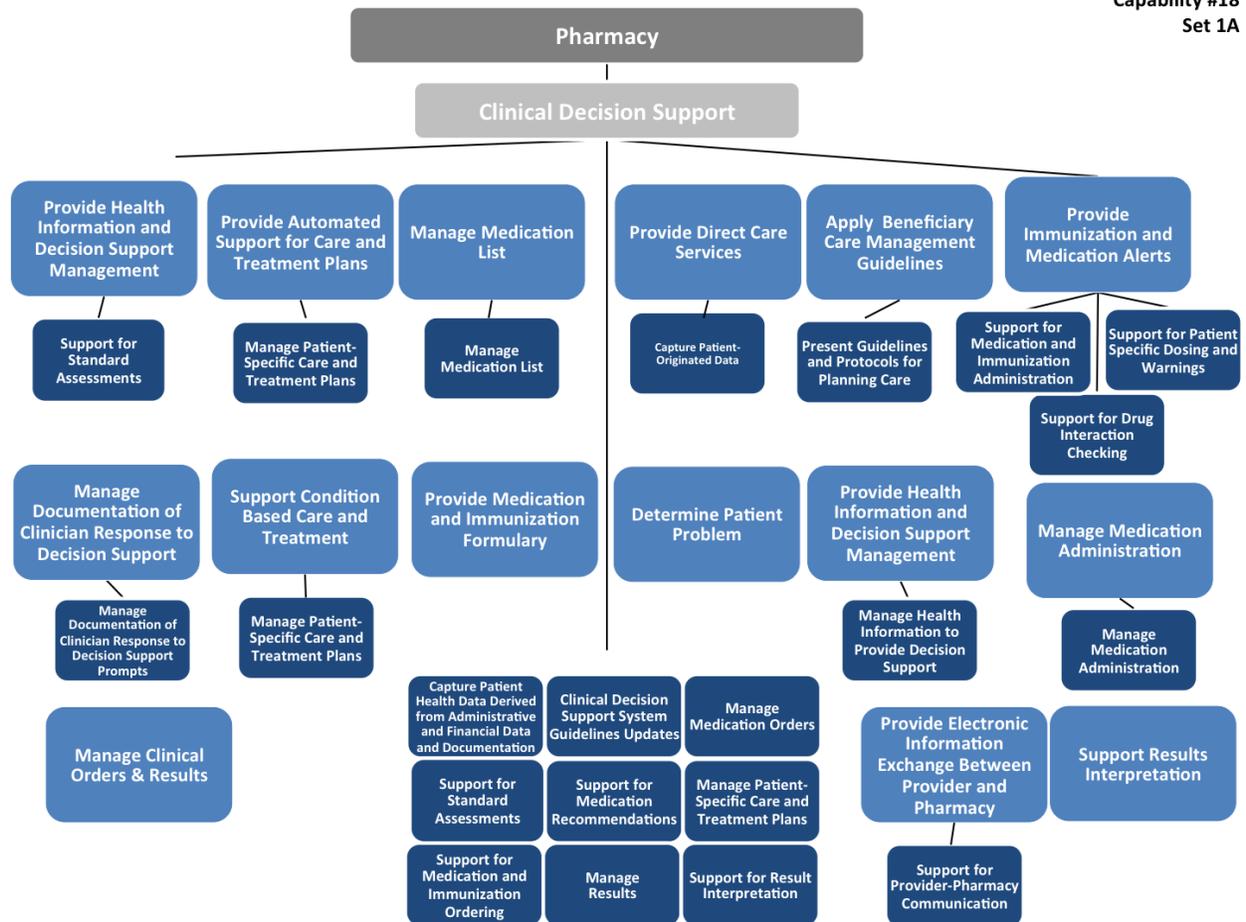




This technology provides the power to reason and make clinical inferences across the patient record, using data from multiple sources within an institution’s existing information systems. Pharmacy CDS assists the provider in determining the timing and sequencing of pharmaceutical related testing, orders, and other necessary clinical actions. This capability function allows the provider to evaluate the clinical need for a specific medication, based on standards of care and best medical practices.

Moreover, pharmacy CDS rules may be applied to the system using a manual process. As standards are developed to represent these rules, an automated update will be recommended. Any process to update decision support rules should include the verification of the appropriateness of the rules to the system. This includes, but is not limited to, authenticity of the source, the currency of the version, and any other necessary approvals before the updates can take place.

Capability #18  
Set 1A



### Pharmacy: Inpatient and Outpatient Orders Fulfillment (Capability 19, Set 1A)

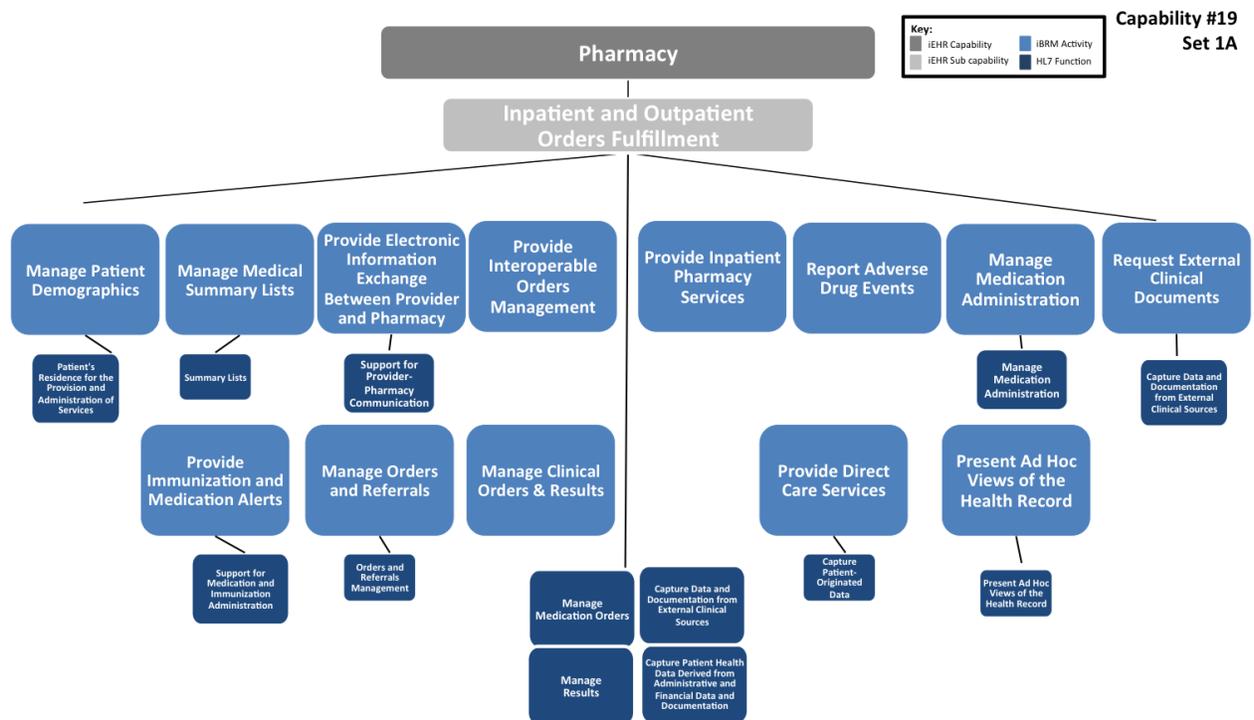
The Pharmacy Inpatient and Outpatient Orders Fulfillment sub capability functions to support filling all inpatient and outpatient orders, including expert clinical pharmaceutical consultation, patient education, and appropriate handling, managing, and dispensing of drugs and other medical supplies. This sub capability shall provide interoperable orders between DoD and VA, such that orders may be placed into the iEHR (may include Lab, Pharmacy, Radiology, and Consults).

This sub capability provides support for medication recommendations, including offering alternative medications on the basis of practice standards (e.g. cost or adherence to guidelines), a generic brand, a different dosage, a different drug, or no drug (watchful waiting). The sub capability also includes expedited entry of series of medications that are part of a treatment regimen, i.e. renal dialysis, oncology, transplant medications, etc.

Where in-patient pharmacy services are offered, the pharmacy is open 24 hours per day, every day of the year. Communication must run bi-directionally between practitioners and pharmacies, as well as between practitioners and beneficiaries receiving prescriptions. If a medication is to be administered by a provider, the capability will provide the providers the following information: list of medications to be administered, directions for use, times and conditions of administration, does, and route.

This sub capability shall maintain a medication list for each patient that includes the medication start date, modifications if any, and end dates. This history should include all medications and supplements taken by a patient and must be viewable to the provider, for any patient. Medication Lists may also include patient-reported medications. Information transmitted from the provider to the pharmacy is used to avoid errors and detect possible adverse reactions. Thus, preventable adverse drug reactions (ADEs) are identified, tracked, and addressed. ADEs are automatically reported to the FDA’s MedWatch program.

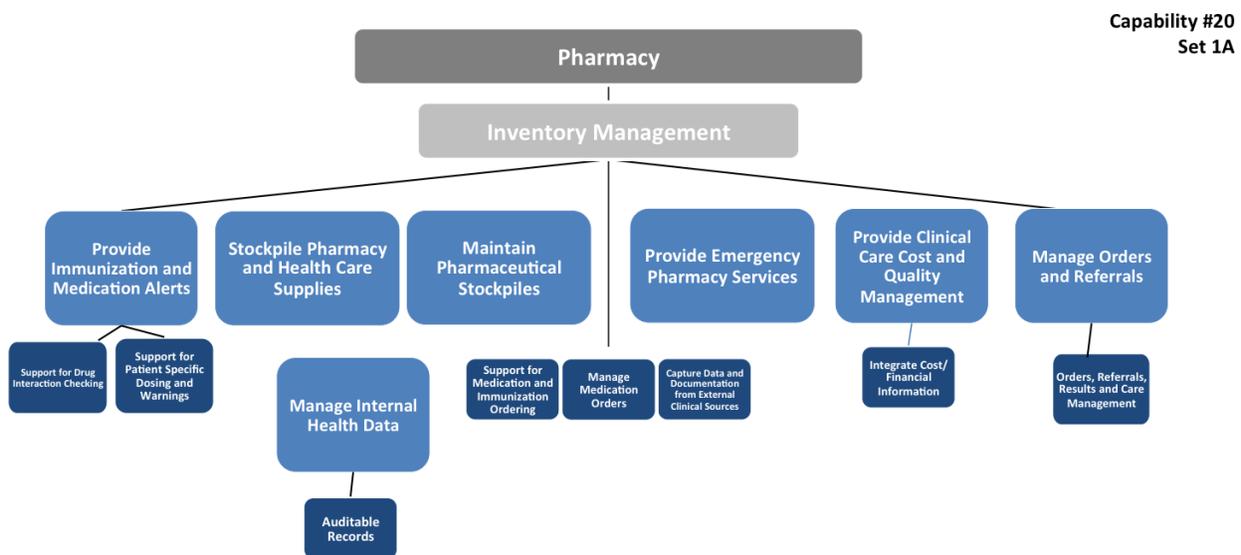
In addition, the Orders Fulfillment sub capability shall manage the National Formulary, which includes coordinating its development, maintenance, and distribution. This includes monitoring the medical literature to support additions or deletions to the National Formulary.



## Pharmacy: Inventory Management (Capability 20, Set 1A)

The Pharmacy – Inventory Management sub capability enables the effective ordering, storage, use, and disposal of pharmacy-related goods. This sub capability helps to ensure that appropriate stockpiles of pharmacy and health care supplies are available and ready for distribution and use. To do so, the system employs a barcoding system to assist with stockpile management, enables communication of inventory information between suppliers and recipients of inventory, and produces reports to display inventory level, distributions, and dollar values.

Workflow-related business rules direct the flow ensure that drugs and other medical supplies are appropriately handled, managed, and dispensed. The system supports the distribution of information between internal and external parties and supports task management and distribution. The sub capability also maintains and stockpiles medical supplies in the event of large-scale disasters, maintains pharmaceutical stockpiles for the Centers for Disease Control and Prevention, and provides emergency pharmacy services for the procurements, storage, and maintenance of emergency pharmaceutical supply items to ensure active readiness of emergency supplies nationwide.



## Care Management (Capability 21, Set 1B)

The Care Management capability includes the ability to assure that each person served by the treatment system has a single approved care (service) plan that is coordinated, integrated, properly prioritized, not duplicative, and designed to assure cost effective and high quality outcomes. This includes the process of creating a health record and concepts such as managing patient information, patient demographics, externally generated data, and patient-originated data in a single logical health record. After the initial creation of the health record, care activities follow a standard path of managing the patient history, obtaining consents, performing assessments, creating care plans, and documenting orders and results.

Care Management includes encounter and episode of care management, which can be described as using data standards and technologies that support interoperability. Encounter management

promotes patient-centered/oriented care and enables real time, immediate point of service, point of care by facilitating efficient workflow and operations performance. This support is necessary for direct care functionality that relies on providing user interaction and workflows, which are configured according to clinical protocols and business rules based on encounter-specific values such as care setting, encounter type (inpatient, outpatient, home health, etc.), provider type, patient's EHR, health status, demographics, and the initial purpose of the encounter. Additional Care Management functions include:

- Using automated tools and models for care management initiatives to implement evidence-based guidelines, care models and delivery methods

- Providing automated tools to support treatment plans and guidelines, including standard care plans and guidelines for self-care.

- Self-Care Management:

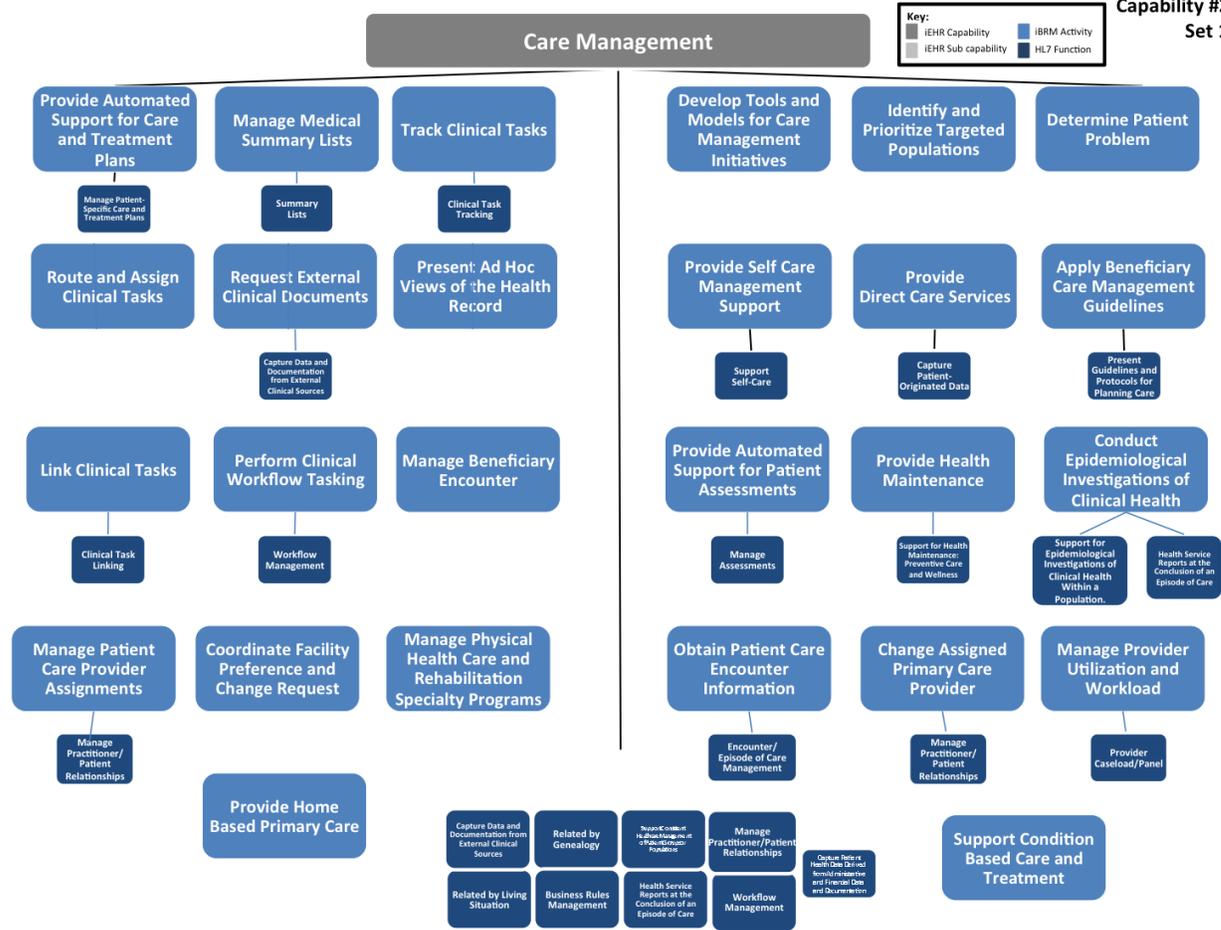
  - Utilize standard care plans, guidelines, and protocols as related to self-care. Provide education to patient, family members, or caregiver to sustain self-care.

  - Institute mechanisms to maintain accountability for self-care.

- Utilizing a managerial guide for applying policy and program requirements for eligible beneficiaries receiving medical care and treatment services.

- Managing patient demographics, and managing externally generated (including patient originated) health data.

- Managing the patient history and progressing through consents, assessments, care plans, orders, results, etc.

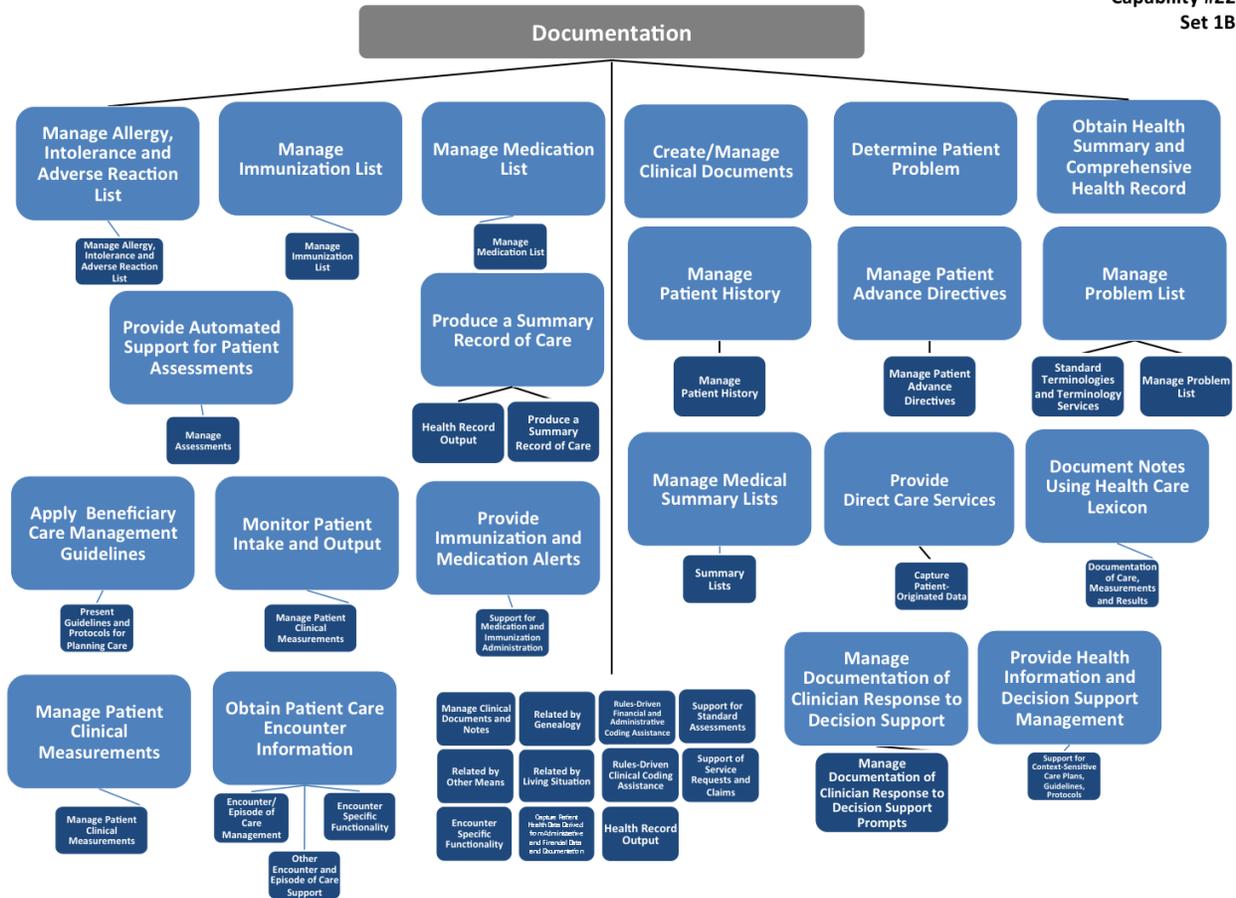


## Documentation (Capability 22, Set 1B)

The Documentation capability includes the ability to record all pertinent and relevant inpatient and outpatient interactions and information, which includes all patient care processes and associated business activities. At the point of contact with a patient, information regarding the patient's need for care is documented, as is a risk assessment, proposed decision, and an individual health determination. A problem list is stored, which includes chronic conditions, diagnoses, symptoms, and functional limitations. Dates and changes in condition are noted as well.

Providers are able to create, amend, correct, and authenticate transcribed or directly entered clinical documents. All procedures are tracked and can be managed, including immunizations, test results, medication administration, patient clinical measurements, clinical documents, patient assessments, care plans, outcomes, and clinicians' responses to decision support prompts. Previous medical diagnoses, surgeries, and family health information is documented with this capability, as are advance directives, DNR orders, and the location of any records (legal or otherwise).

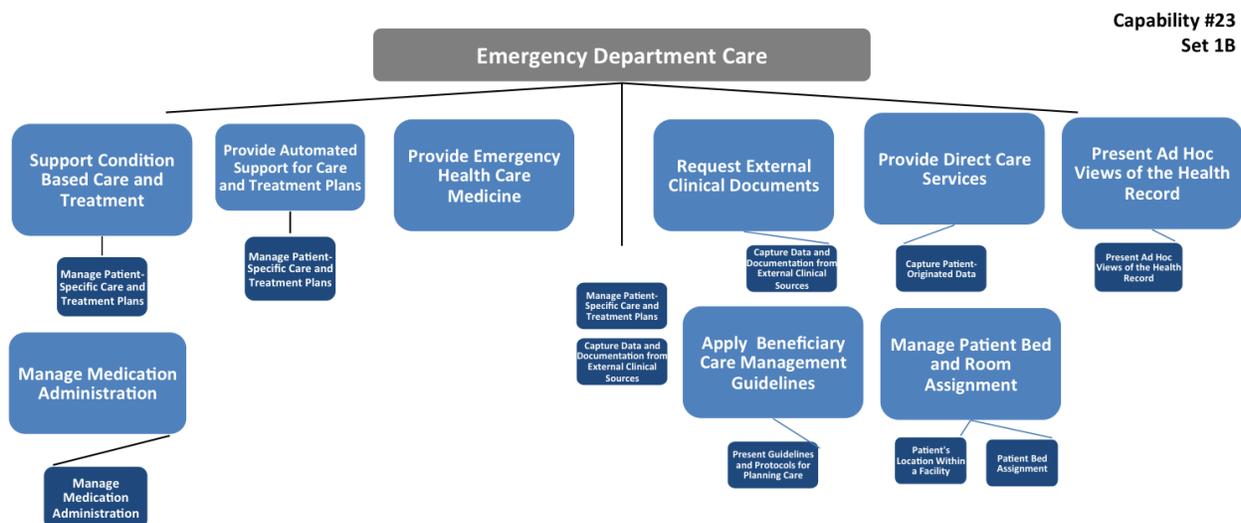
The Documentation capability includes the production of a summary record of care. The history of the current illness and patient's historical data related to previous medical diagnoses, surgeries and other procedures performed on the patient and relevant health conditions of family members are all captured through patient reporting (for example interview, medical alert band) or electronic or non-electronic historical data. When first seen by a health care provider, patients typically bring with them clinical information from past encounters. This and similar information is captured and presented alongside locally captured documentation and notes wherever appropriate.



## Emergency Department Care (Capability 23, Set 1B)

The Emergency Department Care capability provides tools and workflows to expedite patient care, simplify documentation and order management, more easily track patient status, and ultimately enhance the delivery of emergency medicine. Users will be able to spend more time on core duties, thanks to the elimination of redundant and extraneous steps in completing everyday tasks. The capability provides the ability to deliver the initial and immediate assessment, diagnosis, treatment, and disposition of any patient requiring expeditious medical, surgical, or psychiatric care. Emergency services may be provided in a hospital-based or freestanding emergency department (ED), urgent care clinic, emergency medical response vehicle, or at a disaster site.

The level of care available must be consistent with the capability, capacity, and function of that facility. Procedures must be in place for the handling of medical cases that exceed that facility's abilities, whether the facility that is better equipped to handle the emergency is a VA/DoD medical facility or a community facility. Emergency Department Care also includes providing ambulatory care, which may be preventative, routine, or emergency in nature. It further includes disaster medicine and issues affecting public health, including caring for victims of multi-casualty accidents or disasters, and the prevention or mitigation of public health emergencies.

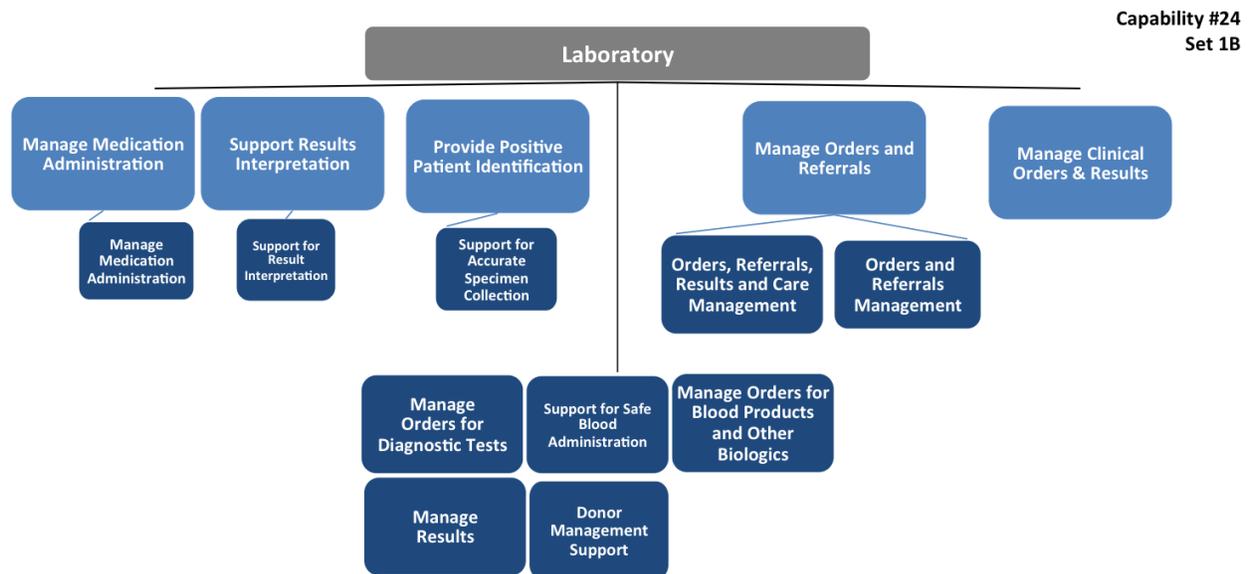


## Laboratory (Capability #24, Set 1B)

The Laboratory capability includes the principal medical diagnostic laboratory testing and transfusion functions, and sets the standards for quality, test methods, and procedures for laboratory testing for patient care in the medical center and supported clinics. The laboratory must analyze physical specimens in order to facilitate diagnosis, treatment, and recovery from disease, as well as to maintain health. Laboratories may exist within hospitals or clinics, or may exist as separate facilities. Specimens are obtained from individuals and may include blood, urine, and tissues. These specimens are analyzed for the presence or absence of certain elements or for critical levels of elements or anomalies.

The Laboratory capability is used to request tests for patients, keep track of patient or specimen histories, and print test results for patients and providers. Records must be kept of every laboratory test and should include patient information, potential diagnosis, the tests performed, type of specimen collected, time the specimen was collected, and any specific instructions or precautions. The entire laboratory history must be viewable in a patient's medical record. Patients are identified at the time of arrival and the specimens are identified by a numbering system that links specific specimens with the related patient. Specimens taken at bedside in a hospital and sent to the laboratory also require proper identification within the capability.

The Laboratory capability must allow for interoperability across all departments and sections of both Anatomic and Clinical Pathology such as Autopsy Pathology, Surgical Pathology, Cytopathology, Clinical Chemistry and Special Chemistry, Hematology, Immunology, Microbiology, and Transfusion Medicine. There are also specialized laboratories that are devoted to Molecular Diagnostics (viral load testing), Toxicology, Flow Cytometry, and Electron Microscopy.

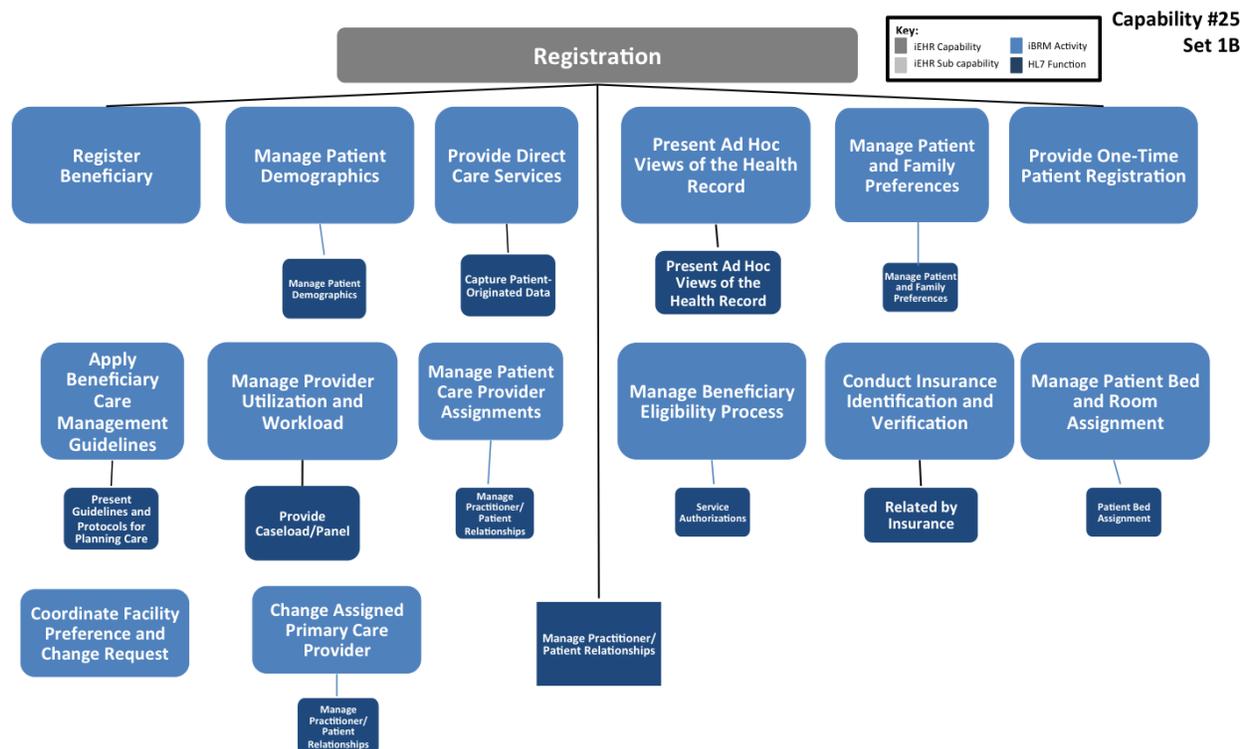


## Registration (Capability 25, Set 1B)

The Registration capability provides the ability to uniquely identify and record individual beneficiaries for the provision of healthcare and to group these individuals for current or future reference electronically.

This capability allows for a single registration across all organizations, so that users will input basic demographic data only once into a common interface. Users are prompted through the registration process, in order to assist them in using coding information for billing or administrative purposes. The patient directory should record, at minimum, the patient's name, address or location, an alternate contact person, phone number, and any relevant health status information. Information for individuals related to the patient may also be recorded, such as that for a family member, next of kin, guardian, authorized person, health care surrogate, or a person related by epidemiologic exposure. The collection of this information may require appropriate consents. Key identifiers will be shown on all patient information output and on each screen of a patient's record. These may include the patient's name and ID number. The system will track who updates demographic information and will alert the user when information is updated.

After registration is complete, in subsequent encounters, the system retrieves registration information needed to support verification of coverage at the appropriate juncture in the encounter workflow. When eligibility is verified, the system would capture eligibility information needed for processing administrative and financial documentation, reports, or transactions - updating or flagging any inconsistent data. In addition to health insurance eligibility, this function would support verification of registration in programs and registries, such as chronic care case management and immunization registries.

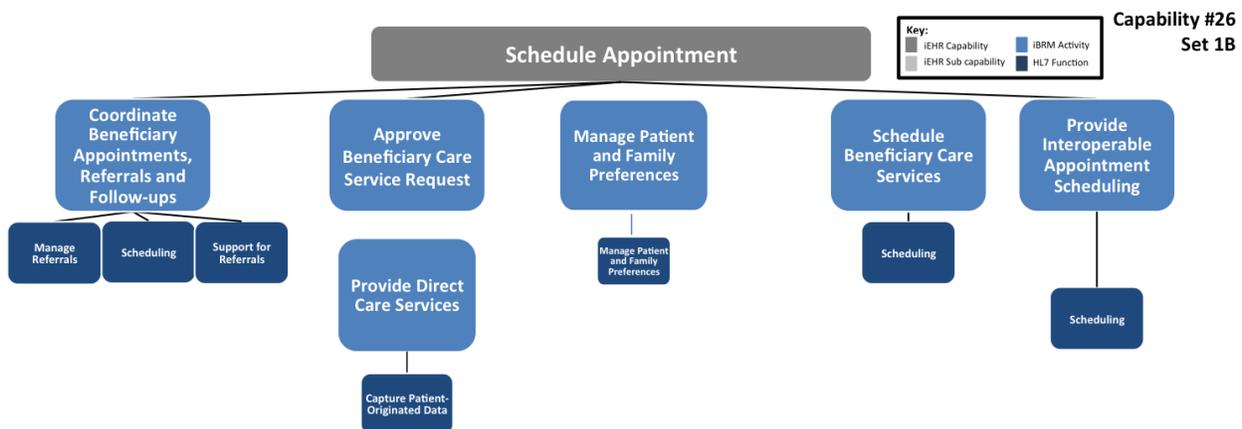


## Schedule Appointment (Capability 26, Set 1B)

The Scheduling Appointment capability provides scheduling, coordinating, and viewing of appointments of patients. It enables users to initiate; request and schedule a health-related visit with a provider or an individual beneficiary.

This capability supports interactions with other systems, applications, and modules to provide the necessary data to a scheduling system for optimal efficiency in the scheduling of patient care, for either the patient or a resource/device. The system may support user access to scheduling systems as required. Relevant clinical or demographic information required in the scheduling process could be linked to the task. The Scheduling Appointment capability also includes obtaining and verifying core information (eligibility, enrollment, demographics, PCM, case manager, special programs, and personal preferences) and scheduling services for beneficiaries.

Scheduling appointments also includes coordinating referrals and follow-up procedures, which are managed through primary care providers. It enables the generation of managerial reports, statistical reports, patient letters, and workload reports. Users will be able to schedule recurring appointments for patients for whom they are required. The scheduling of care should be well coordinated, as should patient or family hand-offs.



## Anatomic Pathology (Capability 27, Set 2)

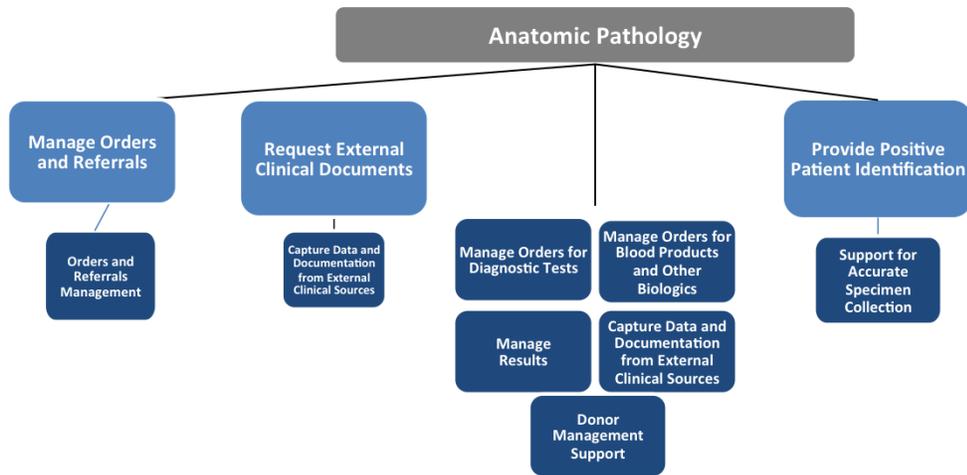
The Anatomic Pathology capability includes the ability to analyze and process information on the diagnosis of diseases based on the examination of tissues and organs. It is a medical specialty that is concerned with the diagnosis of disease based on the gross, microscopic, chemical, immunologic, and molecular examination of organs, tissues, and whole bodies. Pathology and laboratory medicine services provide the principle medical diagnostic laboratory testing and transfusion functions, and set the standards for quality, test methods, and procedures for laboratory testing for patient care in the medical center and supported clinics, which may include deployed labs.

The Anatomic Pathology capability shall interact with a blood bank system or other source to support orders for blood products or other biologics including discontinuance orders. Blood bank or other functionality that may come under jurisdictional law or other regulation (e.g. by the

FDA in the United States) is not required; functional communication with such a system is required.

An additional function of the Anatomic Pathology capability is support for accurate specimen collection, which ensures the accuracy of specimen collection, and positive identification of the patient and specimen. The provider is notified in real-time of potential collection errors such as wrong patient, wrong specimen type, wrong means of collection, wrong site, and wrong date and time.

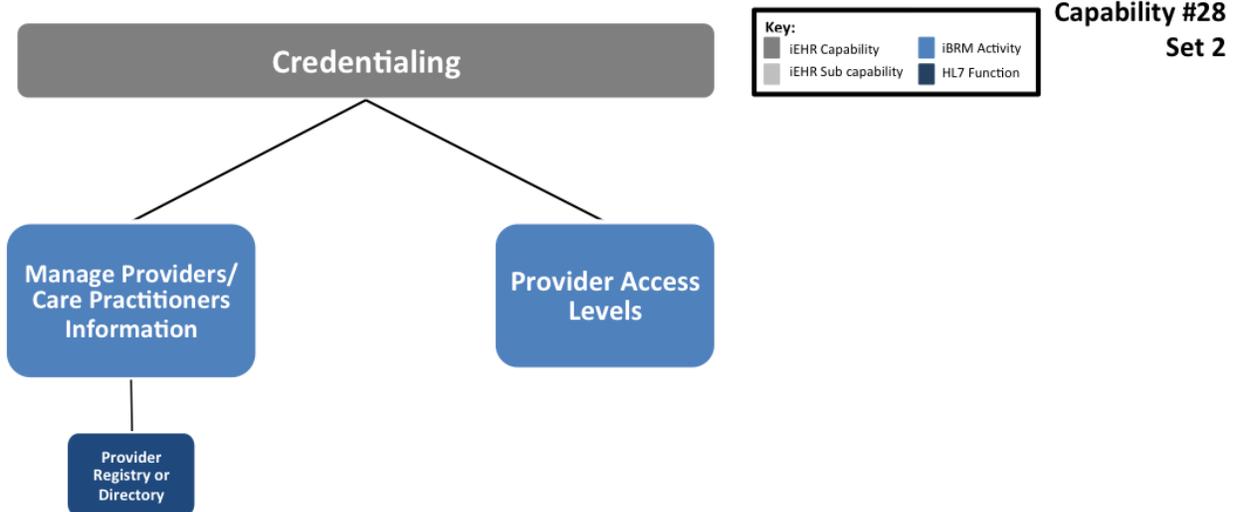
Capability #27  
Set 2



## Credentialing (Capability 28, Set 2)

The Credentialing capability gathers and maintains the qualification and licensing information for health care provider personnel. The capability reviews their clinical and medical privileges and determines their ability to provide specific services based on their credentials to encourage continual quality improvement in care and service delivery and to satisfy regulatory requirements.

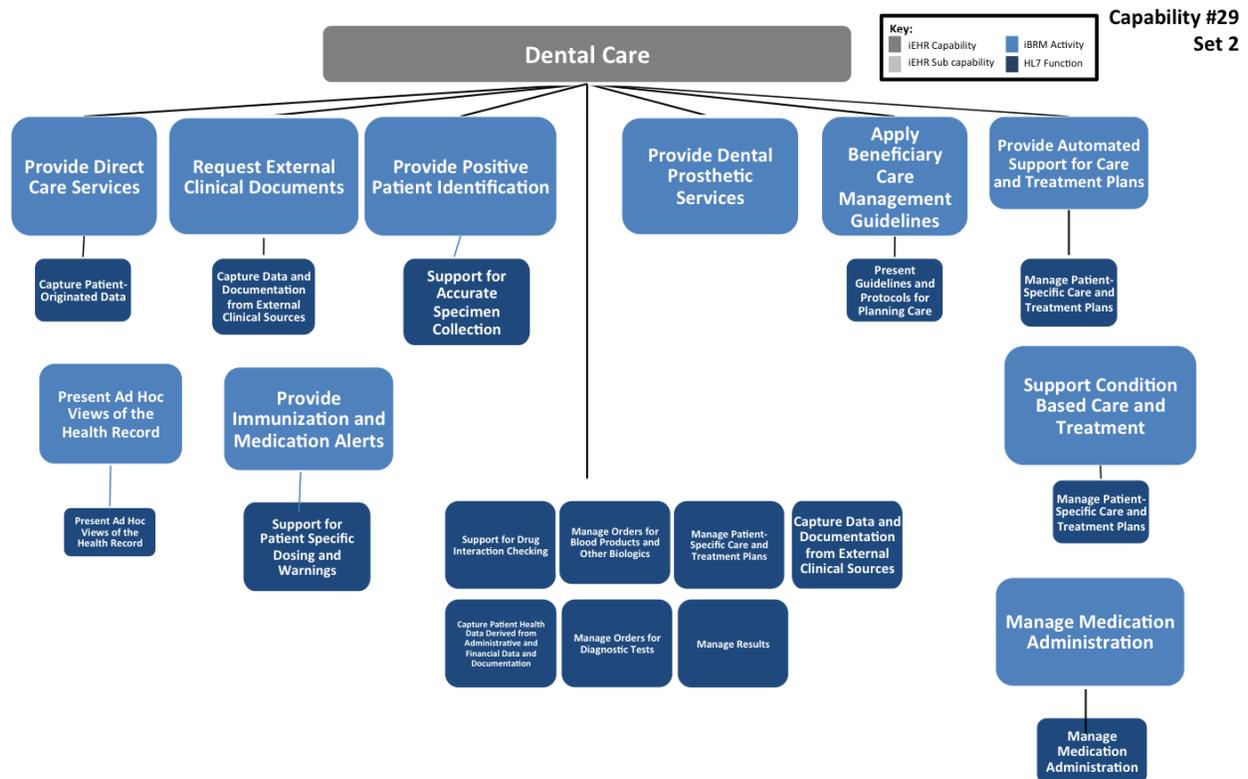
Related functions include overseeing peer reviews for providers, rendering clinical guidelines publicly available, setting clinical performance measures, and overseeing facility accreditations. Facilities submit to internal and external regulatory agencies and generate regular reports or score cards that compare that facility to other area facilities. The system administers patient care administrative services (e.g., patient care correspondence, reports, policies, credentialing, inventory, and human resources), provides quality improvement management, and satisfies regulatory management by ensuring proper documentation.



## Dental Care (Capability 29, Set 2)

The Dental Care capability focuses on providing general or specialized oral care for the teeth, gums, and oral cavity, which includes routine repair and treatment, oral hygiene, prosthetics, oral surgery, maxillofacial surgery, or radiological exams. A broad range of services is offered to eligible patients, including routine, preventative care to oral surgery, which involves problems relating to the mouth, teeth, and jaw regions. Oral and maxillofacial surgery includes the placement of dental implants, wisdom tooth removal, and corrective jaw surgery.

The Dental Care capability provides dental care to patients adhering to programmatic policy and operational plans for dentistry's mission. The capability draws upon administrative guidance for the integration of dental programs with the primary objectives of high quality patient care. The capability also ensures that dental care services delivered adhere to the highest standards of hygiene and infection control. Regularly scheduled cleaning and x-rays, restorative procedures such as fillings, crowns, dentures, oral surgery, and facial reconstruction surgery each tie to the Dental Care capability.

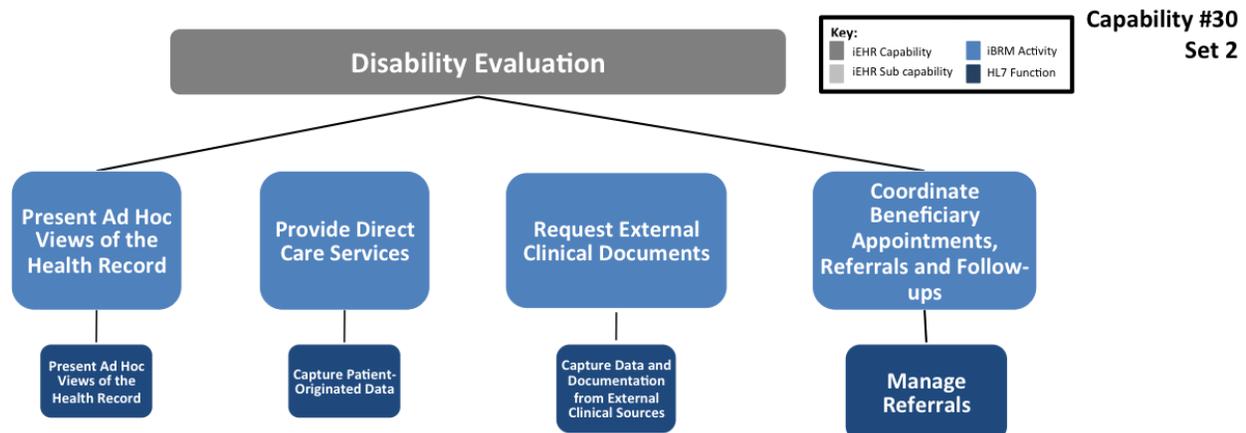


## Disability Evaluation (Capability 30, Set 2)

The Disability Evaluation capability provides the ability to assess and evaluate beneficiaries' health status to determine compensation and healthcare benefit eligibility. The capability thus includes functions related to providing, tracking, and evaluating behavioral and polytrauma care and developing outcome measures and analysis.

Behavioral health includes general inpatient psychiatric and mental health outpatient services including prevention, treatment, and rehabilitation services to reduce illness, death, disability, and cost to society. Strict provisions govern polytrauma care eligibility. Veterans and returning service members qualify if they suffer from injuries to more than one physical region or organ system, one of which may be life threatening, and which results in physical, cognitive, psychological, or psychosocial impairments and functional disability.

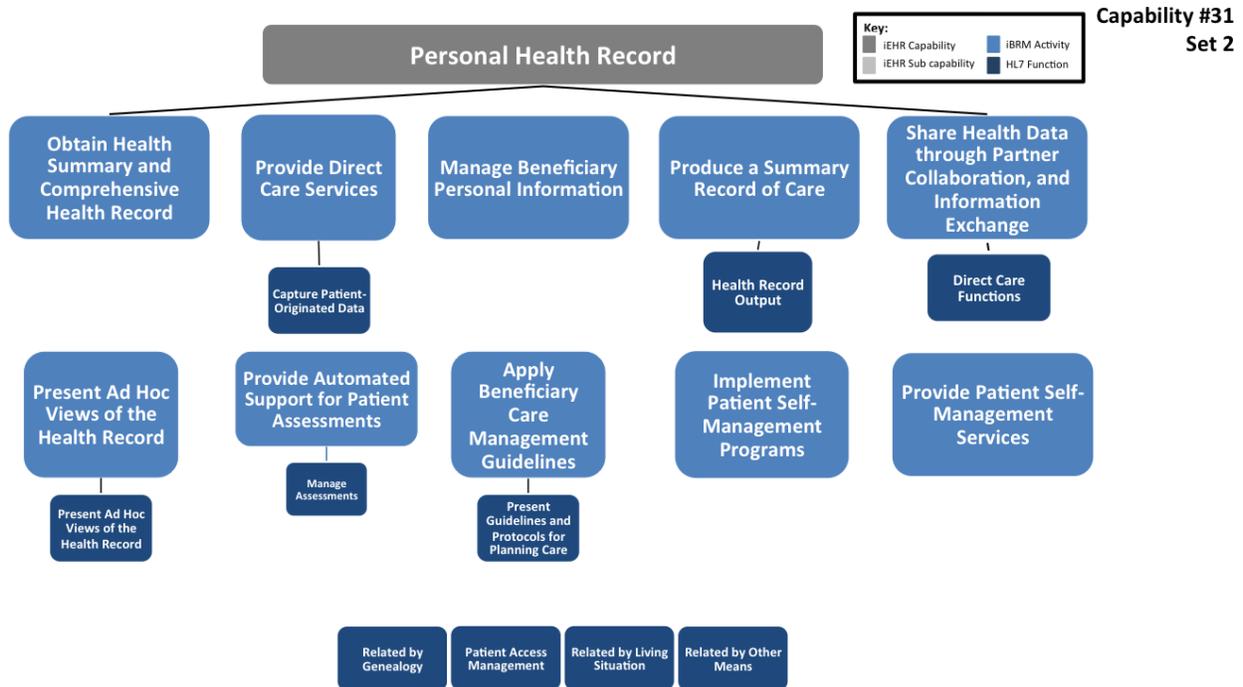
The Disability Evaluation capability captures and maintains medical, procedural/surgical, social, and family history (e.g., pertinent positive and negative histories, patient-reported or externally available patient clinical history) and enables the origination, and tracking of orders for diagnostic tests. Developing a complete historical record of a patient enables accurate care delivery and informed benefit eligibility and compensation decisions.



## Personal Health Record (Capability 31, Set 2)

The Personal Health Record capability provides patients with the ability to electronically access, review, edit, manage, and share their health information in a private, secure, and confidential environment. Patients may also do the same with others' health information with proper authorization.

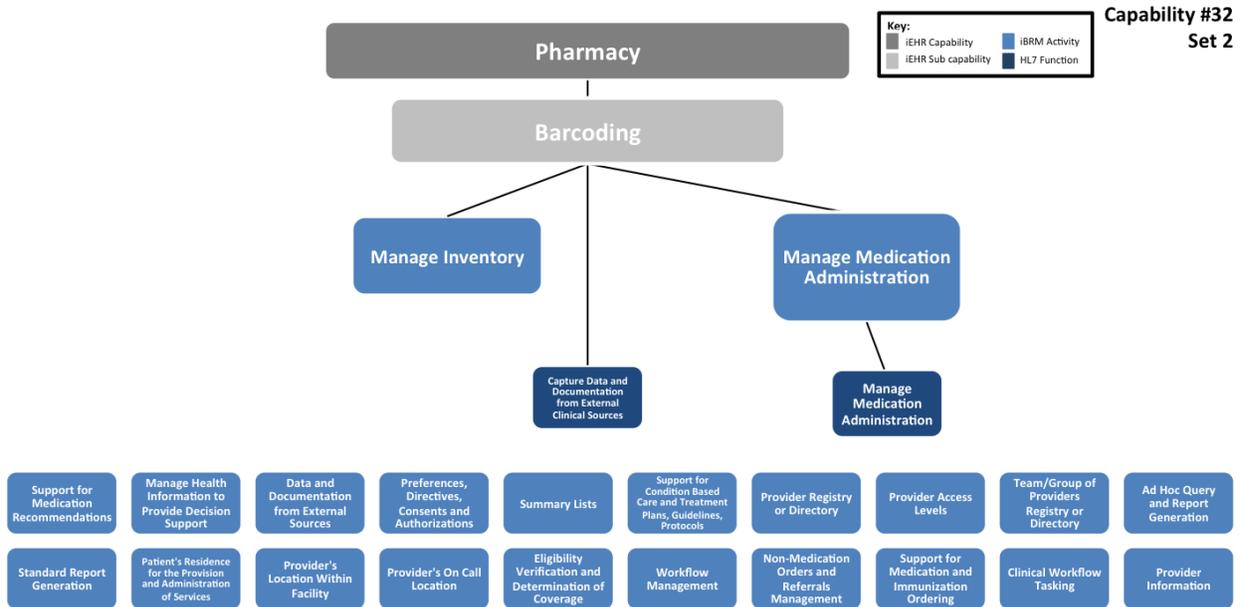
The primary function of this capability is to manage and safeguard beneficiaries' personal and health information, which includes demographic, medical history, test and laboratory, insurance, and other information to assist in the delivery of appropriate and quality patient care. Once providers input patient data, end-users tailor views and information visible to allow for efficient health record review. The system transmits data between the private and public sector facilities to support informed health care delivery, and thus all relevant providers view consistent information. Patients maintain the option and the ability to access their personal record, view appointments and test results, and receive personalized health advice via teleconsultation. To promote accurate recommendations and to prevent unauthorized access to patients' records, the system draws upon digital signatures and location mechanisms to identify the author of each record entry.



## Pharmacy: Barcoding (Capability 32, Set 2)

The Pharmacy – Barcoding capability decreases patient misidentification and promotes accurate inventory management. The system provides the ability to present information necessary to correctly identify patients and accurately identify specimen to be collected. The Barcoding capability enables positive patient identification (PPI) and the labeling of pharmacy inventory. In addition, it mitigates vulnerabilities in medication administration and decreases patient misidentification.

Barcoding decreases the duplication of work associated with patient care activities that exists in the current clinical system where clinicians must manually enter patient and drug data into the electronic health record (EHR) system. Inventory management is simplified and digitized through the adoption of this capability. Barcoding assists inventory management functions to ensure: desired stock levels of pharmacy items, automatic generation of replenishment orders, dispersion of goods to supported services or end users, identification of items via barcode technology, and communication of inventory information between a secondary inventory point and its associated automated supply points, and produces reports displaying inventory level, distributions and dollar values.



## Pharmacy: Mail Order (Capability 33, Set 2)

The Pharmacy – Mail Order capability provides interactive pharmaceutical support services to healthcare facilities as well as the means to dispense and mail prescriptions to eligible patients to ensure timely, accurate, and cost effective delivery. To reduce medication errors at delivery, the system positively identifies the patient and the drug, including the substance, dose, route, and time. The system also crosschecks the prescribed drug against patients' medication list, housed in their electronic records, to identify any possible complications related to allergens, drug-on-drug interactions, and drug-condition interactions. Providers draw upon the electronic record for relevant cost information – the system presents providers with the most cost-effective services, referrals, devices, and medications tailored to patients' health insurance/plan coverage rules.

The Pharmacy – Mail Order capability assists providers with pharmacy decision-support and includes key patient-safety provisions to prevent drug-related complications. In addition to the functions listed above, the capability:

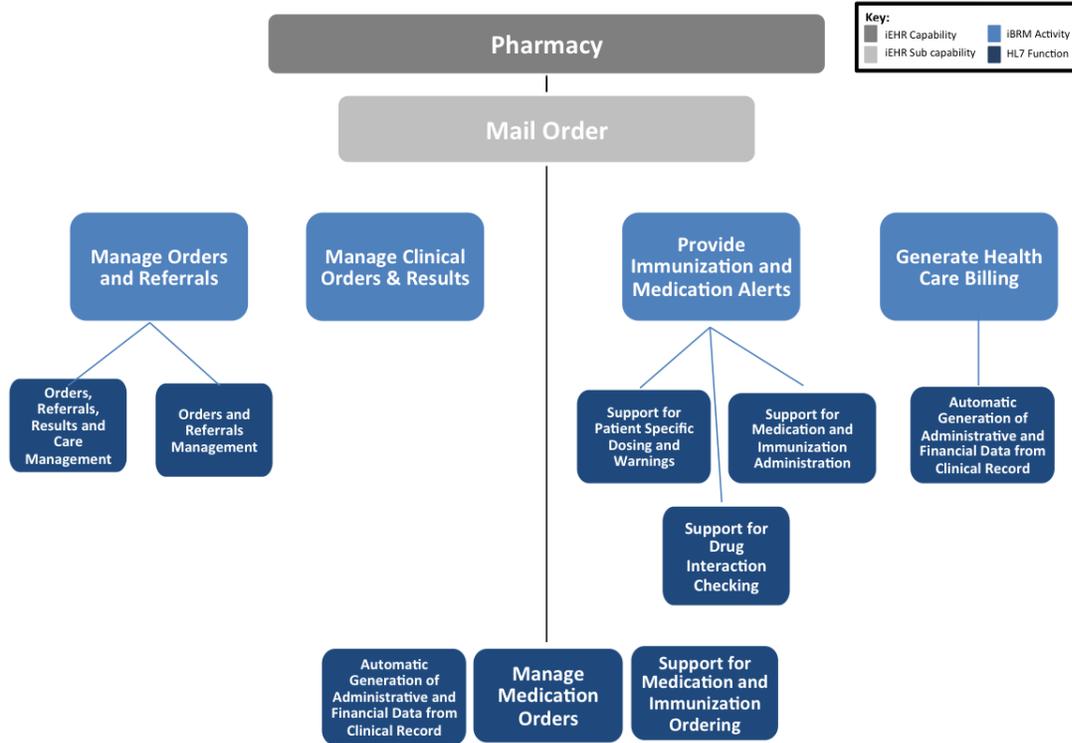
- Creates prescriptions or other medication orders with detail adequate for correct filling and administration

- Provides information regarding compliance of medication orders with formularies

- Presents providers with the list of medications that are to be administered to a patient, necessary administration information, and capture administration details

- Alerts providers to potential administration errors (such as wrong patient, wrong drug, wrong dose, wrong route and wrong time) in support of safe and accurate medication administration and support medication administration workflow

Identifies drug interaction warnings time of medication ordering and alerts providers as needed.



## Radiology/ Imaging (Capability 34, Set 2)

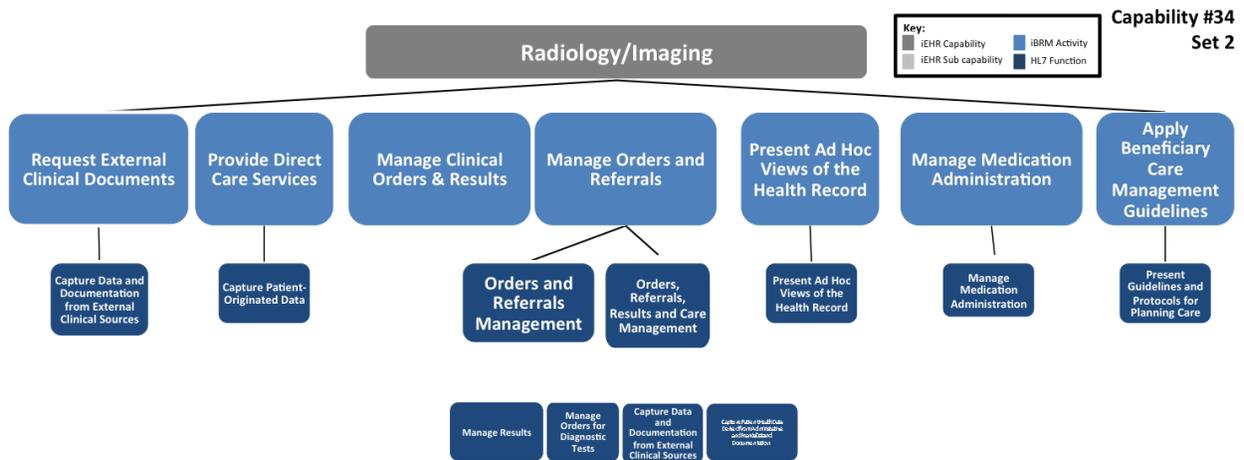
The Radiology/Imaging capability captures, stores, manages, and documents multimedia images in patients' electronic health records. The goal of the capability is to support the analysis, diagnosis, and treatment of injuries and diseases. To do so, the capability relies upon the following functions:

**Nuclear medicine:** Assists in the analysis and diagnosis of injuries and diseases by drawing upon radionuclides and the process of radioactive decay to identify areas requiring further attention, to recommend patients' next steps, and to assess patients' treatment

**Diagnostic services:** Facilitates the provision of timely, cost-effective, and high-quality diagnostic care in safe and secure environments

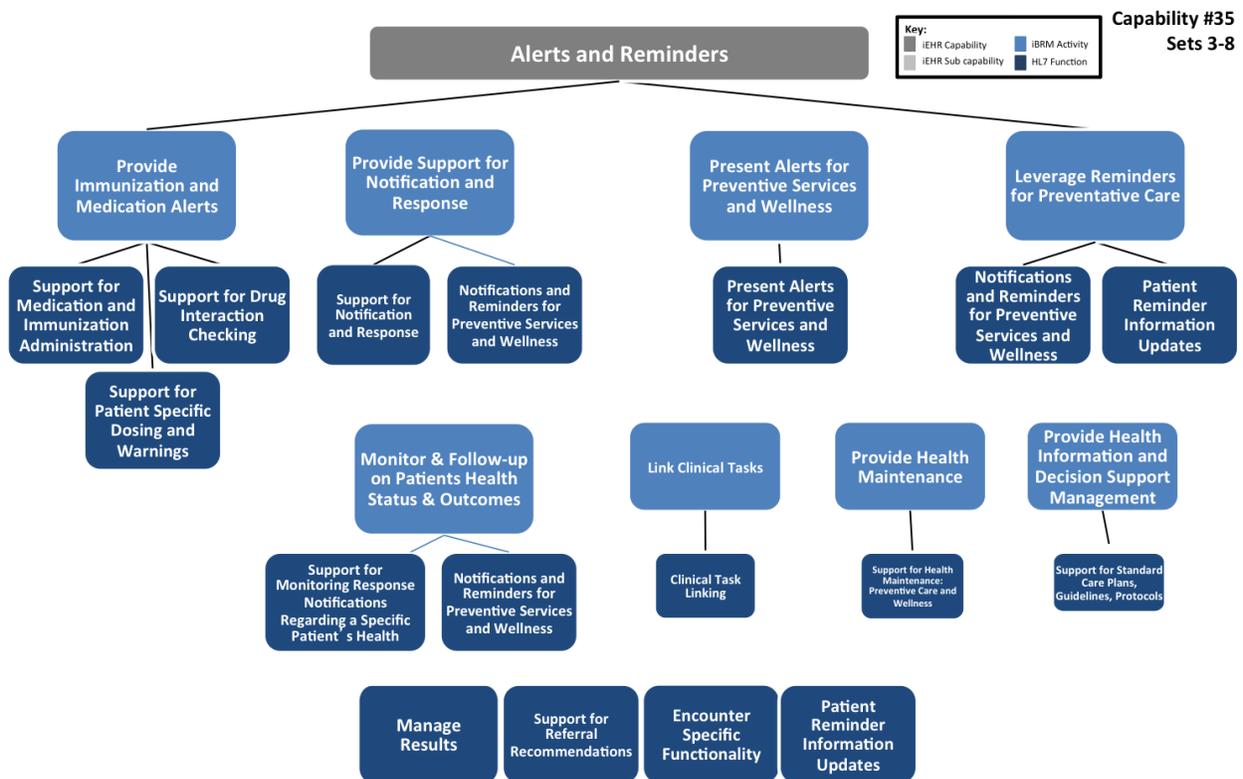
**Picture Archiving and Communication System (PACS)/Tele-imaging:** Provides commercial filmless radiology imaging. Finally, interventional radiology describes the use of minimally invasive procedures to diagnose or treat injuries and/or diseases

The Radiology/Imaging capability provides timely, accurate health data, which can be accessed regardless of where a clinician or patient are stationed—a function that relates to the Global Image Access capability. The Radiology/Imaging capability utilizes high-quality image data from a variety of specialties such as cardiology, pulmonary and gastrointestinal medicine, pathology, radiology, hematology, and nuclear medicine.



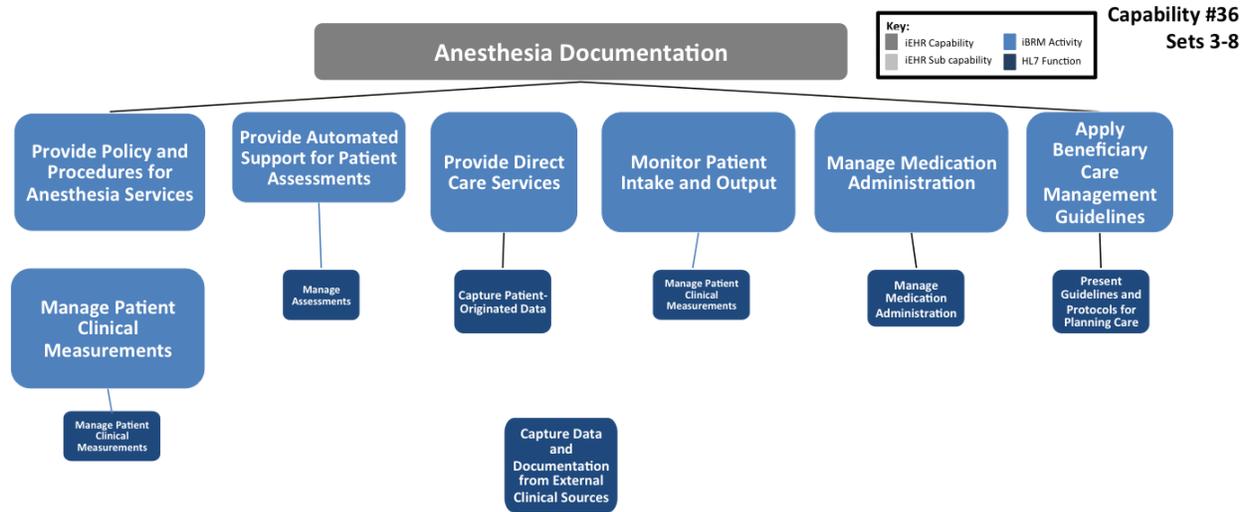
## Alerts and Reminders (Capability 35, Sets 3-8)

The Alerts & Reminders capability notifies and prompts a health care provider to act on behalf of a patient when required by the patient’s medical situation or diagnosis and sends clinical reminders to patients to communicate preventative services, test, or behavioral actions that are due or overdue. Through these notifications, this capability seeks to minimize administration or medication errors (e.g., wrong patient, wrong drug, wrong dose, wrong route, wrong time, drug-drug/condition interactions). Upon receipt of such a notification, providers respond to alerts at the time of the encounter, such as immunizations, screening exams, lab tests, and others as determined by national protocols. The Alerts & Reminders capability ensures the accuracy of its notification by utilization sophisticated mathematical models to generate health care decision-making alerts under given constraints.



## Anesthesia Documentation (Capability 36, Sets 3-8)

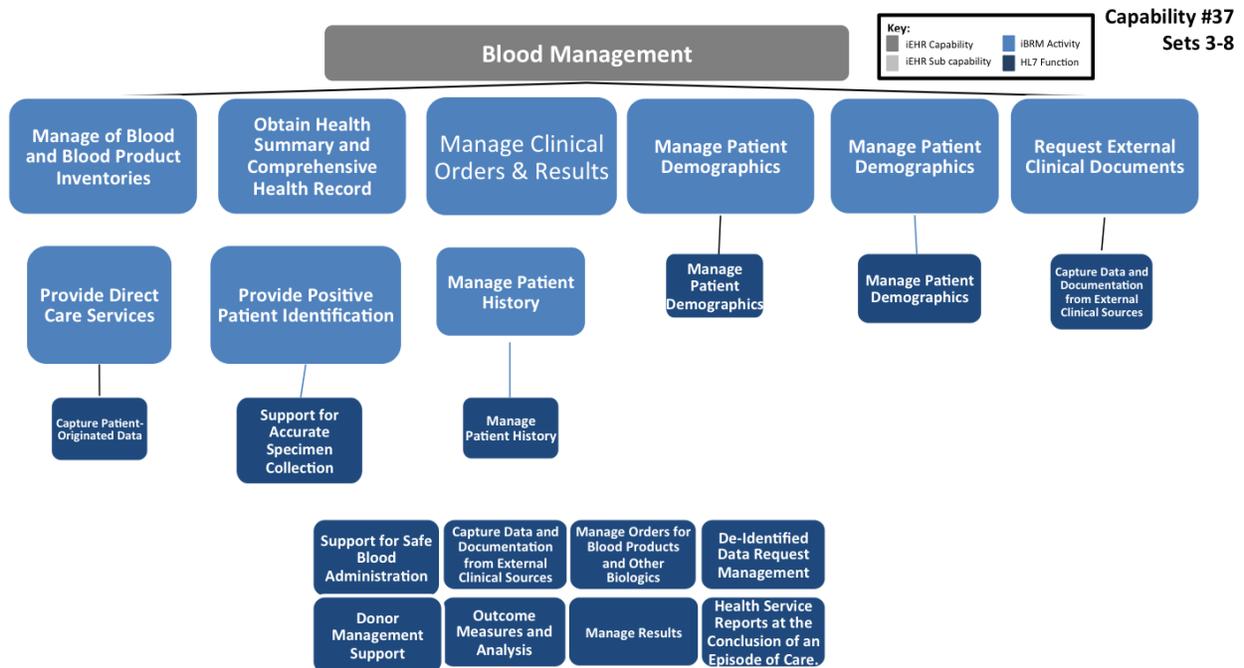
The Anesthesia Documentation capability monitors and documents medication administered, procedures performed, physiological responses and associated outcomes observed during the course of surgical or obstetrical anesthesia. This capability also provides consultation and guidance in the form of policy and procedures regarding anesthesiology services.



## Blood Management (Capability 37, Sets 3-8)

The Blood Management capability manages all aspects of blood products and transfusions. This includes the management of blood and blood-product inventories and donor management support. The management of blood and blood-product inventories follows these inventories through the blood management lifecycle from acquisition, receipt, storage, control, distribution, maintenance, preparation, through to disposal. Donor management support provides the ability to capture or receive information regarding potential donors and recipients, which can then be utilized by donor matching agencies.

The Blood Management capability ensures the appropriate provision and use of blood, including its components and derivatives, but also offers strategies to reduce or avoid the need for a blood transfusion.

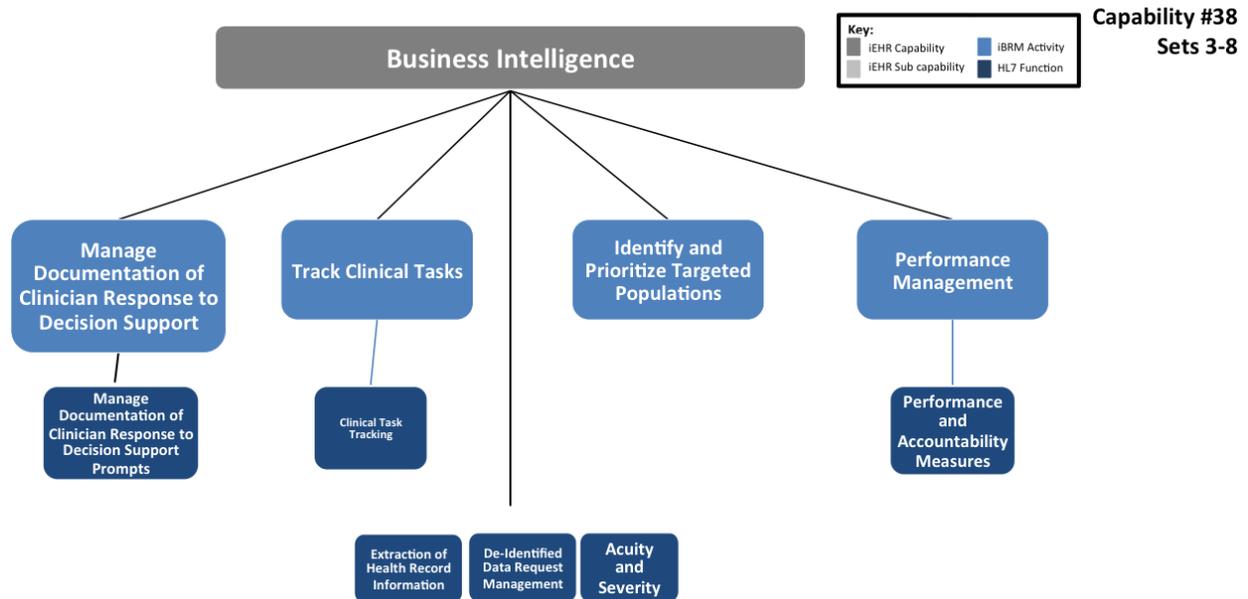


## Business Intelligence (Capability 38, Sets 3-8)

The Business Intelligence capability identifies and analyzes business and medical data to facilitate decision-making and trend analysis. This capability tracks health care delivery data utilizing the Decision Support System (DSS) to increase efficiency of health care delivery, control health care costs, track and trend data. Four key functions describe the Business Intelligence capability:

- Perform cost accounting by collecting and interpreting costs per unit of service to aid in calculation of key financial indicators and support management decision-making
- Conduct business research by collecting and interpreting data, such as current health care trends, staff education opportunities, and business opportunities and risks to achieve the tactical and strategic goals of the organization
- Provide centers of excellence support by developing centers to analyze clinical and administrative data related to workload, productivity, costs, staffing, and the optimal use of databases and clinical data

Provide analytical and transactional business software such as payment gateways, software applications, online bill payment and/or payment to merchant account providers.

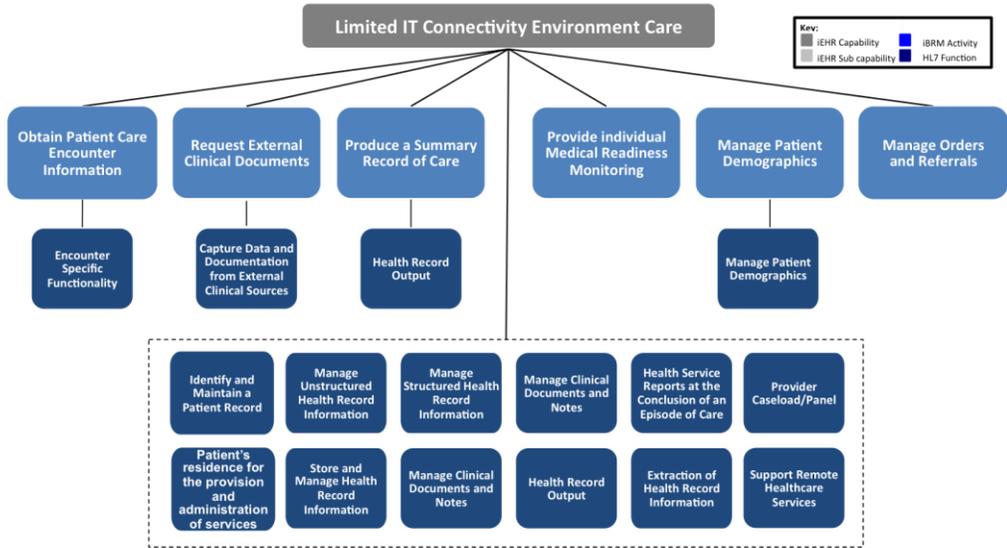


## Limited IT Connectivity Environment Care (Capability 39, Sets 3-8)

Limited IT Connectivity Environment Care refers to care provided in environments where the care provider cannot connect to the primary Information Technology (IT) network and central EHR to access or add to health information, medical records, or other health resources.

Examples of low/no IT bandwidth care environments may include remote clinics, battlefield care, deployed ships, in-transit care, home care, in disasters and other unanticipated system outages, and wilderness or expeditionary care among others. In such environments, health care can be facilitated by local cache servers or mobile devices such as handheld, laptop or tablet computers which contain relevant health information on the proper cohort of individuals and a means to document care provided at the remote site. This capability is not expected to provide all of the agency specific requirements that exist for the Operational Medicine environment of DoD and those will be addressed as an agency specific capability requirement set. Essential components of a Limited IT Connectivity Environment Care capability include:

- The ability to identify a cohort of individuals that may require care in a remote location.
- The ability to download from the host system to a local cache server or appropriate portable device, relevant medical information on these individuals.
- The ability to retrieve and display information by individuals.
- The ability to document history, observations, assessments, interventions/care provided, and plans for follow-up. Capturing observations/data should include vital signs, results of home/field tests, and medical photos among others.
- Care documentation must be stored without loss on the local workstation or mobile device, and then transferred without distortion to the primary data repository system(s) once connectivity is provided, even when that connectivity is intermittent or of limited bandwidth. This includes data and documents as well as orders to be performed when the individual is returned to fully supported care settings.
- Inclusion of basic medical references, care pathways, and protocols is desirable on an as needed, space available basis.
- The ability to export data in a standard that can be consumed by other information systems used in the limited IT connectivity care environment.

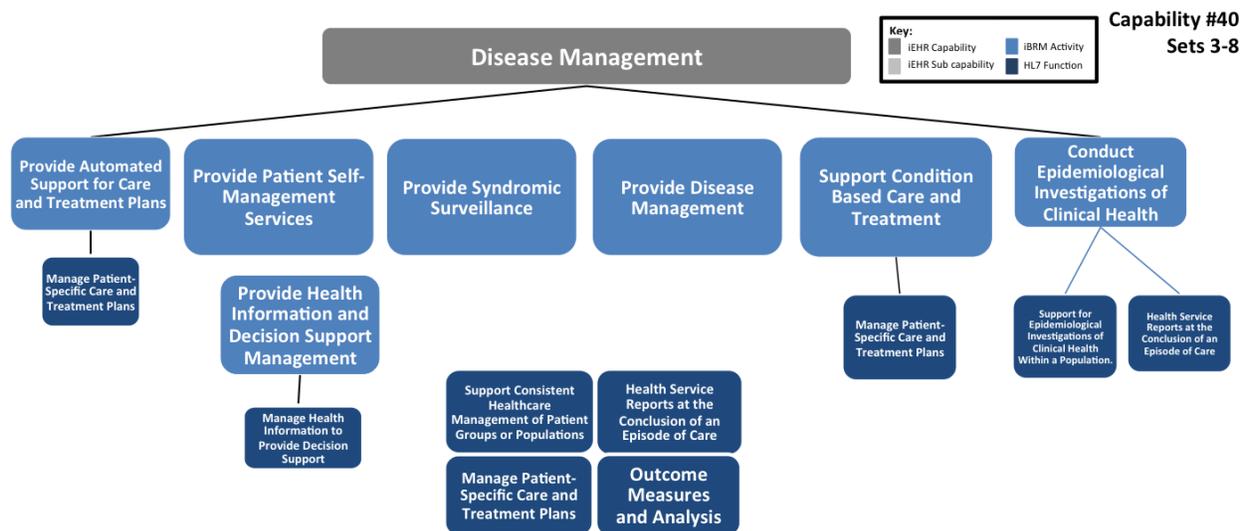


## Disease Management (Capability 40, Sets 3-8)

The Disease Management capability serves as an organized effort to achieve desired health care outcomes in individual populations by tracking and preventing diseases. Disease Management focuses on populations with prevalent diseases or conditions in which health care practices may be subject to considerable variation. It also helps to plan health services, educate populations/patients on new models and practices and advise them on how to access all the information in the system. The Disease Management Capability creates a more stable process for monitoring diseases through the iEHR.

Additional functions of this capability include coordinating health care interventions, education, and communications for populations with prevalent, often chronic, diseases or physical conditions. This function will occur through a continuum of care spanning settings and time. Thus, major chronic or acute disease processes (those with high volume, risk, or costs) will be used to manage the progress and outcome of care.

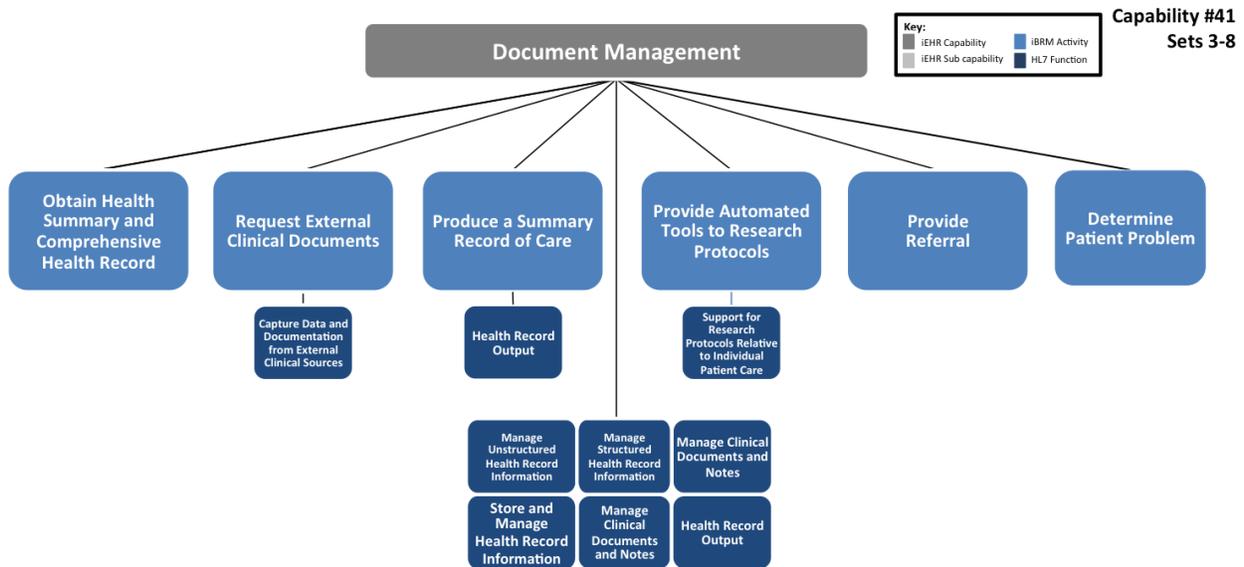
Disease Management also includes the instruction of patients on new practices that increase their level of wellness and avoid illness and providing care education across diverse settings from multiple touch points. Areas of care education include health promotion, wellness, prevention, and use of prosthetic appliances/devices, including community outreach and self-management/service activities.



## Document Management (Capability 41, Sets 3-8)

The Document Management capability processes and retrieves clinical documentation for a patient or an aggregated group of patients to analyze clinical care, billing and other administrative functions, research, and public health. The documentation includes a consolidation of the end-to-end data collected from patient visits (orders, labs, scans, immunizations).

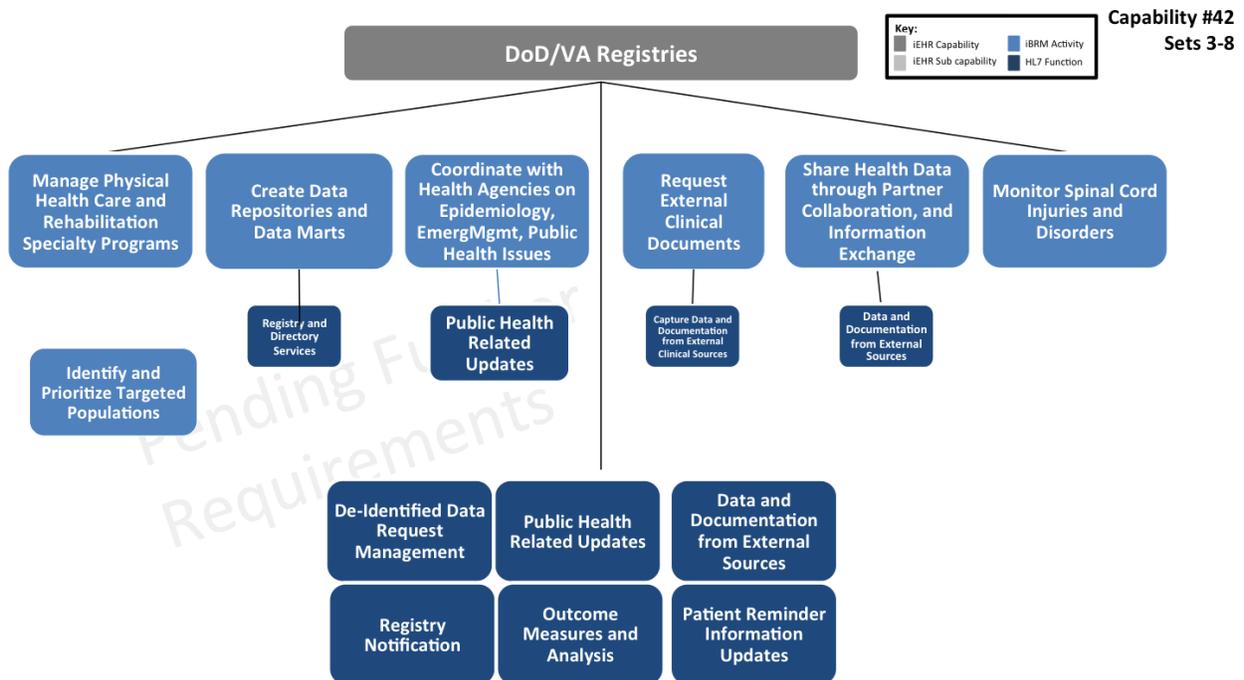
The Document Management capability functions to support all providers (physicians, nurses, technologists, transporters, and any other external providers of clinical care). This capability enables providers to document and organize their observations and medical decisions to best describe their diagnoses. In so doing, the system promotes individual medical readiness, ensures document standards, provides syndrome surveillance, and adopts new technologies for tracking notes and summaries. The tracked documents outline all patient information from health visits. The system provides the ability to access standard assessment data in the patient record, provides the ability to access health standards and practices, and provides the ability to generate reports consisting of all or part of an individual's patient record.



## DOD/VA Registries (Capability 42, Sets 3-8)

The DoD/VA Registries capability systematically collects information regarding patients with a specific disease or diagnosis for analysis of care and population health management. The capability functions to manage a patient's health care, through looking at population-specific data to provide information on public health related updates, registry and directory services, patient demographics and manage medication and immunizations. Providers have the ability to pull information from these registries, when needed.

Medical providers across both the VA and DoD have the ability to add and share information pertaining to treatments, surgical procedures, and outcomes for military service members and veterans who received treatment throughout the entire spectrum of care.



## Encounter Coding (Capability 43, Sets 3-8)

The Encounter Coding capability has the ability to generate and assign a numerical code to depict an accurate portrayal of a patient's healthcare procedure. The encounter codes outline the reason for a patient's visit, their overall diagnosis, treatment, or disposition.

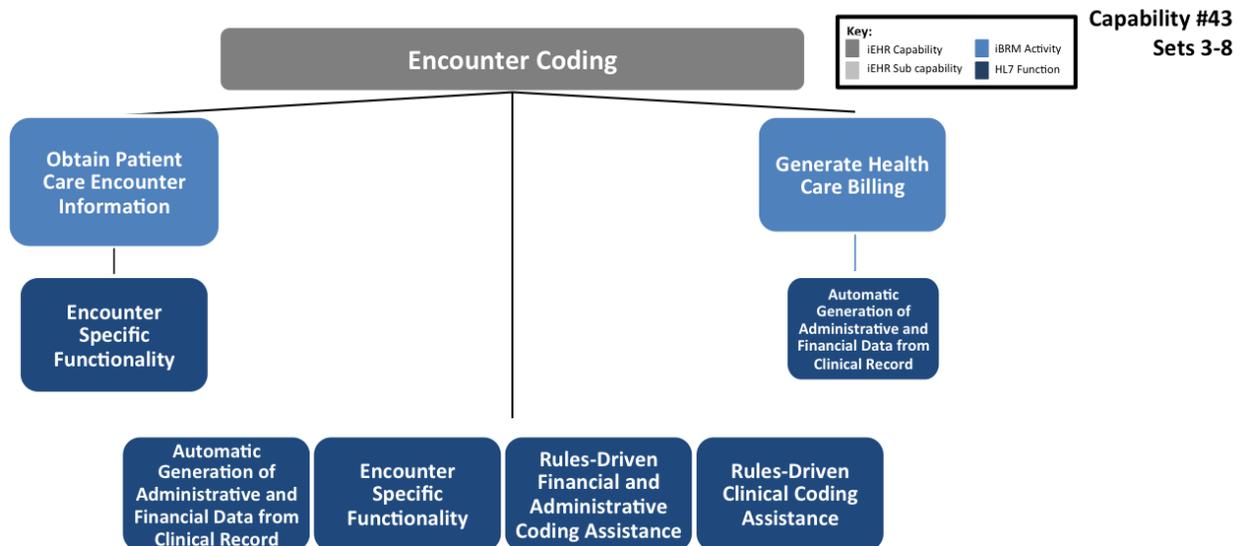
In order to accurately code, a patient's encounter information must be gathered. This is achieved by focusing on encounter management, which promotes patient-centered/oriented care that enables immediate point of service and real-time point of care by facilitating efficient workflow and operations performance. This support is necessary for encounter coding, which relies on providing user interaction and workflows, which are configured according to clinical protocols and business rules based on encounter specific values such as care setting, encounter type (inpatient, outpatient, home health, etc.), provider type, patient's EHR, health status, demographics, and the initial purpose of the encounter.

Additional functions of the Encounter Coding capability include:

- The ability to access pertinent patient information needed to support coding of diagnosis, procedures and outcomes

- The ability to assist with the coding of diagnoses, procedures, and outcomes based on provider specialty, care setting, and other information that may be entered into the system during the encounter.

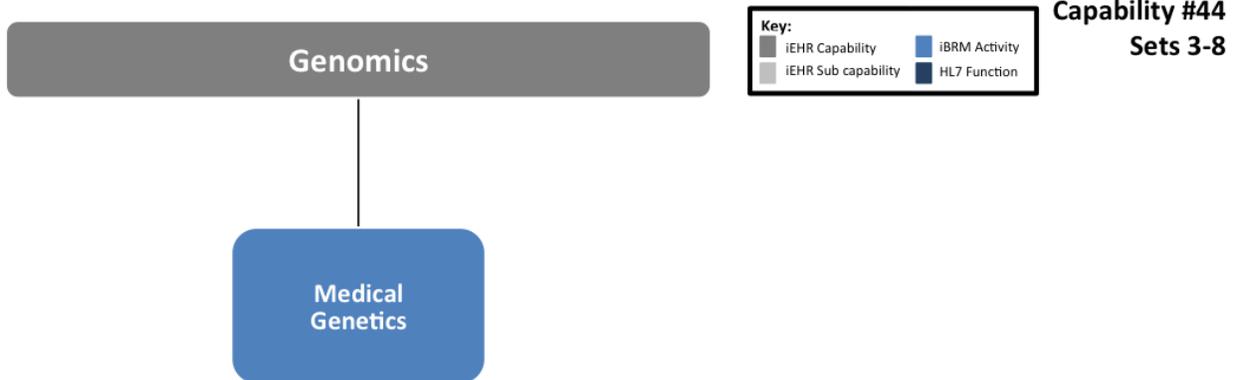
Encounter coding ensures the electronic system is efficiently allocated provider reimbursement and provides direct care with user interaction that is based on clinical protocols and business codes.



## Genomics (Capability 44, Sets 3-8)

The Genomics capability provides the ability to order genetic or genomic tests from iEHR using computerized provider order entry and to develop genetic test summary reports. This capability enables providers to tailor treatment and counseling to individual patient genetic profiles. The capability also supports counseling on patients' hereditary risk factors (e.g., breast cancer susceptibility, Alzheimer's disease) as well as prenatal detection of abnormalities (Trisomy 21, Tay-Sachs disease).

The Genomics capability also supports the storage of discrete genetic findings, supports the workflow in molecular diagnostic laboratories, verifies the syntax of genomics data, enables automated interactions with molecular diagnostic devices, and configures decision support rules that utilize discrete genetic information.



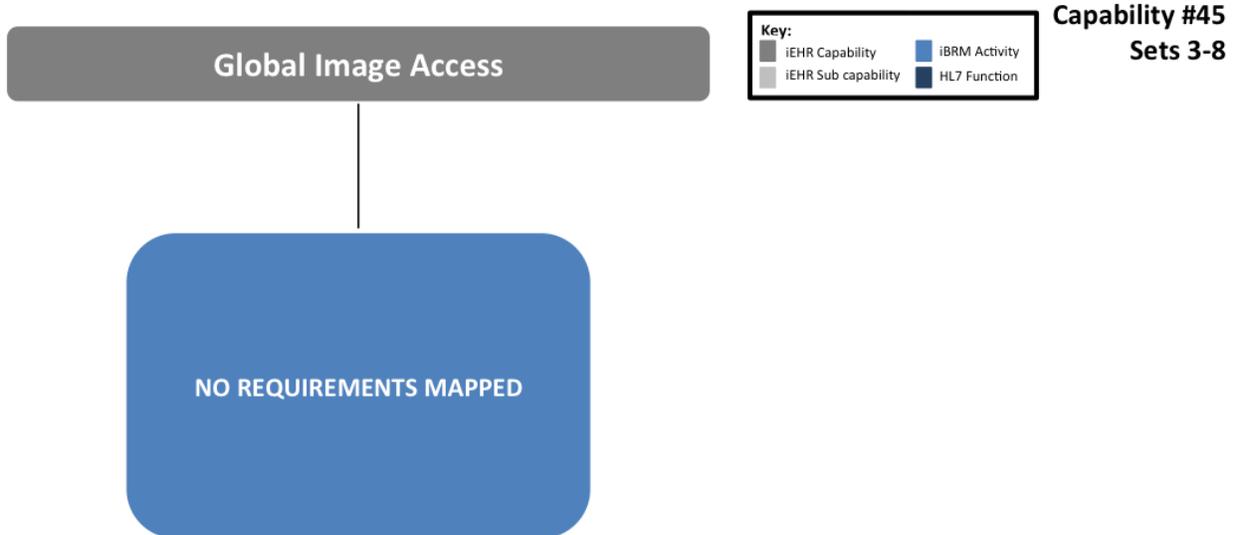
## Global Image Access (Capability 45, Sets 3-8)

The Global Image Access capability provides access to medical and dental diagnostic imaging (multi-media) information from any location across the globe. In order to ensure the security of the images, this capability requires secure communications between all participants: patients, doctors, nurses, chronic disease care managers, pharmacies, laboratories, payers, consultants, and more.

Additional functions of the Global Image Access capability include the ability to:

- Capture external data and documentation
- Receive, store and display scanned documents as images
- Store imaged documents or reference the imaged documents via links to imaging systems
- Receive, store and display clinical result images (such as radiologic images) received from an external source
- Receive, store, and display data elements into the patient record if lab results are received electronically

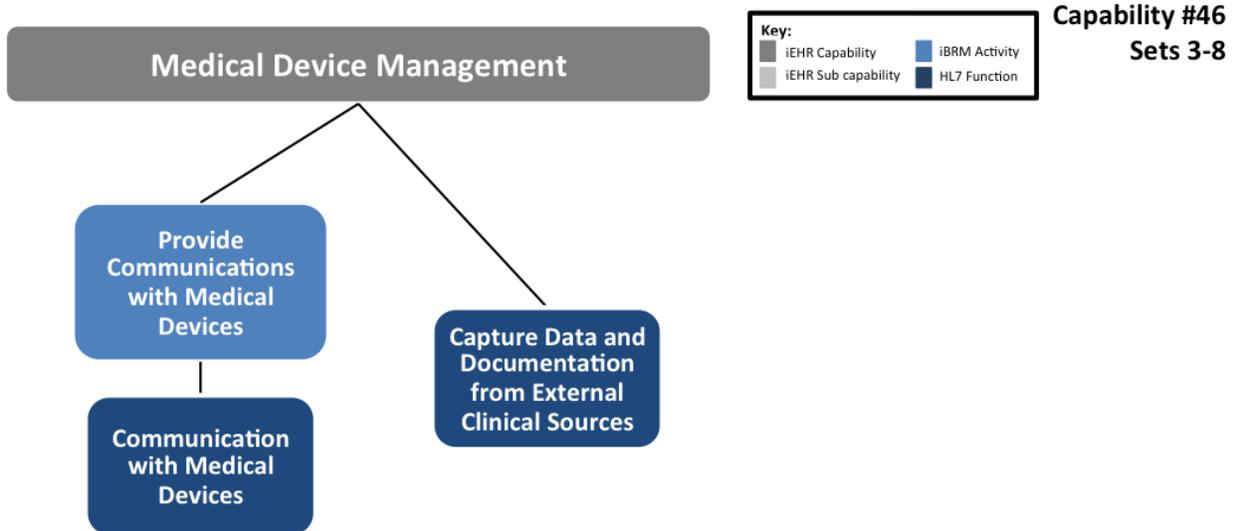
The Global Image Access capability ensures communication between all providers and providers and patients are as effective as possible across all care settings. Mechanisms for incorporating external clinical data and documentation (including identification of source) such as global images are available with this capability.



## Medical Device Management (Capability 46, Sets 3-8)

The Medical Device Management capability includes the ability to govern the processes related to patient care, regarding medical devices and associated systems. Medical Device Management ensures full compliance with government and industry regulations for all handlings and implantation of a medical device. It provides specialized patient care related to medical equipment in the most efficient and effective manner according to all authorizing laws, regulations, and policies.

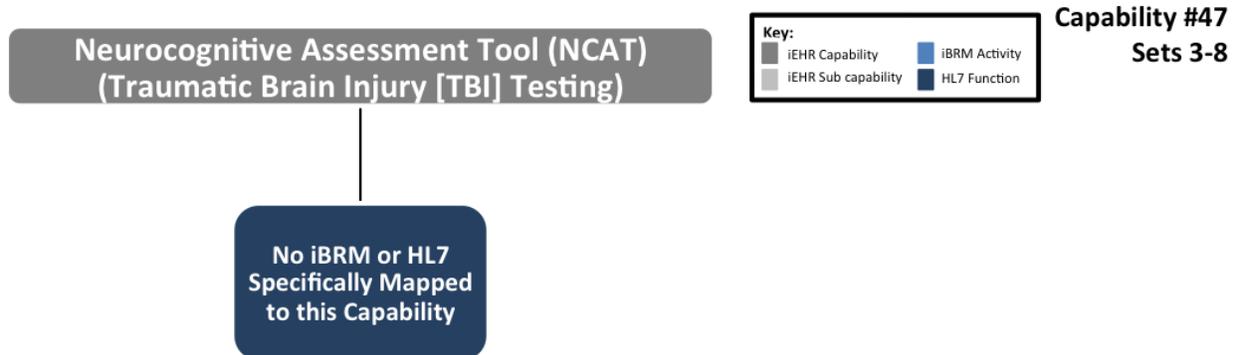
The Medical Device Management capability allows for better communication and more effective presentations of data captured from medical devices. This ensures that all communications from medical devices are actively captured and presented, and equipment uses the correct care settings. Communication with medical devices is supported as appropriate to the care setting such as an office or a patient's home. Examples include vital signs/pulse-oximeter, anesthesia machines, home diagnostic devices for chronic disease management, laboratory machines, and bar coded artifacts (medicine, immunizations, demographics, history, and identification).



## Neurocognitive Assessment Tool (NCAT) (Traumatic Brain Injury [TBI] Testing) (Capability 47, Sets 3-8)

The Neurocognitive Assessment Tool (NCAT) capability provides measurement, assessment, and analysis of the neurological and cognitive performance and abilities of a patient. The NCAT capability's focus is to provide complete care to service members and veterans who have suffered from Traumatic Brain Injury (TBI), stroke, neurodegenerative conditions that involve the spinal cord, or any other neurological injuries.

The NCAT capability permits functional users to administer, store, and retrieve assessment test result data to be used to support both diagnostic and research activities. The assessment results will be centrally stored in the patient's electronic health record (EHR) and available for comparative analysis to authorized healthcare providers. Individual results will serve as a baseline in monitoring for changes in the patient's cognitive function. Ultimately, the goal is to have the capability to compare assessment results before and after a patient is subject to a blast event, in order to improve the accuracy of mild TBI screening and proper treatment.

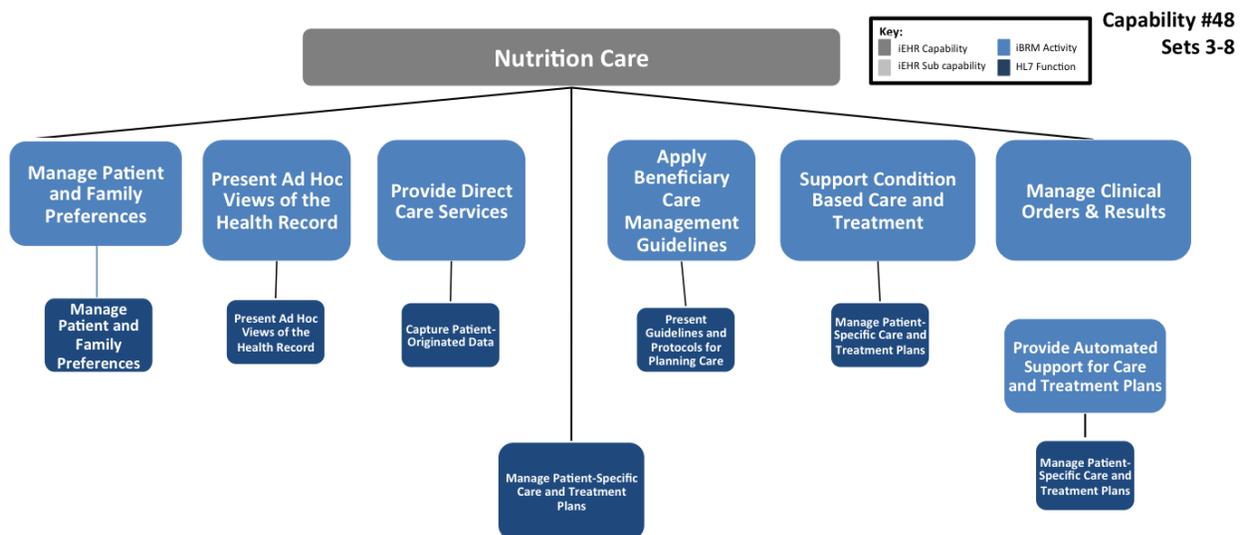


## Nutrition Care (Capability 48, Sets 3-8)

The Nutrition Care capability includes all information related to the assessment, diagnosis, monitoring and evaluation, and intervention of nutrition care. The capability shall provide information on a variety of activities including nutritive screenings and assessments, diet order entries, tube feeding and supplemental feeding orders, diet pattern calculations, nutrient analysis of meals, encounter tracking, and more. The Nutrition Care capability monitors service and distribution, inventory and cost management, recipe and food menu analysis, diet patterns and quality food service tracking.

The system provides the ability to identify and consistently manage healthcare over time and across populations or groups of patients that share diagnoses, problems, functional limitations, treatment, medications, and demographic characteristics that may influence care as they relate to nutrition care. Populations or groups of patients that share nutrition related diagnoses, problems, functional limitations, treatment, medication, and demographic characteristics such as race, ethnicity, religion, socio-economic status that may affect care are identified for the clinician. The clinician is advised and assisted with management of these patients to optimize the clinician's ability to provide appropriate care.

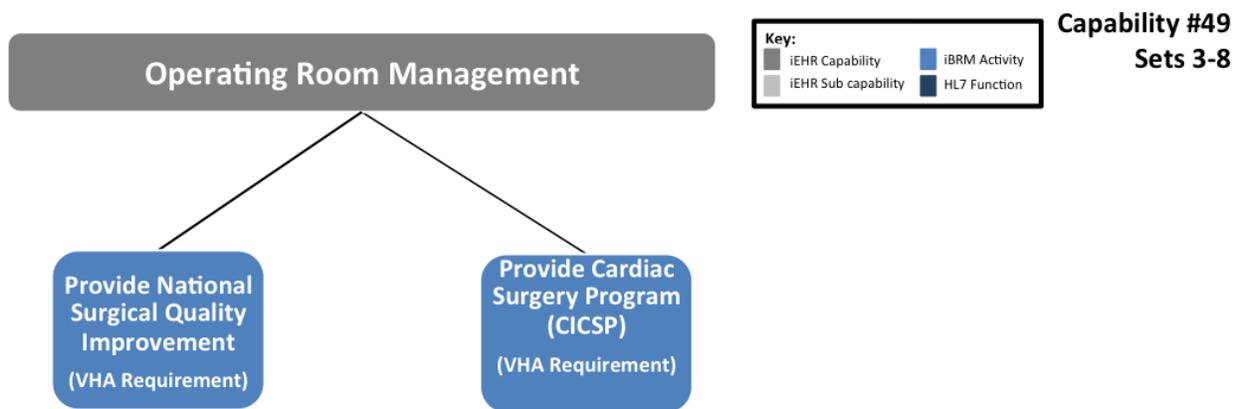
The Nutrition Care capability provides patients with the ability to access reliable information about wellness, disease management, treatments, peer support groups and related information that is relevant for a specific patient. The information may be linked directly from entries in the health record, or may be accessed through other means such as key word search. The information they receive is provided as part of the EHR system, but may also include patient information from external databases or specific websites.



## Operating Room Management (Capability 49, Sets 3-8)

The Operating Room Management capability provides the ability to ensure the safe, efficient, and effective delivery of operating room services through the surgical continuum of care. Surgery is defined as a medical specialty that uses operative manual and instrumental techniques on a patient to investigate and/or treat a pathological condition such as disease or injury, to help improve bodily function or appearance.

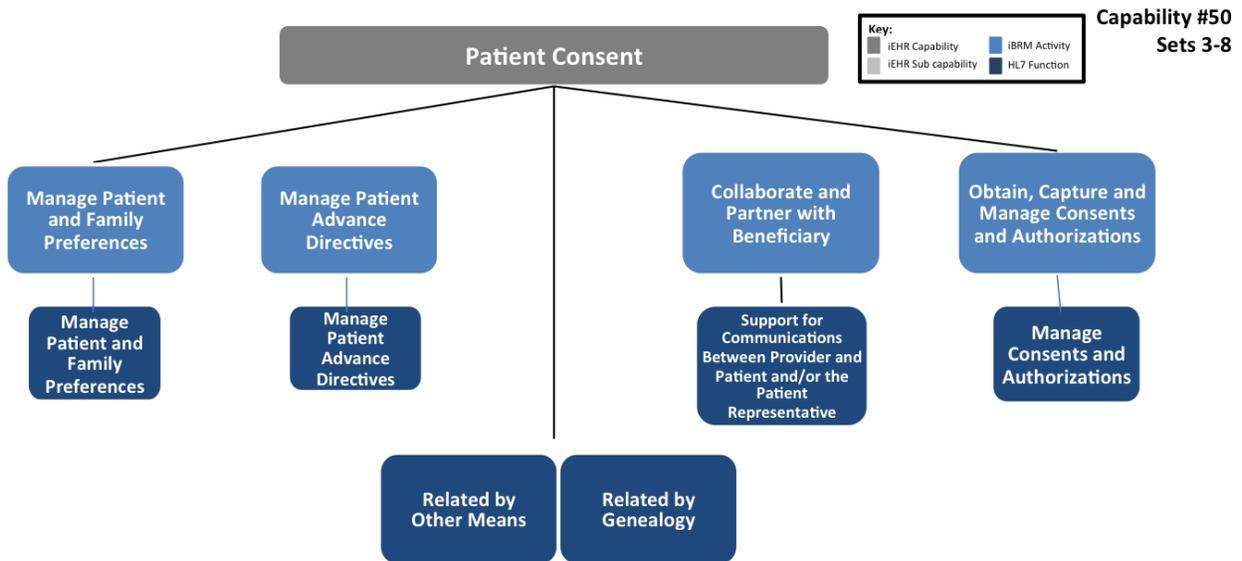
The Operating Room Management system includes patient specific data, including information about patients' length of stay, their workload, and other metrics to better support clinical staff. Additionally, the system addresses a variety of medical procedures including bariatric surgery, general surgery, rehabilitative care, neurosurgery, ophthalmology, oral surgery, plastic surgery, orthopedic surgery, podiatric surgery, cardiothoracic surgery and much more.



## Patient Consent (Capability 50, Sets 3-8)

Required of patients for treatment. This capability will achieve these outcomes by providing patients with the ability to manage the permission and authorizations required from themselves and their families for various types of care. Patients can also use this capability to manage their advance directives. Through these services, this capability allows for more personal, efficient, and effective communication.

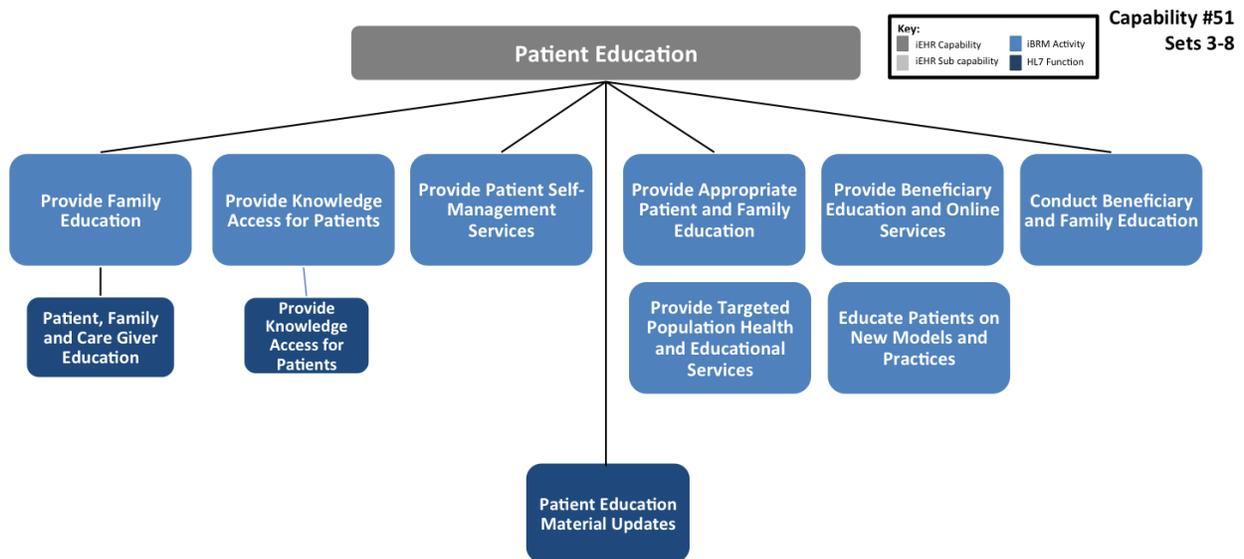
The Patient Consent capability will contribute to a comprehensive health record program by integrating with other patient self-reports and teleconsultation functionality before, during, and after a patient's visit and medical consultations. In this way, the Patient Consent capability will maximize the iEHR system's user-friendliness.



## Patient Education (Capability 51, Sets 3-8)

This capability will provide healthcare providers the ability to send information and instructions to patients and beneficiaries. Specifically, the Patient Education Capability will provide detailed instructions to patients regarding their diagnosis, medical procedures, and the healthcare options available to them. This capability will focus on ensuring that patients and their families and beneficiaries are aware of all of the services available to them, both during their hospital visit and afterwards, to ensure clear communication between beneficiaries and clinicians. This capability not only educates patients, their families, and their beneficiaries about their healthcare options, but also identifies tactical ways to execute this education process.

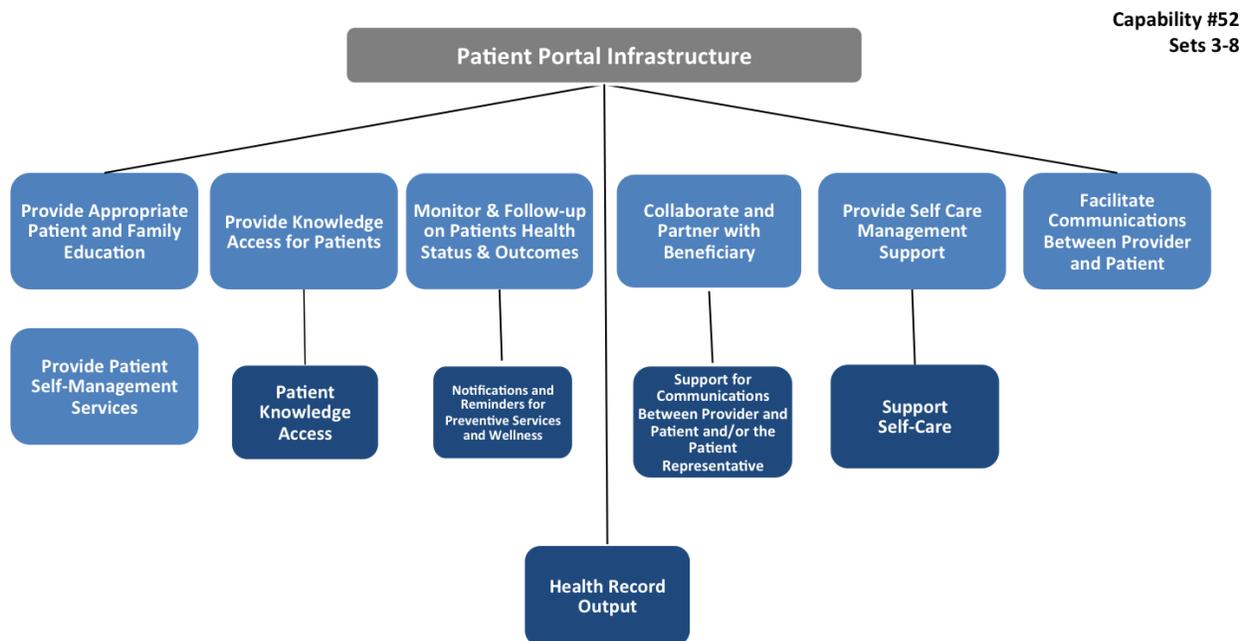
The Patient Education capability also overlaps with the Lab, Immunization, and Pharmacy capabilities. Patient Education is an important capability because it will provide patients with up-to-date information and instructions regarding the rationale behind the medication administered to them and potential side effects. Moreover, this capability will provide patients with information about self-care activities to equip them with the knowledge to proactively take care of themselves. Patient Education will focus on prevention rather than treatment. Finally, the Patient Education capability will enable patients to easily access pre-test instructions, test results, follow-up instructions, and future care processes.



## Patient Portal Infrastructure (Capability 52, Sets 3-8)

The Patient Portal Infrastructure capability provides a secure online platform for patient-provider interactions such as secure communications, e-visits, review of results, and patient education. It will provide fundamental education to patients by describing the basic services that can be rendered. Specifically, the Patient Portal Infrastructure capability will provide online services independently of any healthcare organization that may have a transitory relationship with the patient. The capability will educate patients on new practices to increase their wellness in such categories as healthcare, health promotions, wellness, disease management/prevention, and the use of prosthetic appliances/devices.

The Patient Portal Infrastructure capability identifies various community outreach programs, peer support groups, and self-management activities to facilitate patients' accountability for their own health management plans. The capability will also work with telehealth technologies and information to support patients while they are at home. This capability, in conjunction with other capabilities such as the Patient Education capability, will ensure that the iEHR system provides the most comprehensive care possible for all patients, clinicians and other system users.

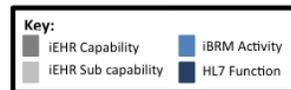


## Patient Questionnaire (Capability 53, Sets 3-8)

The Patient Questionnaire capability is a self-reflective tool that allows patients to inquire about and analyze their individual health status and behaviors. Specifically, patients will be able to customize their use of the system. Patients will be able to rate their individual and family preferences and select preferred languages to better express their background information and health concerns. Furthermore, this capability will serve as a feedback tool for clinicians by allowing patients to describe their clinical visits and identify treatment options. Thus, patients will better understand the information relayed to them in the iEHR system and be able to provide any feedback they may have to offer.

Clinicians will document this portion of the health record so they can pull archived records and feedback as necessary. Thus, this part of the iEHR interface makes it easier to retrieve information from health records, while simultaneously ensuring that all patients have a specific treatment plan. Finally, the Patient Questionnaire will include patient information from external databases and specific websites, thereby providing the most comprehensive depiction of a patient's health record possible.

Patient Questionnaire



Capability #53  
Sets 3-8

No iBRM or HL7  
Requirements  
Associated to this  
Capability

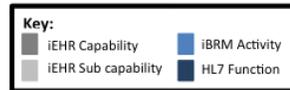
## Patient Safety Report (Capability 54, Sets 3-8)

The Patient Safety Reports (PSRS) capability enables the iEHR system to collect, analyze, and report information regarding patient safety and adverse medical events securely and confidentially. The system allows for the efficient maintenance of policies and procedures and ensures that efficient and high-quality federal health care resources are provided.

PSRS is monitored by the National Aeronautics and Space administration (NASA), enabling staff to voluntarily and autonomously report any narrow escapes, events or concerns they have which involve patient safety. Since NASA is an independent entity, it allows all personnel to accurately report anything that may be amiss.

In addition, the Patient Safety Reports capability develops and updates the outcomes of care provided, including patient safety. Thus, the capability ensures prompt and appropriate care by bringing people, places, processes, and technology together as one. As such, this capability will not only ensure patients' continued safety but also will address more specific aspects of their safety including the quality, cost, and fraud and abuse efforts of healthcare facilities.

Patient Safety Reports



Capability #54  
Sets 3-8

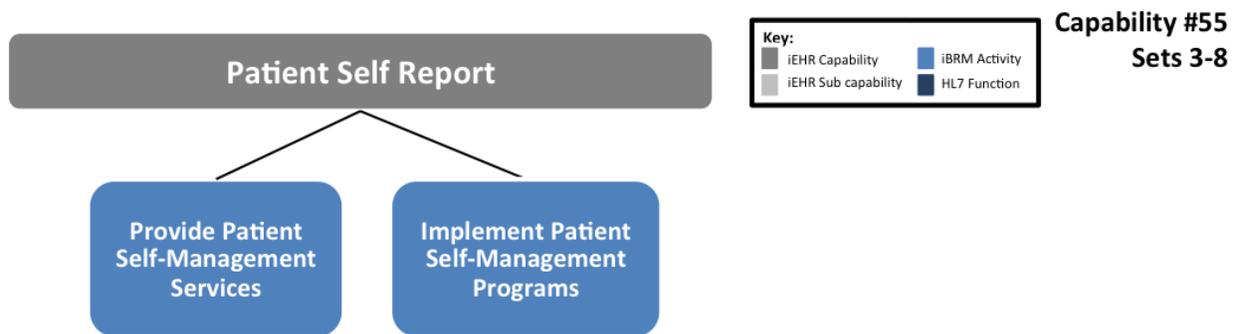
No iBRM or HL7  
Requirements  
Associated to this  
Capability

## Patient Self Report (Capability 55, Sets 3-8)

The Patient Self Report capability describes the ability of iEHR to receive, process, and store information provided by patients regarding their medical conditions or issues. Including self-reported data in EHRs could help patients feel more engaged in their care, which could increase the likelihood that patients follow health care providers' treatment recommendations. Similarly, by involving patients in their health records and care, the Patient Self Report capability incorporates the medical, functional, psychosocial, and spiritual needs of patients and their families.

The Patient Self Report capability provides the ability to manage practitioner-patient relationships. This function addresses the ability to access and update current information about the relationships between caregivers and patients. The system provides the ability to identify all providers by name associate with a specific patient encounter as well as the ability to identify all providers who have been associated with any encounter for a specific patient. The Patient Self Report capability also supports secure inter-provider communication to support the exchange of information between providers as part of the patient care process and the appropriate documentation of such exchanges.

In addition to the functions listed above, the capability also provides support related to donor management support, acuity and severity documentation, potential problem and trend identification, remote health care, and referrals. Finally, Patient Self Report involves patient self-management services, which describes disease self-management strategies and informatics and telehealth strategies to support patients' remote care. Licensed care coordinators support these patient-centered services and work closely with patients, their family, and other caregivers to contribute to overall patient health.



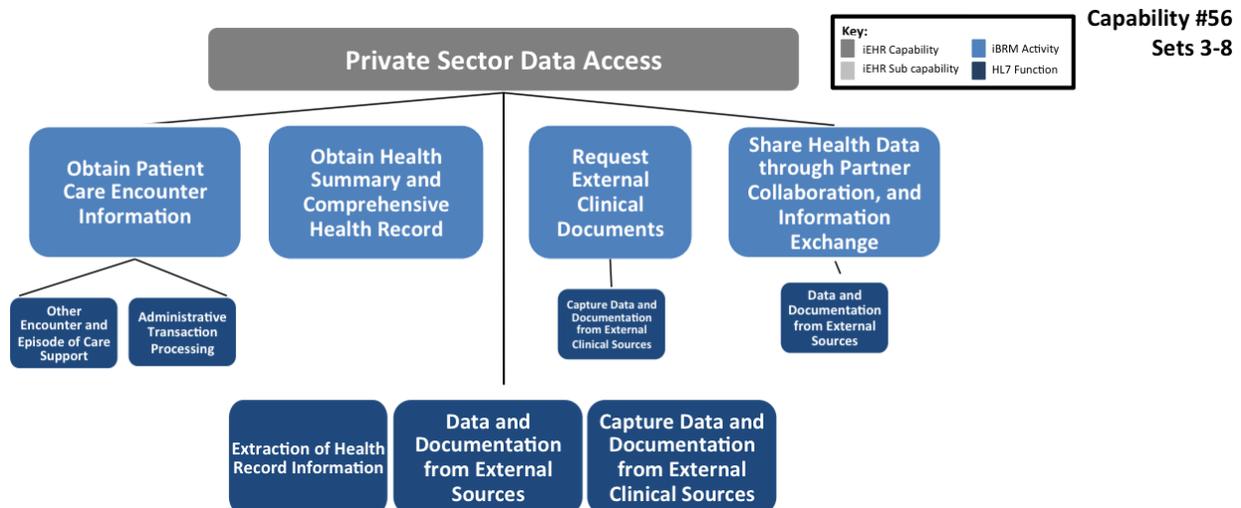
## Private Sector Data Access (Capability 56, Sets 3-8)

The Private Sector Data Access capability works to share beneficiaries' health care data between private healthcare providers and government departments. The goal of this capability is to allow seamless collaboration between partner organizations, focusing on the pursuit of joint venture opportunities such as shared infrastructure and common health/clinical data repositories. Both private sector and government providers are able to enter notes, orders, documents, images, and other clinical data, which is then shared with others with access to the record. Additional technologies and data standards are employed to ensure the integrity of the health record, health/financial and administrative reporting, auditing, and delivery.

To achieve its goal of interoperability, the Private Sector Data Access capability:

- Incorporates clinical data and documentation from external sources
- Enables the linkage of tasks to patients and/or relevant components of the electronic health record
- Employs a standard terminology model to ensure data correctness and enable semantic interoperability (both within an enterprise and externally)
- Supports interactions with other systems, applications, and modules to enable the creation of claims and encounter reports for reimbursement
- Provides assistance in assembling appropriate data, supporting data collection, and processing output from specific encounters

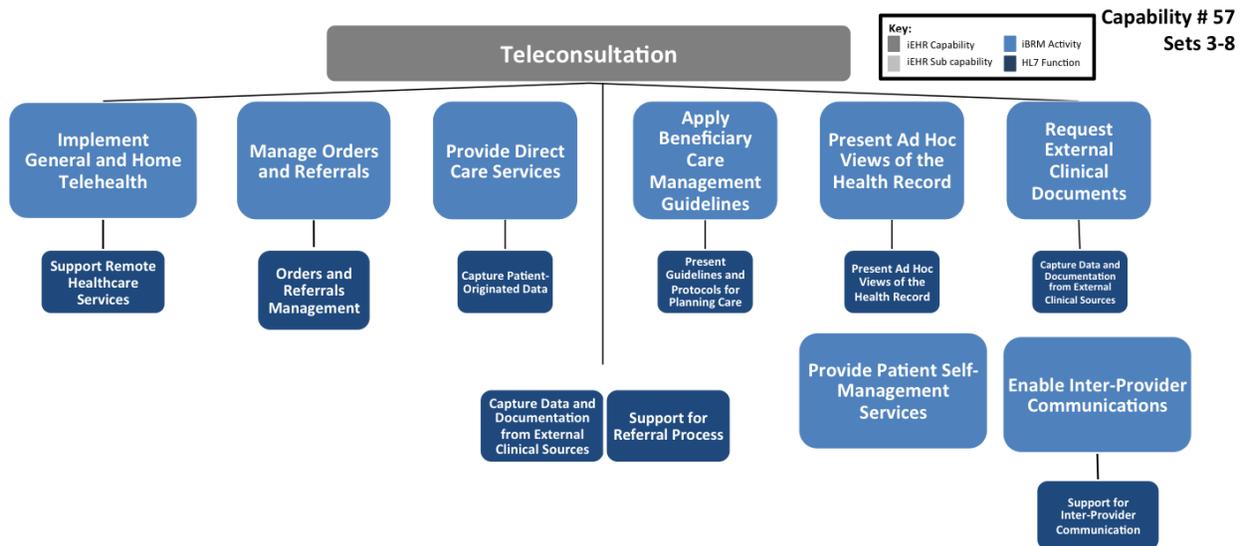
By adhering to the criteria listed above, the capability supports the ability to operate seamlessly with other systems, either internal or external, that adhere to recognized interchange standards. The Private Sector Data Access capability thus fulfills a critical role in ensuring that the iEHR provides a comprehensive record for every eligible patient.



## Teleconsultation (Capability 57, Sets 3-8)

The Teleconsultation capability is the ability for the iEHR system to use electronic information and communications technologies to enable and support provider consultation when distance separates the participants. Telehealth helps meet the health care needs of patients by circumventing barriers to care associated with distance and time. This capability allows users to view information remotely. It also records the author of each entry into the system, along with progress notes, assessments, and digital signatures. As a result, the capability ensures that access is monitored, up-to-date, and controlled, protecting each patient's privacy.

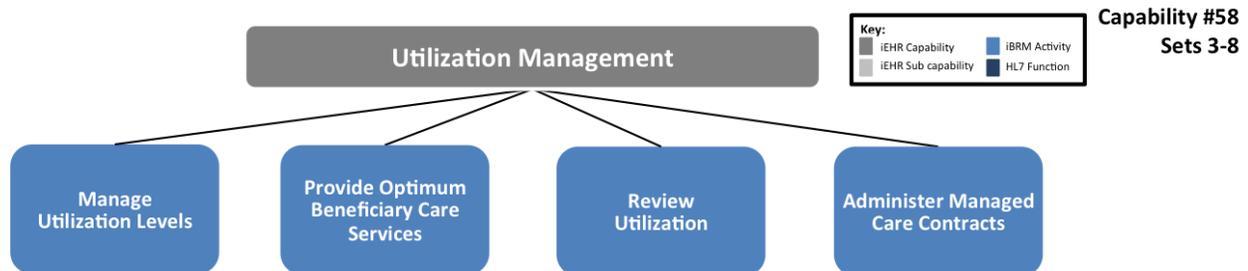
In order to make consultation more efficient, the system also allows information to be tailored such that end-users can choose to view only the information they want to see at that time. Patients also are able to access information regarding each of their optional healthcare providers and their full medical history is stored in the system. As evidenced by its ability to track, store, and save information from a variety of individuals and groups, the Teleconsultation capability is all-inclusive.



## Utilization Management (Capability 58, Sets 3-8)

The Utilization Management capability monitors and manages resources to provide optimal beneficiary care services while simultaneously maximizing force readiness. It provides the ability to address the management of health care resources expended, or to be extended, while measuring the quality of care delivered. In so doing, the capability seeks to balance quality, risk, and cost to ensure that high-quality health care is delivered safely and efficiently.

In an effort to achieve this balance, the Utilization Management capability provides an infrastructure to support further process re-engineering and future utilization forecasts, while maintaining a high level of system utilization. The capability thus needs to provide the status of health care resources and to manage and forecast resource utilization. Specific resources that are monitored include, but are not limited to, available beds and providers, support personnel, ancillary care areas and devices, operating theaters, medical supplies, vaccines, and pharmaceuticals. The intent of this initial monitoring is to enable the authorized body to distribute or redistribute resources or patient load to maximize efficient health care delivery. As such, the Utilization Management capability provides the ability to access a provider's caseload or panel information and provides the ability to add, update, and remove access to panel information such as status.



## XML Forms (Capability 59, Sets 3-8)

The XML Forms Tool capability processes XML forms, which has become a standard computer coding system and format for data exchange between applications. The system uses XML forms to read and transmit data inputted into the iEHR system.

The XML Forms Tool capability will enable iEHR to share data across systems and applications more readily and to recognize set data definitions, fields, values, and all other data typed into iEHR interface fields.

