A Health IT Framework for Accountable Care

Among the many factors that will contribute to the success of an accountable care organization is a focused HIT roadmap that aligns the organization's resources with its goals and objectives for accountable care. **The CCHIT ACO HIT Framework is a guide to developing a technology roadmap** that will mitigate some of the risks associated with taking on accountability for costs, quality of care and patient loyalty.

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Introduction

Both the Patient Protection and Affordable Care Act (PPACA) and the Health Information Technology for Economic and Clinical Health (HITECH) Act, a part of the American Recovery and Reinvestment Act of 2009 (ARRA), acknowledge the importance of health information technology (HIT) in improving the quality and cost efficiency of health care. The PPACA also includes payment reform policy by specifying that certain provider groups may take on escalating levels of financial risk as they become more accountable for the quality and cost of the care delivered. These accountable care organizations (ACOs), as defined by the Centers for Medicare and Medicaid Services (CMS), encompass three types of Medicare Shared Savings programs — upside risk only, up and downside risk, and advanced payment — and the Pioneer ACO program. All are required to demonstrate that they can promote evidence-based medicine and patient engagement, coordinate patient-centered care, and report on quality and cost measures.

Implementation challenges, however, are daunting and include the need for new governance structures and care processes, culture change among clinicians, and changes with respect to patients' expectations and engagement in their own health and care.

The promise of accountable care is tempered by these concerns and by a lack of experience and knowledge about the HIT infrastructure necessary to optimally support health care transformation. While there are more than 400 provider organizations now operating as ACOs, debate continues as to whether they will be successful in meeting their goals as well as the expectations of policy makers who have supported their development.

HIT Framework Development

Among the many factors that will contribute to the success of an accountable care organization is a focused HIT roadmap that aligns the organization's limited resources with its goals and objectives for accountable care. Without guidance, many provider organizations struggle to identify and prioritize their HIT needs. To provide that guidance, the Certification Commission for Health Information Technology (CCHIT) has developed a publicly available ACO HIT Framework. The Framework is designed as a starting point for provider groups developing HIT roadmaps, for payers looking to assess or complement the HIT capabilities of their provider partners and for HIT developers designing products to fill gaps in currently available technology.

The Commission defined seven key processes required to meet the aims of high quality care, cost efficiency and customer loyalty. They further delineated the functions within each process and identified HIT capabilities to support each function. Overarching this Framework is a set of primary HIT requirements necessary for all key processes to be effective. An advisory panel of healthcare experts was convened to review, modify, and expand on the initial work of the Commission.

The Framework does not define the technology used to support a given function, but it's assumed that the data from a chosen technology can be integrated with that of other technologies. The Framework is dynamic and can be updated as we gain experience. It looks to the future by including capabilities that have yet to be developed or piloted in the field.

Though comprehensive, the Framework is not a prescriptive listing of all relevant functions and HIT capabilities for every ACO. It may need to be expanded or shortened for specific settings and situations. While the Framework elements are designed to support resource planning, the capabilities also focus on the needs of HIT users and of the organization.

The Framework

The Framework is a three-part assessment and planning tool comprising these elements:

The Summary Table, which emphasizes the primary HIT requirements of:

- Information sharing among clinicians, patients and authorized entities
- Data collection and integration from multiple clinical, financial, operational and patient-derived sources
- HIT functions supporting patient safety
- Strong privacy and security protections

The first, sharing health information, can be accomplished in numerous ways, such as making the same HIT system available to all providers in the organization, accessing various health data repositories, installing devices that can extract and transmit specific types of data, providing portal access, or participating with health information exchange organizations. Access to comprehensive patient information enables effective care coordination and cohort management.

The second primary requirement, integration of health data, is challenging when the data are extracted from disparate clinical systems. Integrating data from clinical systems with data from financial, operational and patient derived systems is even more complex. Every organization will need to determine which data elements will be necessary to manage the programs that are specific to meeting its goals and then integrate that data to conduct clinical, business and financial analytics.

The third, patient safety, permeates all aspects of healthcare and has a scope far beyond that of HIT, the impact of which is still being assessed. Because of its importance, throughout the Framework we have bolded specific HIT Capabilities that are likely to mitigate errors associated with adverse events. These include support for improved communication, closed-loop follow up, point-of-care access to educational information when considering diagnoses and interventions, integration of data from multiple sources, clear presentation of data, and patient-specific alerts embedded in the clinical workflow.

Finally, privacy is related to an organization's policies and procedures. Security relates to the technical ability to minimize unauthorized access to data. Given that data in the health industry are easily hacked or misplaced, and that numerous breaches occur in spite of significant government fines associated with them, every provider group should invest in a thorough analysis of it security risks, balancing risk mitigation with ease of use.

A Listing of HIT Capabilities, organized by key process, with each function further defined and specified. Some functions and capabilities are duplicated since they are included in different processes. Administrative simplification, for example, is included as a function in each of three processes: patient relationship management, clinician engagement and financial management. Clinical decision support (CDS) capabilities are included in a number of places on the Framework, recognizing that their level of sophistication can differ widely, depending on the organization's goals, structure and processes. Some capabilities are less specific than others, allowing for flexibility as organizations create their own HIT infrastructures. All of the specific HIT requirements of the most current federal Meaningful Use (MU) and ACO regulations have been included, although the broader accountable care environment demands more HIT capabilities than those outlined by the regulations. The HIT requirements supporting meaningful use have been designated with an asterisk on the Framework.

An HIT Glidepath to Health Care Transformation, which describes the continuum through which an organization aspiring to be an ACO must progress. This continuum includes the following areas of focus:

- Financial risk
- Patient influence
- Quality of care
- Cost of care
- Professional culture

Every organization considering or involved in providing accountable care will have its own goals, which will fall somewhere on the continuum from our current system of care to one of greater value. The Glidepath focuses on the HIT capabilities that will enable movement along the continuum until those goals are reached, with each level of transformation building on and incorporating those before it.

Using The Framework

The ACO HIT Framework can be used as an assessment and planning tool. A more complete user's guide follows this introduction. A likely starting point for a provider organization will be matching its current status and internal goals to specific aspects of the Glidepath continuum. The organization will need to thoroughly assess its HIT infrastructure with respect to the primary HIT requirements, recognizing that even early choices in meeting these requirements will be important to support the functions it chooses to develop later on. It also must determine the degree to which it already has the desired capabilities through its existing systems or through a partnering health plan or other provider entity. Once its needs for further HIT investment are clear, the organization can begin the process of prioritizing, planning and budgeting for those needs, recognizing that they can be met in a variety of ways, including self-development, purchasing, contracting or partnering. In addition to an organization's information technology leadership, this requires the involvement of clinical, operations and financial leadership representative users.

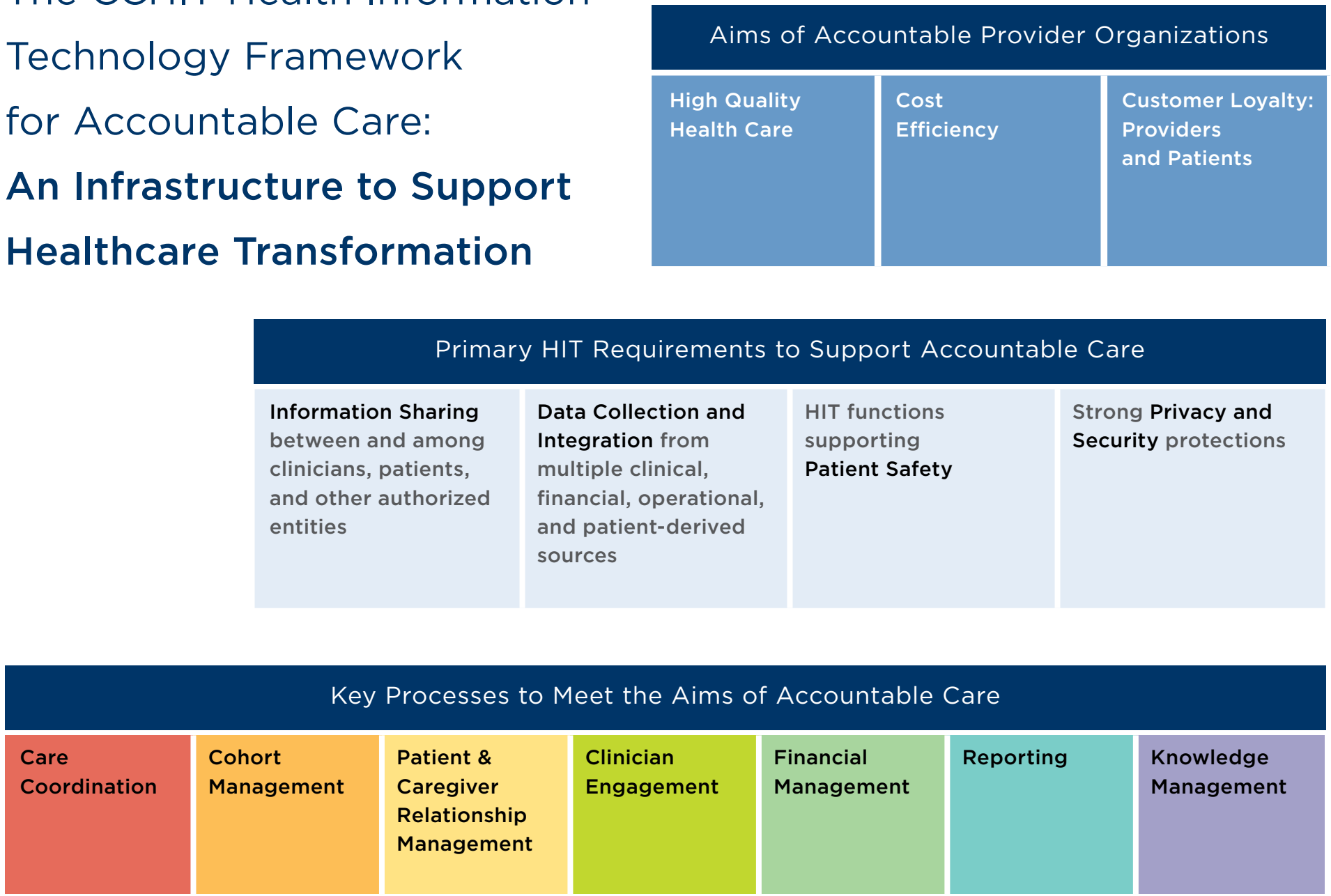
A health insurance plan may include selected functions and HIT capabilities from the Framework in its own assessment tool, which can be used to determine a provider organization's readiness to take on financial risk or to identify opportunities for partnership. HIT developers will find multiple opportunities to either improve their current product offerings to better meet the needs of their customers or to develop additional technology to meet critical gaps in their HIT roadmaps.

Summary and Next Steps

We have presented the first consensus-developed, publicly available ACO HIT Framework as a basis for discussion and planning for the HIT infrastructure necessary to support health care transformation. The Framework represents a starting point for organizations wishing to build an HIT infrastructure that will support varying levels of financial risk under the rubric of accountable care while re-engineering to improve quality, manage cost, change clinician culture, and include patients as partners in care. As the HIT needs of the delivery system are defined and as HIT itself continues to evolve, the Framework also will evolve. In the interim, we hope this first step will prove useful to all stakeholders and we invite comment and feedback on all aspects of the Framework at **hitframework@cchit.org**.

The CCHIT Health Information Technology Framework for Accountable Care:

An Infrastructure to Support Healthcare Transformation



How to Use the CCHIT ACO HIT Framework

First and foremost, the CCHIT ACO HIT Framework is a structured foundation for the conversations necessary to roadmap, purchase, complement or build an HIT infrastructure that will meet your organization's specific goals in meeting its aims for high quality, efficient care while developing patient and clinician loyalty under different types of financial risk arrangements.

It is also an assessment tool that can be used to identify potentially important gaps in your organization's HIT infrastructure as it moves along the continuum from current care to a system that truly meets the health needs of patients, providers and the public.

Finally, the Framework is a consensus-derived document that is designed for broader use by

- Provider groups thinking about how best to allocate and use internal or external HIT resources over the next several years
- Payers interested in partnering with selected provider groups
- HIT developers planning to create technology that may be needed by providers in the future

It starts with the premise that initial IT investments should focus on four primary HIT requirements necessary to improve care, efficiency and customer loyalty. It then outlines key processes and functions within each process that must be considered in meeting these goals. Strong governance, culture change within both clinician and patient populations and a strong financial foundation are all integral to success in implementing these processes and functions. This Framework focuses solely on the HIT capabilities most likely to best support each function. Since your organization may be interested in different key processes at different times in your ACO evolution, you will note some areas of duplication as functions and capabilities are described for each individual process.

With the exception of the four primary HIT requirements, your organization will need to determine which functions and requisite HIT capabilities are needed to meet your goals. The following series of steps will help accomplish this.

Step 1 | Address the four Primary HIT Requirements necessary to build a strong foundation.

This is a foundational step with respect to assuring that all Processes and Functions can be optimally supported.

- Evaluate how your organization engages in the sharing of health information, with whom and how. Take into account the degree to which local, regional, or statewide Health Information Exchange (HIE) can be accessed, any data repositories or registries that may store useful data, interfaces between disparate systems, and use of portals. If no HIT roadmap has been established to realize health information exchange among your providers and with patients, developing such a roadmap should be a high priority and may require the cooperation of others.
- A high priority is the establishment of a data warehouse that can accept, store, normalize, and integrate data from multiple clinical, operational, financial and patient derived systems. All of the key processes and many of the functions and HIT

capabilities listed are dependent on the existence of such a data repository. How your organization performs with respect to its goals will be dependent on a timeline that outlines what data will be incorporated and when. Consider external sources as well, such as your state's all payer claims database, an HIE's notification-of-encounter service, or a quality reporting organization collecting and transporting data on behalf of your ACO.

- Patient safety is integral to the care of all patients and goes far beyond the realm of what can be considered health IT, where it is still evolving. We recommend, however, that as part of your overall patient safety program, your organization review the bolded HIT capabilities listed in the Framework to identify opportunities where HIT may contribute to a safer patient care environment.
- Conduct a privacy and security risk analysis to identify any opportunities for improvement.

Step 2 | Map short and long term goals to the broad areas in the HIT Glidepath.

The HIT Glidepath outlines some of the major changes that must occur in five aspects of your organization's operations as it moves from volume based revenue to value based revenue. It is neither a full discussion of what compromises a transformed health care environment nor does it discuss in detail the aspects of each change. It does plot a flexible course that can help guide your HIT investment strategy depending on your organization's goals and current state.

For example, your organization may find that more emphasis may be required on how your providers relate to patients but less on changing clinician culture. Or that you can partner with a payer on many of the Care Coordination Functions and the related HIT Capabilities, but need to focus more on your own internal interfaces and integration of information from different EHR systems. Your overall goals may be limited to those associated with upside risk only, in which case the HIT infrastructure can be more limited than that of an organization planning to move through the transition process to a fully transformed environment. The planned HIT infrastructure should support whatever your goals may be over time and your roadmap should be dependent upon your current status and priorities for change.

Step 3 | Review the HIT Capabilities associated with the specific Functions of each Key Process. Determine which may be most relevant for your HIT Roadmap based upon your goals and where you find your organization on the Glidepath. Conduct an internal assessment using the Framework.

Many of the capabilities may already be present in the HIT infrastructure. Others may not yet be readily available in the market. Pay particular attention to those that are bolded. These are features that improve patient safety through better communication, documentation, or diagnosis, treatment and follow up. Incorporate those HIT capabilities into your HIT roadmap as appropriate, attending to how they will be integrated into your current HIT infrastructure through purchasing, building internally or partnering with another entity such as a payer, an HIE organization or an external secure data warehouse.

Important Points to Remember

- Your ACO and your clinicians both bear responsibility for different aspects of the Framework. For example, a physician may have independently purchased an EHR that provides some of the HIT capabilities listed. It is, however, your organization's responsibility to provide the Primary HIT Requirements and much of the access to external information and educational resources. It should be clearly established what your organization will provide consistently to all providers and patients.
- The Framework is not prescriptive as to what type of technology should include a given set of capabilities.
- The Framework is not prescriptive as to what HIT capabilities your organization should or should not have. It is a list of recommendations that may help your organization use HIT to achieve success in meeting your goals as an ACO.
- The Framework HIT Capabilities are not objective testing criteria that can guarantee that your chosen HIT will perform as expected to support a particular function. They are simply capabilities that would optimally be included in your overall HIT infrastructure.
- The Framework is dynamic. It is a first public, consensus-built attempt to gather, organize and recommend a robust set of HIT capabilities that is consistent with aiding an ACO provider group function successfully. As we learn more from experience and feedback, we hope to evolve the Framework to better meet your needs.

Key Processes and Functions to Meet the Aims of ACOs

Care Coordination	Cohort Management	Patient & Caregiver Relationship Management	Clinician Engagement	Financial Management	Reporting	Knowledge Management
Access real time health insurance coverage information	Identify cohort from within entire patient population	Basic information services	User friendly, timely and actionable Clinical Decision Support (CDS)	Administrative simplification for operations	Retrieve Data specific to measures	User friendly, timely and actionable Clinical Decision Support (CDS)
Establish payer relationships	Monitor individual patients	Administrative simplification for patients	Standard clinical assessment tools	Normalized and integrated data	Store quality metric data	Personalize patient specific information
Establish provider relationships	Clinical Decision Support	Patient educational services	Well defined care teams	Health assessment of entire patient population	Calculate quality measures	Create and share clinical knowledge
Share clinical data during transitions of care	Patient engagement within cohort	Patient communication	Communication within organization	Patient attribution algorithms	Report quality metrics for internal use	Create and share process improvement knowledge
Identify best setting for care	Engage preferred providers and clinicians in care teams	Patient engagement in care	Communication external to organization	Performance reports	Report measures to external designated entities	Support comparative effectiveness research
Identify social & community supports	Shared care management plan	Patient assumption of care responsibilities	Administrative simplification for providers	Risk sharing analytics	Report data required for syndromic surveillance	
Manage referrals	Interventions	Monitor patient goals and outcomes	Usability of HIT	Payer contract management	Public Health reporting	
Patient-centric medication management	Follow up	Patient experience of care surveys	Comprehensive educational systems for clinicians	Provider contract management	Registry reporting	
Clinical information reconciliation	Monitor cohort		Community based resources	Cost accounting	Report resource consumption for internal use	
			Public Health information	Reimbursement systems for other than fee for service	Report adverse events to Patient Safety Organization	
			Research protocol information	Billing for revenue outside of risk contracts		
				Financial manage-ment for patients		

Care Coordination Functions and HIT Capabilities

Care Coordination involves two different but related aspects of patient care. One provides information to the clinician who must be able to access from and provide relevant clinical data to multiple sources in order to determine and provide for appropriate next steps in diagnosis or treatment. The other is to assure that patients are in the appropriate setting as they transition among multiple levels of care. Both are important for providing high quality care as well as mitigating excess, both must incorporate patient needs and preferences, and both are highly dependent on the ability to quickly and easily send and query health information on a given patient to and from multiple electronic sources.

Care Coordination continued

Function	HIT Capabilities | System can or has…
1. Access real time health insurance coverage information | Clinicians need to know which services and providers of all types are covered by individual patients' health insurance and patient contribution to costs of care at time of ordering and providing care	- up to date information available on patients' eligibility and plan benefits - up to date information available on plans' provider networks - information available on co-pays and deductibles for contemplated services
2. Establish payer relationships | The organization and the health plan or insurer may be able to effectively and efficiently partner in providing case management and other services for selected patients	- include plan based case managers among authorized users of clinical record as appropriate - **ability for clinicians to communicate directly with specified health plan personnel about a specific patient**
3. Establish provider relationships | As the organization builds a network of preferred providers willing to formally participate in coordinating care (include physicians and other licensed clinicians, ancillary providers of care (eg., PT, OT, ST, imaging centers, emergency medical services, medical goods suppliers) in multiple settings and facilities, the clinician will have access to providers with similar goals and objectives with respect to coordinating care for a given patient	- the organization's preferred provider lists available for all types of providers and facilities across the entire continuum of care, both within and external to the accountable organization - ability to cross reference the organization's preferred providers to patients' provider networks - **ability to share clinical information among preferred provider systems** - **accept notification of patient encounters within 24 hours of occurrence, wherever they may occur**
4. Share data during transitions of care* | From one setting to another across the entire continuum of care, including caregiver and social supports	- auto-populate summary document at time of transition* - populate care plan - **acknowledged receipt of transmission** - **identify person responsible for follow up care**

*ONC Certification criteria | **Bolded capability** – enhances patient safety

Care Coordination continued

Function	HIT Capabilities | System can or has…
5. Identify best setting for care | From clinical, financial, geographic, socio-economic, and cultural perspectives as patients transition from one setting to another	- **assess acuity of care necessary for transition, using validated tools** - record and display, patient and family needs, and circumstances - present benefit and health plan provider network information - access real-time information on available beds, personnel, for appropriate setting of care
6. Identify community and social supports | Good health is dependent on access to transportation, nutrition, social networks, and a safe environment	- access list of patient designated zipcodes - maintain current list of community services within each designated zipcode - **include patient safety risk assessment of home environment**
7. Manage referrals | Support efficient and effective patient use of specialty, diagnostic, and ancillary care services	- **schedule care where and with preferred providers on behalf of patient as clinically appropriate and consistent with health plan coverage and operations** - **send clear indications for referral and requested recommendations** - **receive, incorporate, and acknowledge referral recommendations** - **receive notification if appointment not kept** - **communicate with patient about referral after completed**

*ONC Certification criteria | **Bolded capability** – enhances patient safety

Care Coordination continued

Function	HIT Capabilities | System can or has…
8. Patient centric medication management and reconciliation* | Assures that a single list of patient medications correlates with those that the patient is actually taking and contains no medications with unintentional duplicative effects. Must be done in both inpatient and outpatient settings and should include OTC medications and supplements	**- access medication lists* from multiple sources and display together** **- highlight duplications, possible duplications, and multiple medications in the same specified class within a general category (e.g. beta blockers within antihypertensives)** **- incorporate patient supplied history re current active medications** **- designate, date, and sign reconciled med list** **- system accurately reflects active medications; allows discontinued medications to be removed from list at time of change** **- maintain history of previous medications** **- eMAR* in the inpatient setting** **- evidence that prescription was filled (or not)** **- real-time alerts when prescribing duplicate medications, discontinuing a critical medication, etc.**
9. Clinical information reconciliation* | At its most basic level, this entails comparing and reconciling simple lists of clinical information. At a more sophisticated level, it assures that comparable data from multiple sources is consistent and accurate, or that inconsistencies are accounted for	**- can compile lists of problems*, diagnoses*, allergies*, procedures from multiple sources** **- can highlight duplications and possible duplications** **- can incorporate patient supplied information** **- designate, date, and sign reconciled list**

*ONC Certification criteria | **Bolded capability** – enhances patient safety

Cohort Management Functions and HIT Capabilities

Also referred to as population management in some settings, cohort management starts with an assessment of the entire risk based population, in order to identify the specific cohorts on which the organization chooses to focus: high risk patients, those with specific chronic disease, and those in need of appropriate screenings and primary prevention interventions. Specific aspects of patient engagement are particularly important, especially for those patients who must manage their own health and care outside of a clinical setting. As the health of each patient in a cohort improves, so does that of the whole cohort, ultimately leading to improved health of the entire population of the organization.

Cohort Management continued

Function	HIT Capabilities | System can or has…
1. Identify desired cohorts of patients from within entire population assigned to the organization | Critical step in population segmentation for the accountable care organization since each sub-population will be managed differently with different anticipated outcomes	- extract data from multiple sources: all payer claims, practice management and clinical systems, health risk assessments - **normalize and integrate data from multiple sources** - Identify patients by demographic information*, diagnosis*, medication, lab result, or symptoms - apply predictive modeling algorithms to identify high risk patients - generate list of patients in cohort* - populate monitoring technology (see 2. Monitor individual patients) - add newly eligible patients to the cohort - remove patients no longer eligible for cohort (e.g., death)
2. Monitor individual patients | Ability of the clinician to monitor, track, and trend events and results per the individualized care plan with respect to a patient's specified milestones, goals, and outcomes	- **Accept and integrate information on patients', events, goals, interventions, results in a unified format** - **Identify and authorize use of monitoring technology by care team members** - **Flag and communicate needed interventions as appropriate** - **Manage and present data in multiple usable formats (graphs, charts, etc.), including trended information** - **share information with individual patients**

*ONC Certification criteria | **Bolded capability** – enhances patient safety

Cohort Management continued

Function	HIT Capabilities | System can or has…
3. Clinical Decision Support | Specific features of the organization's knowledge management program that prompt providers, patients and designated caregivers, and specified health plan personnel that specific Evidence Based Medicine (EBM) interventions should be considered	- **Evidence Based Medicine (EBM) prompts and alerts to clinicians** - **EBM prompts and alerts to patients and designated caregivers** - **all prompts and alerts attentive to clinician workflow and context sensitive to patient specifics** - **prompts and alerts to health plan personnel as appropriate**
4. Patient engagement | Includes those aspects of Patient Relationship Management that are specific for the sub-populations (cohorts) on which the organization has chosen to focus	- **secure bidirectional messaging available with patients* and their caregivers** - **data incorporated from remote monitoring devices or programs** - **online availability of shared decision making tools and information** - **patient access to relevant, reliable, culturally sensitive, and linguistically appropriate online educational resources*** - **provide patient access to their own clinical data, information, and medical records** - **accommodate other caregivers as authorized by the patient**

*ONC Certification criteria | **Bolded capability** – enhances patient safety

Cohort Management continued

Function	HIT Capabilities | System can or has…
5. Engage preferred providers and clinicians in care teams | Both internal and external to accountable organization as needed, including designated health plan clinicians as appropriate	- identify providers by specialty, commitment to care coordination, patient preference, patient plan's network - identify patient and authorized family members on care team, including escalation path for the patient - acknowledged commitment of all participants to participate on the care team - authorize access to care plan for each specified team member (see 6. Shared care management plan) - **facilitate communication among team members using multiple modalities**
6. Shared care management plan | A single source of information about anticipated care in specific circumstances by each team participant (including patient) for a specific patient	- **care plan template standardized within the accountable organization** - **care plan accessibility by all designated providers and specified health plan case managers involved in care** - **care plan accessibility by the patient and designated caregivers** - **customize to patient need: health maintenance, chronic care management, minimal excess morbidity in complicated patients, advanced directives** - **include patient directed goals, patient preferences and directions, planned provider interventions, planned patient interventions, information on barriers to care, and Medical Orders for Life Sustaining Treatment (MOLST) if available** - **be modified (with audit trail) by any care team member (including patient)**

*ONC Certification criteria | **Bolded capability** – enhances patient safety

Cohort Management continued

Function	HIT Capabilities | System can or has...
7. Interventions | Systematic approach in assuring that the most appropriate intervention is offered, explained, and ordered at the right time; Includes care in addition to that of standard Evidence Based Medicine alerts and reminders	- **CPOE for medications*, radiological exams*, and lab tests*** - **appropriately sensitive and specific CDS when ordering medications*, radiological exams, and lab tests** - **links to programs that offer comprehensive clinical information on specific topics** - **incorporate shared decisions and patient preferences** - **capture patient consent information** - **schedule care on behalf of the patient**
8. Follow up | Assurance that all results (and all appointments or orders not acted on by patient) are tracked, acted upon, and communicated appropriately to designated parties in a timely manner	- **notify ordering clinician or other allied health professional if test, intervention, or prescription fill not completed in a designated timeframe** - **notify ordering clinician of results of tests or interventions** - **communicate results and summaries to patients in a designated timeframe** - **update monitoring program with new information** - **update care plan that intervention has been accomplished** - **update care plan with results when available** - **update monitoring technology that intervention has been accomplished** - **update monitoring technology with result of intervention**

*ONC Certification criteria | **Bolded capability** – enhances patient safety

Cohort Management continued

Function	HIT Capabilities | System can or has…
9. Monitor Cohort | To ascertain that overall quality measures are on track	- calculate quality measures or transfer data to complimentary technology that can do so across the entire patient population - presents results of measures across entire population to responsible clinician(s) on a regular basis - includes benchmark measures and year to year progress - share program progress with patients

*ONC Certification criteria | **Bolded capability** – enhances patient safety

Patient & Caregiver Relationship Management Functions and HIT Capabilities

As the delivery system evolves from doing things "to" the patient, to doing things "for" the patient, to doing things "with" the patient and designated caregiver as partner, the expectations of patients and caregivers and their cultural attitudes about accountability for their own health will also evolve. This will require a major change in how communication occurs between patients, their caregivers and providers, and even a more significant change in how patients and caregivers can use technology to better care for themselves on multiple levels — to stay well, manage a chronic condition, or assume informed control of major life changing decisions and events. Sound health literacy principles, access by the visually and hearing impaired, cultural competence, and linguistically appropriate communications are all fundamental attributes to HIT support for patient and caregiver relationship management.

Patient & Caregiver Relationship Management continued

Function	HIT Capabilities | System can or has...
1. Informational services | Online and mobile access to maps, directions, provider directories, available services, 24/7 contact information, quality reports, cost information, results of satisfaction surveys, opportunities to provide feedback	- links to information sites to which patient can be directed - **communicate with visually or hearing impaired** - delivery site apps for mobile devices - **accept, collate, and respond to feedback about any type of services (within organization or community)**
2. Administrative simplification for patients | Assure that care system is easy to navigate and all patient billing is accurate, timely, and understandable	- incorporate a Master Patient Index such that every patient in organization has one identifying number - reuse existing administrative and demographic data for each new encounter within the organization - online and mobile access to pre-populated pre-encounter data forms for verification purposes - online and mobile access to scheduling information (including referrals and procedures) - ability for patients to schedule primary care (or with physician of record) using online and using mobile devices - online and mobile access to prescription refills - appropriately format and repurpose historical data as appropriate for work, school or camp physicals - accurate, up to date billing information and patient invoices in patient oriented language - access to reliable and timely insurance information - access to out-of-pocket costs for various care services - access to online and mobile forms and applications as appropriate.

Patient & Caregiver Relationship Management continued

Function	HIT Capabilities | System can or has...
3. Patient education | Should be targeted, pertinent, and customizable to the individual patient, status, condition(s), and circumstances. Information should be delivered in format that fits patient and caregiver's learning style (audio, visual, graphic, etc.); Should include information about general health concerns, patient specific health concerns, full disclosure about options and outcomes of various modes of treatment, advanced care planning, and about different care processes (e.g., self-management, group visits, coordinated care, cohort management, use of HIT, and patient focused health technologies)	- links to reputable sites for culturally sensitive health related information at the appropriate health literacy level* - availability of shared decision supports - links to information on advanced care planning and health care proxies - links to information about specific programs and aspects of health care transformation - links to information about the value of HIT, HIE and patient consent - links to information about patient-directed health technologies
4. Patient Communication | Ability to securely communicate electronically and bi-directionally about care, concerns, expectations, and status	- **patient preference for channels of communication clearly documented and incorporated into provider workflow** - **send free text, documents, and required structured data to patients or designees with results interpreted*** - **receive and incorporate free text, documents, and required structured data to patients or designees** - **provide patients access to their clinicians' clinical notes** - **attention to health literacy when engaging in bidirectional communication (secure messaging)** - **notify patient about recalls, public health alerts, etc.** - **accommodations for the disabled**

*ONC Certification criteria | **Bolded capability** – enhances patient safety

Patient & Caregiver Relationship Management continued

Function	HIT Capabilities | System can or has…
5. Patient engagement in their own care | Patients have the tools to actively monitor and care for themselves and have the ability to contribute to information in the EHR about the care they provide for themselves	- **provide patient access to real-time personal health information in understandable format*** - provide patient access to culturally sensitive shared care plans - outbound motivational messages, reminders, opportunities to further engage in care - **remote monitoring options that integrate with clinical record** - **ability to accept patient generated data** - **ability for patients to amend or correct their clinical record** - patient access to organization supported social media, games, etc. that encourage positive behavior change - incorporate patients' advanced directives wishes* - links to MOLST information and forms

*ONC Certification criteria | **Bolded capability** – enhances patient safety

Patient & Caregiver Relationship Management continued

Function	HIT Capabilities | System can or has...
6. Patient willingness and confidence to assume appropriate responsibility for care | Reflects need to track, understand, and respond appropriately to patients who do not keep appointments, fill prescriptions, follow up with diagnostic testing or referral, or follow their care plans	- **notification to clinician when patient does not keep appointment** - **notification to ordering clinician when prescription not filled as ordered** - **notification to ordering clinician when referral or diagnostic test does not take place as ordered** - reschedule and reorder as appropriate - authorized access to clinical record by patient advocate or navigator on behalf of patient - collate and track patients' out of pocket costs for care - capture data on barriers to care
7. Monitor individual patients | With respect to meeting their long term goals and self-reported outcome as well as attributes that can change over time	- monitor care plan milestones and goals - regularly survey patients regarding outcomes, functional status, quality of life, changes with respect to goals, and personal barriers in meeting them - monitor motivational status, mental status, health literacy status, preferred language
8. Patient experience of care | Survey across entire population	- patient access to electronic satisfaction surveys - ongoing survey analysis - **complaint capture and response** - public reporting of results, corrective actions

*ONC Certification criteria | **Bolded capability** – enhances patient safety

Clinician Engagement Functions and HIT Capabilities

Culture change is generally a slow and difficult process. While professional clinicians may be quick to learn and apply scientific information in their daily work, the process and workflow changes necessary to improve care and mitigate excess costs will be difficult to assimilate. HIT systems must be easy to use and support the need for relevant information at the point of care. With improved technical advances in communication, information sharing, and in data presentation, a culture of independence and authority can evolve to one of collaboration and partnership — with other clinicians, with staff in the clinical unit, and with patients and caregivers themselves.

Clinician Engagement continued

Function	HIT Capabilities | System can or has…
1. User friendly Clinical Decision Support | Reminders, prompts, and information feeds to both providers and patients about possibly needed care* that are informative, timely, actionable, appropriately sensitive and specific, and incorporated seamlessly into workflow	- **identify clinically important drug-drug interactions*** - **drug formulary checks* for each patient's prescription plan** - **identify and flag drug-allergy interactions*** - **identify and flag drug-lab opportunities** - **ability to adjust sensitivity to decrease "over-alerting" and "alert fatigue"** - **incorporate "prediction rules"** - **incorporate patient centric information and preferences** - **customizable order sets**
2. Standardized clinical assessment tools | While several of these may be proprietary, access through an EHR would be invaluable for both patients and clinicians	- **access to standardized forms and clinical assessment tools per the accountable care organization**
3. Well defined patient specific care teams | Plans that take into account patient preferences, as well as health plan provider networks and the organization's preferred provider contracts, will make it easier for clinicians to construct the most effective care team for a given patient	- access to lists of providers needed for an effective care team, along with their affiliations, locations, special interests, and payer arrangements with respect to a patient - links to local, regional, and national data bases - contact information readily available for each member of the care team

*ONC Certification criteria | **Bolded capability** – enhances patient safety

Clinician Engagement continued

Function	HIT Capabilities | System can or has…
4. Communication tools for use with colleagues within the organization or on the patient's care team | Asynchronous communication about a patient, a clinical situation, a care process, or scheduling opportunity has become a primary means of sharing all types of information; It must, however, occur easily and in a time frame that is appropriate to the situation	**- timely notification of patient calls, texts, messages** **- incoming data triaged to covering clinician when designated clinician not available** **- ability to communicate through shared care plan** **- community of practice opportunity** **- instant messaging** **- secure messaging among providers** **- online and mobile remote access to clinical records**
5. Communication tools for use in settings outside of accountable organization | So that care can be coordinated when patient presents for care external to their medical home	**- timely notification when patient presents in any ED** **- timely notification when patient presents in an external clinician's setting** **- access to clinical information when patient is seen outside of the organization**
6. Administrative simplification for providers | Minimizes the time spent on administrative tasks throughout the day	- manage prior authorization process electronically - record patient preference regarding sharing of data so that it is automatically incorporated in all clinical information transactions - centralized online consent for sharing of data - access to centralized source for current MOLST or advanced directive information, medication lists, other information likely to change - date and sign each change to centralized data - audit each change to centralized data

*ONC Certification criteria | **Bolded capability** – enhances patient safety

Clinician Engagement continued

Function	HIT Capabilities | System can or has…
7. Usability of clinical information technology | While this continues to be a developing science, recognized elements that enhance the human to computer interface are now being incorporated in health information technologies; Ease of data capture and clear presentation of relevant data continue to evolve	- **customizable templates for capturing information** - **ability to record nuances of assessment and impressions** - **well displayed relevant recent data and information** - **access to longitudinal and historical care data** - **trended clinical data (graphs and charts)** - **consistency with standardized User Centric Design Usability Test characteristics**
8. Clinical education at point of care | Programs that provide comprehensive clinical information on specific topics and provide tools to incorporate information in the clinical care process	- **links to programs approved by accountable organization** - **diagnostic algorithms (can be static, customized, or interactive)**
9. Access to information about community based resources | The psychosocial and physical supports available in any community are a major determinant of health outcomes	- community based social, educational, and support resources listed by zip code - ability to incorporate patient feedback on effectiveness of community based resources - case manager or patient navigator presence on care team with access to shared care plan for complicated patients

*ONC Certification criteria | **Bolded capability** – enhances patient safety

Clinician Engagement continued

Function	HIT Capabilities | System can or has…
10. Access to public health information | Information from environmental, syndromic, and microbiological surveillance is important in assessing a patient's presentation and determining treatment; Can also include access to information on the health of the community which may help accountable organization differentiate itself in terms of care effectiveness	- links to local, state, and federal PH information - **ability to generate alerts on emerging PH topics specific to a practice and/or specific patients**
11. Access to information on research protocols | As different patients present with various disease processes, they may be eligible to participate in research protocols that could bring benefit to them as well as others	- links to study protocols by disease process - links to results of newly published studies relevant to a given patient

*ONC Certification criteria | **Bolded capability** – enhances patient safety

Financial Management Functions and HIT Capabilities

The financial systems required to manage fiduciary health under risk arrangements are far more complex than the simple practice management and billing systems in the Fee For Service environment. Consider the complexities of revenue cycle management, actuarial analytics, business intelligence analytics, and different reimbursement strategies under multiple different risk arrangements where the margin accrued from shared savings may be less than the loss incurred through improved care management for subsets of providers within the organization's structure. The following functions and HIT capabilities are basic for all organizations taking on any form of downside risk.

Financial Management continued

Function	HIT Capabilities | System can or has…
1. Administrative simplification for operations | Assures consistent data for claims adjudication, payment distributions, and analytics for financial management	- support HIPAA compliance with respect to operating rules, fund transfers, claims attachments, health plan identifiers - mapping to ICD-10 or incorporated ICD-10 - support other mandated code updates - capture data from both coding schemes during transition period
2. Normalized and integrated data | Pulled from multiple clinical, financial, and operational system sources and integrated within each of these and across all of these sources	- integrated claims from all payers (access to an all payer data base) - encounter data for all settings within organization - structured clinical data available from multiple sources within organization, including patient supplied - structured clinical data available from providers external to organization
3. Assessment of the health of the organization's population of patients | Before any clinical or financial management can be undertaken, the provider groups will need to understand both the demographics and illness burden of its patient population	- age, gender, case mix analysis - current performance (quality and cost) with respect to local, regional, and national benchmarks - payer mix and % of population that will be in risk arrangements - access to disease prevalence data and information on procedure rates (compared to benchmark)

*ONC Certification criteria | **Bolded capability** – enhances patient safety

Financial Management continued

Function	HIT Capabilities | System can or has…
4. Assignation of patients to a particular clinician or practice | Patient and provider understanding of assignment and changes to enrollment	- patients identified within each accountable care contract - assignation algorithms for patients to particular provider for each contract
5. Performance reports | Focusing on agreed upon clinical, financial, and operational measures and goals	- access to validated and mature analytical tools cost reports, including incurred but not reported activity (IBNR) - ROI analyses - risk stratification
6. Risk sharing analytics | Contractual agreement between provider and payer on risk sharing formulas allowing computation of additional revenue or loss	- shared savings algorithms - cost sharing algorithms
7. Payer contract management | Payers have unique approaches to contracting risk; providers groups also have unique preferred approaches; Providers must understand the complexity of managing multiple types of contracts, and enter into those contracts with clear understanding of what they entail with the recognition that a single care model applies to all patients within the organization	- mechanisms in place to bill payers under various revenue models - ability to aggregate services for payment processing - ability to track P and L under various revenue streams - ability to integrate P and L under various revenue streams for forecasting purposes

*ONC Certification criteria | **Bolded capability** – enhances patient safety

Financial Management continued

Function	HIT Capabilities | System can or has…
8. Provider contract management | Ability to identify and pay preferred providers of all types outside of the legal purview of the accountable organization; will require payer collaboration	- access to payer data on provider networks available to patients assigned to the accountable organization, including reimbursement rates - ability to forecast financial impact (P and L) of use of these providers - access to payer data on utilization of external providers by patients assigned to accountable organization
9. Cost accounting | The ability to collect, analyze, and share accurate and granular financial data for retrospective, predictive, and activity based cost accounting and analyses, and apply to various revenue streams	- capture and collate costs of all purchases - track administrative costs - track overhead costs - identify and track costs associated with a particular activity or clinical process
10. Reimbursement systems | That align with incentives and payer contracts; Could include FFS, salaried, bundled, bonuses, or capitated payments to providers both within and external to the accountable care entity	- ability to calculate and distribute payments, depending on approach used
11. Billing for revenue outside of contacts | This applies to both contracts with payers and contracts with other providers that may be providing revenue to the organization as well as billing of patients	- accurate and timely patient billing systems for co-pays, deductibles, and self payment - identify services rendered outside of a pre-determined "bundle" and bill accordingly - track expected vs actual revenue from each source
12. Predict and adjust to different care consumption per patient | If an accountable care organization that includes hospital and other non-physician care	- produce reports for strategic planning purposes that project differences in care consumption based on organization's programs and processes

*ONC Certification criteria | **Bolded capability** – enhances patient safety

Reporting Functions and HIT Capabilities

The current federal focus on reporting of quality measures and the technical specifications required by the Meaningful Use and ONC HIT Certification programs drive much of what is needed in HIT systems to report out quality measures. It is perhaps more critical that providers of all types have access to internal reports on their quality of care as well as reports on their resource consumption. Reporting to various registries and patient safety organizations (PSOs) are also functions that will not only lead to improved public health efforts, but to better health for the patients partnering with their provider organization.

Reporting
continued

Function	HIT Capabilities | System can or has...
1. Retrieve data specific to quality metrics*	ONC Certification for all CQM measure related criteria
2. Store data specific to quality metrics*	ONC Certification for all CQM measure related criteria
3. Calculate quality metrics*	ONC Certification for all CQM measure related criteria
4. Report out quality metrics for internal use*	ONC Certification for all CQM measure related criteria
5. Report out quality metrics to external designated entities*	ONC Certification for all CQM measure related criteria
6. Syndromic Surveillance*	ONC Certification for syndromic surveillance criteria
7. Public Health Reporting*	ONC Certification for public health reporting criteria
8. Registry Reporting	- reporting to state immunization registries* - reporting to cancer registries* - reporting to other disease specific registries - reporting to research based registries
9. Reporting on resource consumption, cost metrics, and patient feedback for internal use at the individual, unit, and program level	- analytic tools and programs - dashboards - benchmark data
10. Reporting of adverse events to Patient Safety Organizations	- **access to AHRQ's Common Formats for reporting patient safety incidents as they become available for different settings and situations**

*ONC Certification criteria | **Bolded capability** – enhances patient safety

Knowledge Management Functions and HIT Capabilities

One of the main assets of any provider organization is the wealth of health related data that it can amass. As it seeks to identify, create, represent, distribute, and enable adoption of insight and new knowledge, it will need document management systems, powerful search engines, and book-marking engines. At the present time, however, the following functions and components compromise a good start on the progression from data to information to knowledge.

Knowledge Management continued

Function	HIT Capabilities | System can or has…
1. Clinical Decision Support | Internally developed reminders, prompts, and information feeds to both providers and patients about possibly needed care*	- relational data base where information can be accessed about clinical issues specific to the organization's population and opportunities for interventions identified
2. Personalized presentation of information that is specific to a given patient | And will support customized care planning, the creation of patient and caregiver support networks, and the ability to anticipate patient needs and resource use	- patient specific alerts related to PH information, research opportunities and results, adverse drug events, genomic data base - capture patient specific information on environmental and psychosocial situations - perform patient specific predictive modeling based data capture and analysis from entire patient population
3. Create and share clinical knowledge | Insight and experience shared collaboratively through collating clinical information from multiple sources in addition to the organization's electronic health record	- document management systems - search engines - groupware - community of practice - social network software/wiki software
4. Create and share process knowledge | Determine how various workflows and process improvement interventions contribute to better outcomes	- identify and extract key data from operational and clinical systems - integrate operations data with clinical outcomes - link to information and guidance on conducting process improvements in the clinical setting
5. Support comparative effectiveness research | Large institutions will quickly amass a large enough data base that can be used to determine the most effective and cost efficient clinical processes within that particular organization	- ability to incorporate and integrate data from clinical, financial, operational, and patient derived sources as emphasized in the Primary HIT Requirements - sophisticated analytic tools

*ONC Certification criteria | **Bolded capability** – enhances patient safety

HIT Glidepath Supporting Health Care Transformation

Stages of Transformation

Focus	Current Environment	Transitioning Environment	Transformed Environment
Financial Risk	Fee for Service, moving into early upside risk for limited number of patients	Significant upside (20% to 45% of population) or up and downside risk	Most patients under some form of global payment arrangements
Patient Influence	Patient satisfaction feedback in response to what is done in the care setting for the patient	Patient outreach and follow up; improved services and communication from the provider to the patient	True partnership with patient — all clinical decisions and interventions centered around patient needs
Clinician Culture	Individualistic and authoritative	Team based, with primary care physician arranging comprehensive care	Collaboratively engaging the patient, caregiver and professional care team
Quality of Care	Reporting on measures selected by external parties	Clinical team engaged in coordination of care and cohort management for selected populations	Care processes re-engineered using principles associated with clinical quality improvement
Cost Control	Cost of care is measured on entire population using claims	Cost managed through care coordination case and cohort management processes	Expense managed through strong business analytics, contracts, improved clinical processes, and efficient system design

Incremental Elements of a HIT System to Consider and Implement Based on Stage of Transformation

HIT Requirements, Functions and Capabilities in CCHIT's ACO HIT Framework	• ONC Certified EHR Technology 2014 • All Primary HIT Requirements • All Care Coordination Functions: provider based HIT Capabilities for accessing patient-centric information from multiple providers; management of care transition to appropriate settings may be payer based capabilities • All Cohort Management Functions: all HIT Capabilities in Functions # 2 (monitor patient) through # 8 (monitor cohort); capabilities to ID patients from clinical information, generate patient lists, populate monitoring technology, and add new patients to cohort (with date) as they present • Selected Clinician Engagement Functions and Capabilities per ACO	• ONC Certified EHR Technology 2014 • All Primary HIT Requirements • All Care Coordination Functions and Capabilities • All Cohort Management Functions and Capabilities • Selected Patient and Caregiver Relationship Management Functions and Capabilities per ACO • Selected Clinician Engagement Functions and Capabilities per ACO • All Financial Management Functions and Capabilities	• ONC Certified EHR Technology 2014 • All Primary HIT Requirements • All Functions and HIT Capabilities described in CCHIT's ACO HIT Framework

Summary

We noted earlier that there are significant challenges in meeting the aims of accountable care within the evolving environment of healthcare transformation. CCHIT has attempted to address one of those challenges — a lack of experience and knowledge about the HIT infrastructure necessary to optimally support health care transformation. With the input of a broad group of multi-disciplinary stakeholders, we present this first consensus-developed, publicly available ACO HIT Framework as a basis for discussion and planning for the HIT infrastructure necessary to support that effort.

The Commission's leadership and staff offer their thanks to the Commission and advisory panel members who voluntarily committed their time to this project. We believe this Framework represents a starting point for organizations wishing to build an HIT infrastructure that will support varying levels of financial risk under the rubric of accountable care while re-engineering to improve quality, manage cost, change clinician culture, and include patients as partners in care. The Framework is also designed for payers looking to assess or complement the HIT capabilities of their provider partners and for HIT developers designing products to fill gaps in currently available technology.

As the HIT needs of the delivery system are defined and as HIT itself continues to evolve, the Framework also will evolve. In the interim, we hope this first step will prove useful to all stakeholders and we invite comment and feedback on all aspects of the Framework at **hitframework@cchit.org**.

Selected Reading

The following is a selected list of references which those interested in accountable care and HIT might find useful.

1 | *The American Recovery and Reinvestment Act of 2009* Title IV (the HITECH Act) of ARRA describes the incentive payments available to eligible providers and hospitals, including critical access hospitals, that can demonstrate "meaningful use" of "certified" EHRs. Title XIII codifies the Office of the National Coordinator for Health Information Technology (ONC) and describes how it should promote adoption of HIT, develop grants and loans, and support privacy in an HIT enabled clinical environment.

See:

- **Medicare and Medicaid Programs; Electronic Health Record Incentive Program on federalregister.gov**
- **Health IT Rules & Regulations on healthit.gov**

2 | *The Patient Protection and Affordable Care Act of 2010* Section 3022 added Section 1899 to the Social Security Act which required the Secretary of Health and Human Services (HHS) to establish a Medicare Shared Savings Program whereby providers could be held accountable for the quality and care that they deliver to Medicare patients as well as the patient experience.

See:

- **Public Law (PDF) from gpo.gov**
- **Statutes/Regulations/Guidance on cms.gov**

3 | Provisions for Accountable Care Organizations under the Medicare Shared Savings Program Rule released by the Centers for Medicare and Medicaid Services (CMS) specifically calls out the requirements for telehealth and use of remote patient monitoring devices, in addition to requiring a number of care processes that would be difficult without HIT.

See:

- **Federal Register, Vol. 76, No. 212 (PDF) from gpo.gov**
- **Shared Savings Program on cms.gov**

4 | A listing of ACOs are published and updated by CMS on its **website.**

5 | A number of commercial insurers also have financial risk arrangements with some of their provider groups. At present there are over 400 unique provider groups contracting for some form of accountable care. Information on these can be found at:

- **www.Leavittpartners.com** — a consulting group that analyses ACOs annually
- "Hospitals on the Path to Accountable Care: Highlights from a 2011 National Survey of Hospital Readiness to Participate in an Accountable Care Organization"— the results of this survey by the Commonwealth Fund may be found at **www.cmwf.org**

6 | *Health Affairs,* September 2012 includes several papers describing the results of payer sponsored Patient Centered Medical Home projects and a number relevant to ACOs:

- Altman, S. "The Lessons of Medicare's Prospective Payment System Show that the Bundled Payment Program Faces Challenges" pg. 1923
- Werner, R and Dudley, R. "Medicare's New Hospital Value-Based Purchasing Program is Likely to Have Only a Small Impact on Hospital Payments" pg. 1932
- Frakt, A and Mayes, R. "Beyond Capitation: How New Payment Experiments Seek to Find the Sweet Spot in Amount of Risk Providers and Payers Bear" pg. 1951
- Weissman, J, Bailit, M, D'Andrea, G, and Rosenthal, M. "The Design and Application of Shared Savings Programs: Lessons from Early Adopters" pg. 1959
- Markovich, P. "A Global Budget Pilot Project Among Provider Partners and Blue Shield of California Let to Savings in First Two Years" pg. 1969
- Mechanic, R and Zinner, D. "Many Large Medical Groups Will Need to Acquire New Skills and Tools to be Ready for Payment Reform" pg. 1984

7 | *Health Affairs,* January 2013, Kellermann, A and Jones, S. "What It Will Take to Achieve the As-Yet-Unfulfilled Promises of Health Information Technology" pg. 63