U.S. Department of Health and Human Services

Office of the National Coordinator for Health Information Technology

Medical Home: Problem Lists & Practice-Based Registries

AHIC Extension/Gap

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1.0 Preface and Introduction

1.1 Background

In April and June of 2008, the American Health Information Community (AHIC) approved a recommendation to develop documents that address extensions/gaps from the use cases published between 2006 and 2008. One of the extensions/gaps prioritized for subsequent processing in the national health agenda activities in 2009 was to support the Medical Home and care coordination activities supported by the management of patient problem lists and practice-based registry capabilities for patient population management. AHIC specifically requested that the 2009 Medical Home: Problem Lists & Practice-Based Registries Extension/Gap address the ability to incorporate information from multiple patient problem lists (from multiple sources) to support comorbidity management and the ability to utilize registry functions in support of care coordination to support individual patient needs.

This extension/gap document is being developed by the Office of the National Coordinator for Health Information Technology (ONC) to represent AHIC priorities and provide context for the national health agenda activities, beginning with the selection of harmonized standards by the Healthcare Information Technology Standards Panel (HITSP). Components that need to be considered during the standards identification and harmonization activities include standardized vocabulary, data elements, datasets, and technical standards that support the information needs and processes of the medical home provider and other clinicians who may provide care for patients. This document is the Final AHIC Extension/Gap. Feedback received on the AHIC Extension/Gap has been considered and incorporated into this document where applicable. HITSP has the opportunity to reuse standards, where applicable, from those previously recognized by the Secretary of Health and Human Services, to specify and constrain how they are to be used to advance interoperability and to work with standards development organizations to see that gaps in standards are filled.

1.2 Progress to Date

To date, the national health agenda, including the activities of AHIC and HITSP, has not formally addressed all of the interoperability considerations for the communication of problem list management and practice-based registry capabilities.

Previously published Use Case and Extension/Gap documents address many of the functions and information exchanges that may support the problem list management and patient population management within the medical home. These published documents incorporate several concepts that have been evaluated by HITSP and could be leveraged during activities supporting this extension/gap document.

- The 2008 Consultations and Transfers of Care Use Case includes the need for communicating information to request and fulfill a consultation and support transfers of care;

- The 2009 Clinical Note Details Extension/Gap includes the need for communicating encounter notes between providers to support care coordination;

- The 2008 Patient-Provider Secure Messaging Use Case includes the needs for patient communication with their healthcare clinicians remotely using common computer technologies readily available in homes and other settings.

- The 2008 Remote Monitoring Use Case includes the need for communicating remote monitoring information from an ambulatory setting, including physiological, diagnostic, medication tracking, and activities of daily living (ADL) measurements, to a clinician's Electronic Health Record (EHR) or a patient's Personal Health Record (PHR) for management of chronic health problems, new conditions, or maintaining wellness.

- The 2008 Personalized Healthcare Use Case includes the needs for communicating clinician-initiated genetic/genomic laboratory test results including interpretive information from an Laboratory Information System (LIS) to an EHR;

- The 2008 Immunization and Response Management Use Case includes the needs for communicating immunization and drug administration information between clinicians, registries, consumers, those individuals in public health roles, and those who report information describing the inventory status of vaccines and drugs;

- The 2007 Medication Management Use Case includes needs for communicating medication information between clinicians and pharmacists in inpatient and ambulatory settings;

- The 2007 Consumer Access to Clinical Information Use Case includes capabilities that enable consumers to have direct access to clinical information that helps promote their understanding and involvement with their healthcare.

- The 2007 Quality Use Case includes the needs for communicating information between the EHR and quality measurement, feedback and reporting systems; and

- The 2006 EHR – Laboratory Results Use Case includes the needs for communicating Laboratory Results from an LIS to an EHR or other clinical system.

2.0 Overview and Scope

2.1 Document/Request Overview

This extension/gap document is focused on information needs to facilitate the electronic exchange of medication information. The 2009 Medical Home: Problem Lists & Practice-Based Registries Extension/Gap Document is divided into the following sections:

- Section 1.0, Preface and Introduction, describes the progress to date, the additional priorities identified by the AHIC, the resulting extensions/gaps, and their purpose;

- Section 2.0, Overview and Scope, describes the sections of an extension/gap document, the request being made to HITSP, and the scope of that request;

- Section 3.0, Functional Needs, describes the combination of end-user needs and system behaviors which support interoperability and information exchange;

- Section 4.0, Stakeholder Communities, describes individuals and organizations that participate in activities described in this extension/gap;

- Section 5.0, Issues and Obstacles, describes issues and obstacles which may need to be planned for, addressed, or resolved to achieve the capabilities described in the extension/gap;

- Section 6.0, References to Use Case Scenarios, describes various scenarios and information exchanges which assist in the communication of information. Scenarios may re-used from previously published 2006 – 2008 Use Cases and/or new scenarios may be described;

- Section 7.0, Information Exchange, describes information exchange capabilities which are needed to support the scenarios and the high-level role of information exchange;

- Section 8.0, Data Set Considerations, identifies specific information opportunities relevant to this extension/gap document that may support future identification, development, and harmonization of standards;

- Appendix A, Glossary, provides contextual descriptions of key concepts and terms introduced in this extension/gap document; and

- Appendix B, Analysis and Examples, describes current public and private efforts to support problem lists and practice-based registries.

2.2   Medical Home Background

Definitions for the term "Medical Home" are continuing to evolve. The Medical Home has been described as a model for providing care that is "accessible, comprehensive and coordinated, and delivered in the context of family and community."[i] A patient's medical home includes a clinician, referred to as the medical home provider, who is the central point of planning, coordination, and management of the patient's health promotion, acute illness care, and chronic condition management.[ii] The medical home provider is an ambulatory practice-based clinician that coordinates care across the patient's providers and care settings and supports patient primary care and management of chronic conditions.

A medical home provider may utilize health information technology tools such as EHRs and practice-based registries to document and access patient information. These tools may aid the medical home provider in care coordination and management of patients, particularly patients with chronic conditions, disabilities, and special needs by providing a centralized view of patient clinical information that may incorporate evidence-based medicine and clinical decision-support functions.

2.3   Scope

The medical home provider may receive patient information and clinical documentation from other providers and sources, both within the medical home provider's practice and from external organizations. The evolving definitions of the Medical Home present many functional and interoperability needs for health information technology. Prior AHIC Use Cases and Extension/Gap documents address many of the standards, information exchanges, and capabilities to support exchanging of patient clinical information between organizations. This is depicted in Section 6.0 in Figure 6-1. This extension/gap is not intended to define comprehensive processes, functions, and interoperability to support the medical home.

The 2009 Medical Home: Problem Lists & Practice-Based Registries Extension/Gap document is focused on the standardization and information needs that support the use of Health IT within the medical home to enable use of the information available to the medical home provider. This extension/gap does not present new information exchanges, but instead describes capabilities within a patient's medical home that can be enabled and supported by extensions to information exchanges from previous Use Cases and Extension/Gaps and associated HITSP interoperability specifications.

Current needs to support care coordination within the medical home includes problem list management and use of standards that support population management functions within the medical home.

Therefore, the requirements for the 2009 Medical Home: Problem Lists & Practice-Based Registries Extension/Gap can be summarized as:

- The ability to manage patient problem lists and provider information (from intra-organizational and inter-organizational sources) within the medical home to support comorbidity management; and

- The ability to utilize information to perform practice-based, patient population management and registry functions within the medical home for care coordination to support individual patient needs.

The identification, development, and harmonization of standards to support the interoperability associated with the information exchange of problem lists and information to support practice-based registries has been preliminarily addressed. However, additional work with standards and professional organizations, care delivery organizations, and organizations providing information technology services and products to the healthcare industry is needed to support the interoperability needs associated with the medical home. As mentioned in Section 1.0, these needs have not yet been fully addressed by the national health agenda's standardization efforts. Examples of gaps in industry standards are outlined in the upcoming sections of this extension/gap document.

3.0   Functional Needs

This section describes a combination of end-user, role-based needs and system behaviors to support user activities during the exchange of patient information between EHR, registry, and other systems to support problem lists and practice-based registry functions within the medical home. Support for this exchange includes the development of interoperability standards for vocabularies, data elements, datasets, and other technical components that are implicit in these functional needs. Rather than an all-inclusive list of functional requirements, key capabilities are outlined below. The descriptions in this section are not intended to prescribe policy nor propose architectures required to implement capabilities.

A. The ability to designate and modify the role of a patient's medical home provider and provider responsibilities for a patient's problems and conditions;

   i. Providers and patients may designate the medical home provider role to a clinician to support the communication of relevant patient information;

   ii. Providers may access information regarding a patient's current and historical medical home provider, such as the effective dates, for medical home designations;

   iii. The medical home provider may designate and/or modify the association of a provider to manage specific problems within a patient's problem list; and

   iv. The medical home provider may view information about any other providers caring for his/her patient and access the role of each provider in the patient's care.

B. The ability for the medical home provider to receive and incorporate information from problem lists from multiple EHRs within the medical home provider's EHR or practice-based registry.

   i. The medical home provider may receive new or updated problem lists and diagnoses information from other providers in the form of consultation or referral requests, transfer of care information, clinical note details, reports, or other clinical documentation;

   ii. The medical home provider receiving problem list information from multiple sources may need to update information contained within the patient's health record or within a provider registry; and

   iii. The medical home provider may require access to standardized detailed information regarding specific items within the problem list as context for information received from other sources, including but not limited to: date of

onset, status, date of change in status, provider information, and problem name and type.

    iv. The ability to utilize information received from multiple sources regarding patient diagnoses and conditions (e.g. problems) to identify and trigger decision support resources within the medical home.

C. The ability to utilize clinical decision support and practice-based registry functionality using standards-based EHR information to report, track, and manage patients by condition, problem, or diagnosis to describe the treatment or status of patient populations to support proactive population management.

    i. The medical home provider may access decision support capabilities that utilize standardized patient information from EHRs, diagnostic reports, and registries to monitor and manage adherence with care management and care coordination measures or clinical practice guidelines related to the provider's patient population.

    ii. The medical home provider may review data necessary to support routine monitoring and response administration of treatment, such as identifying patients overdue for patient-specific or population-based interventions.

    iii. The medical home provider may receive prompts, automated reminders, and alerts to assist in management of patients with particular conditions or risk factors at the point-of-care.

    iv. The medical home provider may identify patients that are receiving care at other facilities or from other providers.

D. The ability to run local data "queries" and identify clinical problems associated with specific patient populations within the medical home provider's practice.

    i. The medical home provider may access and incorporate information from multiple sources to identify certain characteristics (e.g., problems, comorbid conditions, medications) associated with specific conditions.

    ii. The EHR, practice registry or other repository of patient information may respond to a query to provide patient lists with relevant demographic and clinical information for use by the medical home in care delivery.

    iii. The medical home provider may identify the most frequent problems associated with the patients in the provider's practice.

    iv. The medical home provider may identify patients who are prescribed specific medications or the ability to identify patients with a specific problem and the medications prescribed for the specific problem.

    v. The ability to use demographic and clinical information to identify at-risk patients.

E. The ability to run externally developed "distributed queries" that have been provided to the practice and its registries.

    i. The results of queries can be provided, with appropriate confidentiality protections, by the practice for purposes of adverse events, quality, public health reporting etc., or to help populate other population health registries.

    ii. The local practice/medical home can control the application of distributed queries and when information is reported.

    iii. Views of query results should be available to clinicians in the medical home/practice setting.

4.0   Stakeholder Communities

Examples of stakeholders who may be directly or indirectly involved in the problem lists and practice-based registries in the medical home have been listed below. Specific descriptions of each type of stakeholder can be found in the previous 2006 – 2008 AHIC Use Cases.

Stakeholders that may be directly involved in the use and exchange of information to support the medical home may include: Clinicians, Pharmacists, Clinical Support Staff, Healthcare Payors, Laboratories, Diagnostic Imaging Service Providers, Quality Organizations, Public Health Agencies/Organizations, and Patients.

Stakeholders that may assist in medical home information communication may include: EHR System Suppliers, Pharmacy-related System Suppliers, Practice-based Registry System Suppliers, Medication Network Intermediaries, and PHR System Suppliers.

Stakeholders that may be sources or recipients of medical home information may include: Clinicians, Clinical Support Staff, Pharmacists, Healthcare Payors, Laboratories, Diagnostic Imaging Service Providers, Quality Organizations, Public Health Agencies/Organizations, Patients, and Consumers.

5.0   Issues and Obstacles

A number of issues in today's health information technology environment are obstacles to achieving the healthcare data standardization and interoperability needed to promote patient safety, reduce healthcare costs, and increase the value of electronic health information exchange. Some general issues were described within the 2006 – 2008 AHIC Use Cases. Examples of specific issues and obstacles related to Medical Home: Problem Lists & Practice-Based Registries discussed in this document are outlined below.

A. **Financial Barriers, Incentives, and Reimbursement:**

   i.   Financial incentives and reimbursement policies to support the medical home delivery model may be needed.

   a. Without financial incentives, provider adoption of the medical home model and associated care coordination activities may be limited.

   ii. Many clinicians may not be able to bear the cost of electronic systems to enable problem lists and patient population management capabilities to support the medical home. Appropriate financial incentives to promote the adoption and use of these systems may be needed.

   a. If electronic systems supporting care coordination activities have limited adoption, the benefits to overall healthcare costs and patient care will not be realized.

B. **Patient and Provider Identification:**

   i.   A provider may not be able to be designated as a patient's medical home provider or send/receive clinical information to/from other providers and patients without standards that support the ability to uniquely and unambiguously identify patients and providers utilizing numerous pieces of information.

   a. Without processes supported by standards that define specifications for identification of patients and providers, the ability to exchange clinical and patient information that supports care coordination will be limited.

C. Electronic System Capabilities and Integration:

i. For clinicians and patients to effectively exchange information with the medical home provider, electronic systems must be capable of exchanging and managing information from various sources.

   a. If electronic systems utilized by a patient's medical home provider lack the capabilities necessary to exchange and manage information from other providers and patients, adoption of the medical home model and associated care coordination activities may be limited and the benefits to overall healthcare costs and patient care may not be realized.

ii. For a medical home provider to track and manage a practice-based patient population, registry capabilities may need to be integrated within or with the provider's EHR.

   a. If a medical home provider's EHR record lacks the capabilities necessary to perform registry functions such as tracking and managing a practice-based patient population based upon criteria such as problems, medications, or clinical practice guidelines, the provider may need a separate registry system resulting in possible duplicate data entry for patient population and disease management activities.

6.0   References to Use Case Scenarios

This 2009 Medical Home: Problem Lists & Practice-Based Registries Extension/Gap document is focused on the standardization and information needs that support the use of Health IT to provide a central point of care coordination for patients in the medical home model.

Previously published Use Cases and Extension/Gap Documents described information flows that support sharing of clinical information between providers, patients, and other stakeholders that support the information needs for this extension/gap. Specific events and information exchanges have been selected from previous use cases for contextual purposes.
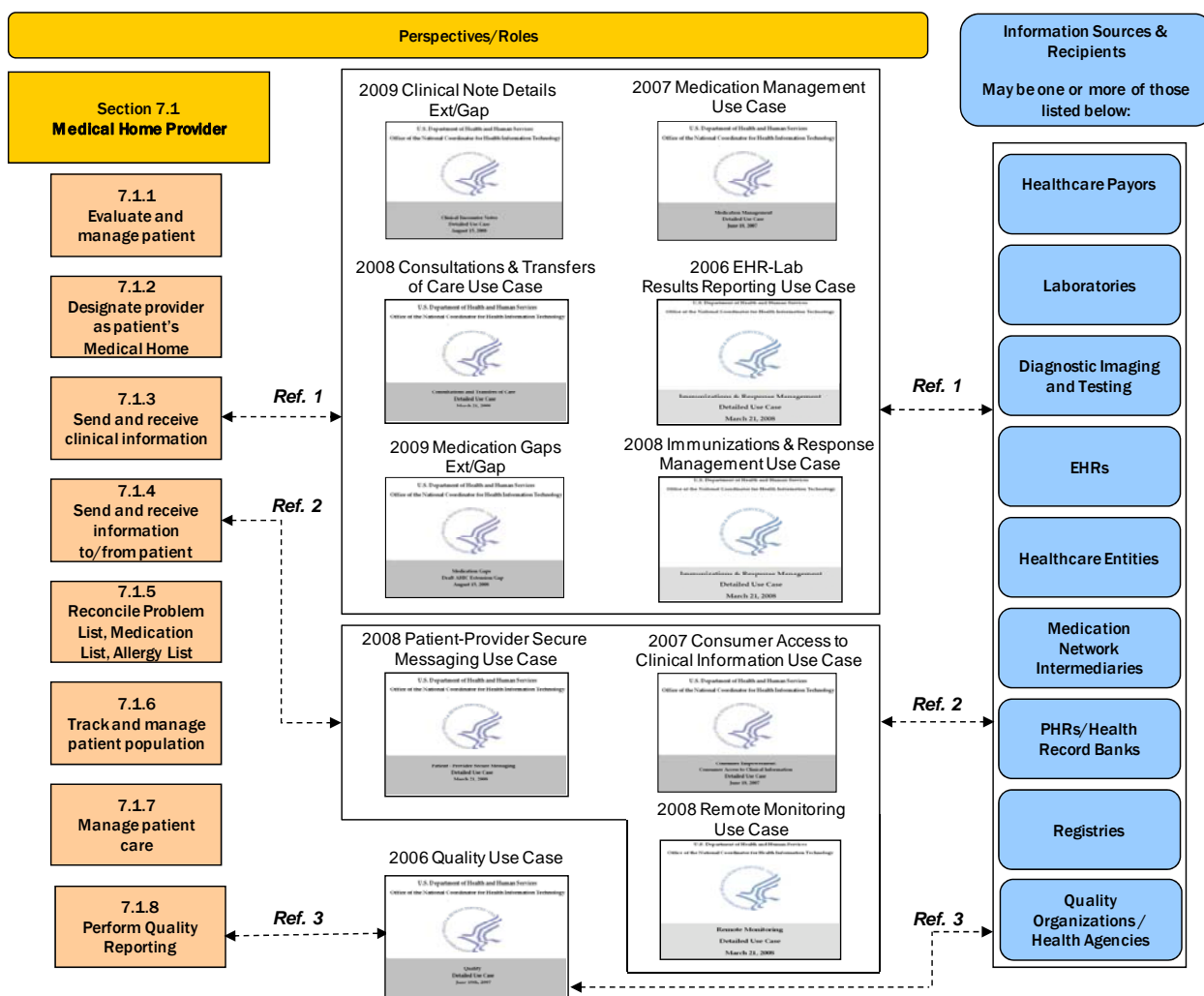
The 2009 Medical Home: Problem List & Practice-Based Registries Extension/Gap does not present any new information exchanges. The Functional Needs described in Section 3.0 identify extensions to previous Use Cases and Extension/Gaps, and support the continued development of standards in these areas.

6.1 References to Prior Use Cases and Extension/Gaps to Support the Medical Home

This 2009 Medical Home: Problem Lists & Practice-Based Registries Extension/Gap Document provides a previously unpublished information flow diagram (Figure 6-1) that highlights several functions that may benefit from additional standards harmonization activities and electronic system capabilities.

Figure 6-1. References to Previous Use Cases and Extension/Gaps

For the purposes of this 2009 Medical Home: Problem Lists & Practice-Based Registries Extension/Gap document, Figure 6-1 has been developed to depict how previously published Use Cases and Extensions/Gaps can support the Medical Home Provider's events and actions.

The ability to manage patient problem lists and provider information (from intra-organizational and inter-organizational sources) within the medical home to support comorbidity management as described in the 2009 Medical Home: Problem Lists & Practice-Based Registries Extension/Gap is expressed by Reference 1 in Figure 6-1 above. Reference 1 represents references to clinical information exchanges between providers and other organizations, and is enabled by previous Use Cases and Extension/Gaps.

Reference 2 depicts existing information exchanges and supports communication of information between patients and providers. Information communicated via patient-provider secure messaging or remote monitoring may be utilized by the Medical Home Provider to support patient care. Patients may communicate provider lists and access permissions for information accessible via PHRs or HIE to the Medical Home Provider.

Lastly, Reference 3 is provided as a reference to the 2007 Quality Use Case in which the information flow supports the integration of data to support quality measurement, feedback and reporting into EHRs, uses quality measures to support clinical decision making, and allows for the aggregation of quality information across multiple providers and entities to support public reporting of healthcare quality.

The ability to utilize information to perform practice-based, patient population management and registry functions within the medical home for care coordination to support individual patient needs as referenced in the 2009 Medical Home: Problem Lists & Practice-Based Registries Extension/Gap may be supported by Reference 1, Reference 1, and Reference 3.

An example can be provided by the 2008 Consultations and Transfers of Care Use Case and the 2009 Clinical Note Details Extension/Gap which contain scenarios that describe the communication of information required for a consultation request, completion of a consultation, and coordination of a transfer of care. The events and information flows which are pertinent to the 2009 Medical Home: Problem Lists and Practice-Based Registries Extension/Gap are shown in bold. All other events and information flows have been faded out.

6.2 Reference to Prior Use Case: 2008 Consultations and Transfers of Care (Scenario 1)
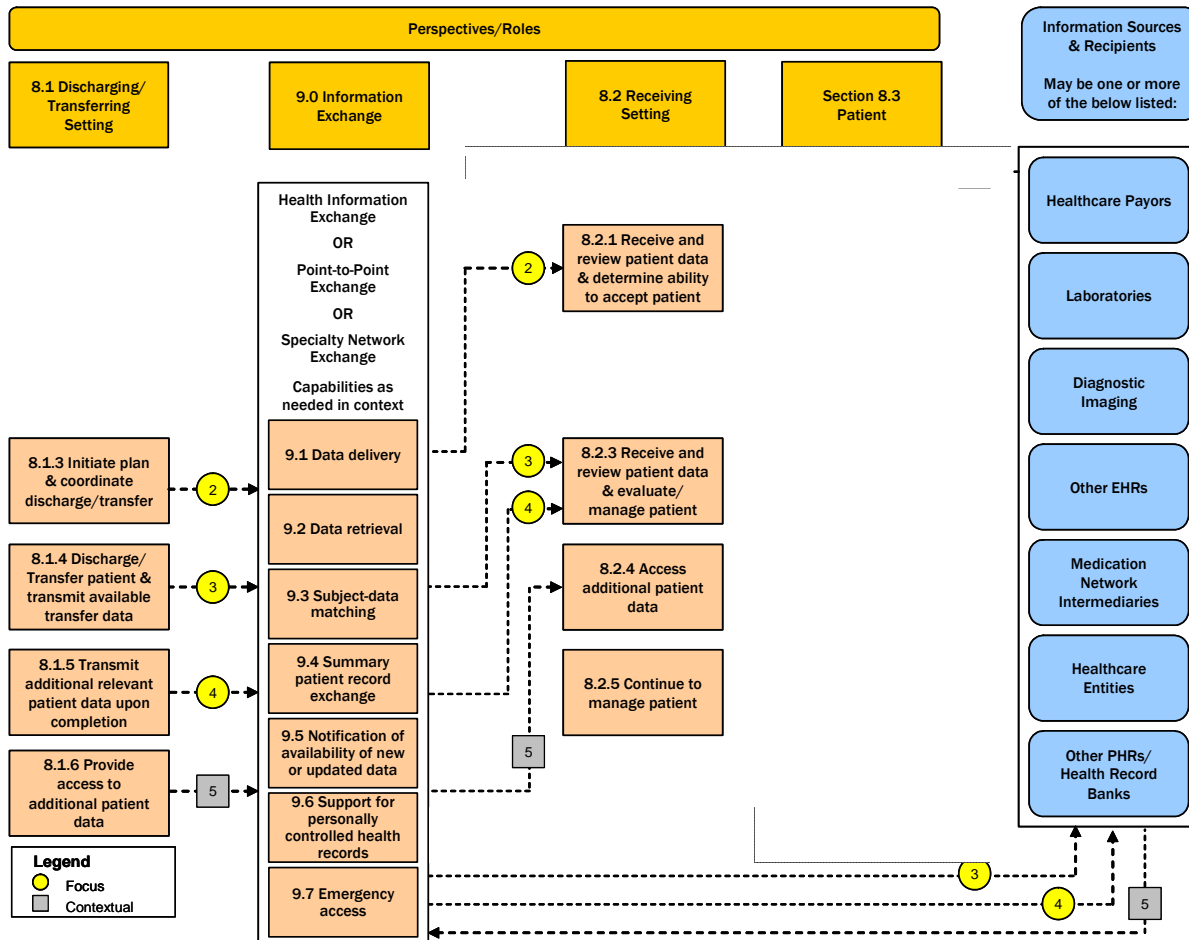
Figure 6-2. Consultations
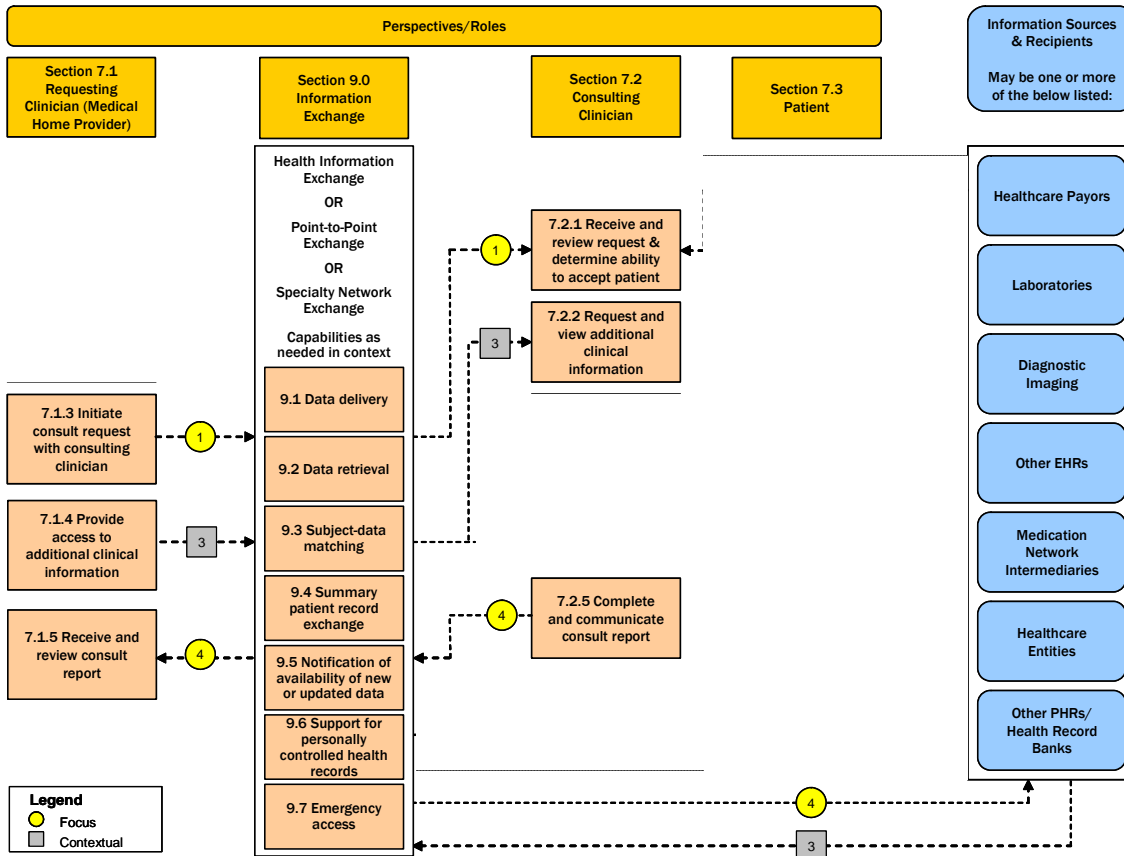
In Figure 6-1, Reference 1 refers to the exchange of clinical information between the medical home provider and external sources such as other providers for the patient. Reference 1 can be further expressed by the 2008 Consultations and Transfers of Care (and 2008 Clinical Note Details) events 7.1.3, 7.1.4, 7.1.5, 7.2.1, 7.2.2, 7.2.5 and information flows 1, 3, 4 as depicted in Figure 6-3; clinical information containing problem list information may be communicated via health information exchange activities and incorporated into EHRs and other systems. The Medical Home Provider may receive clinical information from consulting clinicians and other providers. Information flows 1, 3, and 4 should be referenced and considered to be a focus information flow when addressing Medical Home: Problem Lists & Practice-Based Registries.

6.3 Reference to Prior Use Case: 2008 Consultations and Transfers of Care (Scenario 2)

Figure 6-3. Transfers of Care

In Figure 6-1, Reference 1 refers to the exchange of clinical information between the medical home provider and external sources such as other providers for the patient. Reference 1 can be further expressed by the 2008 Consultations and Transfers of Care (and 2008 Clinical Note Details) events 8.1.3, 8.1.4, 8.1.5, 8.1.6, 8.2.1, 8.2.3, 8.2.4, 8.2.5 and information flows 2, 3, 4, 5 as depicted in Figure 6-3; clinical information containing problem list information may be communicated via health information exchange activities and incorporated into EHRs and other systems. In this scenario, the Medical Home Provider may be the Discharging/Transferring clinician or the Receiving clinician. Information flows 2, 3, 4, and 5 should be referenced and considered a focus information flow when addressing Medical Home: Problem Lists & Practice-Based Registries.

7.0   Information Exchange

The information exchange requirements to exchange patient problem lists (from multiple sources) to support comorbidity management and utilize registry information in support of care coordination may be comprised of information exchanges addressed in previous 2006 – 2008 Use Cases. There are no new information exchanges identified by this extension/gap.

Examples of information exchange capabilities described above and in Section 3.0 may include: Data Delivery, Routing, Data Retrieval, and Subject Data Matching. Descriptions of each of these are in the previous 2006 – 2008 Use Cases.

The functional capabilities may be provided fully or partially by a variety of organizations including: free-standing health information exchanges, integrated care delivery networks, provider organizations, health record banks, medication network intermediaries, specialty networks, and others.

While not described in this section, Health Information Exchange (HIE) and Point-to-Point exchanges assist in the completion of the processes described in this extension/gap. Examples of HIEs and Point-to-Point exchanges can be found in the previous 2006 – 2008 AHIC Use Cases.

8.0   Medical Home: Problem Lists & Practice-Based Registries Dataset Considerations

The following non-exhaustive information categories and limited examples illustrate some of the information needs outlined in this extension/gap document. Examples of information relevant for this extension/gap are included in Appendix B.

A. **Medical Home Designation –** Information that specifies a provider as a patient's medical home. Medical home designation information may include:

   i.   Medical Home Provider Role Type – Role type that may be included within encounter documentation, consultation requests, etc. that assists in the designation of the service provider role as a patient's medical home.

   ii. Medical Home Provider Effective Date – Date associated with the designation as the patient's medical home provider.

   iii. Medical Home Provider End Date – Date associated with the termination as the patient's medical home provider.

B. **Problem List –** An index of diagnoses and/or conditions and associated information that impacts and/or influences a patient's health. Examples of types of problems that may be included in a Problem List are medical, psychiatric, nursing, dental, social, and preventative programs, as well as events such as procedures or complications of procedures. Problem List information for each item on the problem list may include:

   i.   Problem Name **–** Concept name or term that represents the patient's problem. The use of available code sets for condition, diagnosis, procedures, and chief complaint such as those addressed by LOINC, SNOMED CT, ICD, CPT, and other standards, may be valuable.

   ii. Problem Type (e.g., medical, psychiatric, nursing, dental, social, and preventative programs, as well as events such as procedures or complications of procedures, or others Condition, Symptom, Finding, Complaint, Functional Limitation, Problem, Diagnosis, Risk Factor/Health Alert)

   iii. Date of Onset – Physiologically relevant date for onset of the problem

   iv. Problem Status (e.g., Active, Inactive, Chronic, Intermittent, Recurrent, Rule Out, Ruled Out, Resolved)

   v.   Problem Status Effective Date – Date associated with each status or modification of the entry of a status in the problem list

vi. Problem Health Status (e.g., Alive and Well, In Remission, Symptom Free, Chronically Ill, Severely Ill, Disabled, Severely Disabled, Deceased)

vii. Problem Source – Identification information associated with a new or updated problem entry received from providers, patients, caregivers, etc.

viii. Responsible Providers – Provider name and other information associated with a specific problem list item. This association indicates clinical responsibility for managing the specific item.

ix. Additional Comments/Notes (free text)

C. **Standards-based Information to Support Practice-based Registry Capabilities –** Registry functions to support practice-based patient population management may require standards-based information to trigger decision support and reporting. Standards-based information may be needed for the following types of data that are provided as examples and are not intended to be exhaustive:

i. Demographics (e.g., age, sex, zip code)

ii. Problems (e.g., Conditions, Diagnoses, events)

iii. Services (e.g. Health Maintenance, Physical Exam, Diagnostic Procedures)

iv. Diagnostic Tests (e.g. Laboratory, Radiology,

v. Results

vi. Vital Signs (e.g., Blood Pressure, Temperature, Pain Scale)

vii. Medications

Appendix A: Glossary

The 2006 – 2008 AHIC Use Cases contained general terms and their contextual descriptions. Listed below are the new terms that are specific to this extension/gap.

Clinicians: Clinicians are healthcare providers with patient care responsibilities, including physicians, advanced practice nurses, physician assistants, nurses, psychologists, pharmacists, dentists, oral surgeons, therapists (e.g., physical therapists, occupational therapists), and other licensed and credentialed personnel involved in treating patients.

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

Co-morbidity: Diagnoses and/or conditions that exist simultaneously with a primary diagnoses/condition but also stand on its own as a specific disease or condition. Diagnoses/conditions are designated as comorbidities if they are not directly related to the principal diagnosis

Diagnostic Imaging Service Provider: Organizations which provide radiology and diagnostic imaging services to patients in various settings, which perform and analyze the study as ordered by clinicians to assess the health status of patients.

Evidence Based Medicine: An approach to health and health care decision-making that is grounded on a reliable evidence base, accounts appropriately for individual variation in patient needs, and supports the generation of new insights on clinical effectiveness.

Healthcare Payors: Insurers, including health plans, self-insured employer plans, and third party administrators, providing healthcare benefits to enrolled members and reimbursing provider organizations.

Laboratories: A laboratory (often abbreviated lab) is a setting where specimens are sent for testing and analysis are resulted, and then results are communicated back to the requestor. The types of laboratories may include clinical/medical, environmental, veterinarian and may be both private and/or public.

Medical Home: A model for providing care that is "accessible, comprehensive and coordinated and delivered in the context of family and community." A patient's medical home includes a clinician, referred to as the medical home provider, who is the central point of planning, coordination, and management of the patient's health promotion, acute illness care, and chronic condition management.

Patients: Members of the public who receive healthcare services.

Pharmacists: Health professionals and clinicians who are licensed to prepare and dispense medication pursuant to the request of authorized prescribers. The practice of pharmacy

includes, but is not limited to, the assessment, monitoring, and modification of medication and the compounding or dispensing of medication. Direct care activities that pharmacists can perform include patient education, patient assessment, and consultation.

Practice-Based Registry Suppliers: Organizations that design, build, sell, or support the use of practice based registries which support systems for the collection, storage, retrieval, analysis, and dissemination of information to support health needs of patients within a clinician practice or organization.

Problem List: An index of diseases and/or conditions and associated information that impacts and/or influences a patient's health. Examples of types of information that may be included in a Problem List are medical, psychiatric, nursing, dental, social, nutritional, preventative, and other diagnoses and events such as: procedures, complications, disabilities, and functional limitations.

Public Health Agencies/Organizations: Federal, state, local, territorial, and tribal government organizations and clinical care personnel that exist to help protect and improve the health of their respective constituents.

Quality Organizations: Public/private organizations active in the healthcare quality measurement enterprise. These organizations include entities which set priorities, endorse measure sets, harmonize quality measures across settings, establish guidelines for collection and reporting, and support quality improvement. Examples of various quality organizations include the National Quality Forum (NQF), Hospital Quality Alliance (HQA), AQA, The Joint Commission, Centers for Medicare & Medicaid Services (CMS), the National Committee for Quality Assurance (NCQA), Quality Improvement Organizations (QIOs), and specialty medical boards.

Appendix B: Analysis and Examples

An analysis of the information exchange components associated with the medical home and examples of potential mechanisms are included in this appendix. These examples are not intended to be inclusive of all activities in this area.

Figure B-1. Examples of Medical Home Information Exchange Needs

Medical Home Information Exchange Needs	Use Case or Extension/Gap
• Patient Demographic Details • Dates of Previous Visits • Encounter Documentation from Visits to Other Providers • Advanced Directives • Request for Consultation Information • Transfer of Care Information	• 2009 Clinical Note Details Extension/Gap • 2008 Consultations and Transfers of Care Use Case
• Order Laboratory Tests Electronically Laboratory Results and Interpretation	• 2009 General Lab Orders Extension/Gap • 2006 EHR-Lab Results Reporting Use Case
• Prescribe Medications Electronically • Information to Facilitate Medication Management • Information to Facilitate Allergy Management • Prescribing Clinician Information • Ambulatory, Inpatient, Discharge, and Long-Term Care Medications	• 2007 Medication Management Use Case • 2009 Medication Gaps Extension/Gap
• Patient Preferences and Information • Patient Information from PHRs and Health Record Banks • Patient-Provider Secure Communication • Patient Entry of Symptoms, Adherence to Treatments • Patient Physiologic Measures (e.g. weight, blood pressure, glucose)	• 2007 Consumer Access to Clinical Information Use Case • 2008 Patient-Provider Secure Messaging • 2008 Remote Monitoring Use Case
• Report on Nationally Recognized Quality Measures	• 2006 Quality Use Case
• Medical Home Provider Designation • Provider Lists Management (Gap) • Problem Lists Management (Gap) • Registry Functions and Patient Population Management (Gap)	• 2009 Medical Home: Problem Lists & Practice-Based Registries

Figure B-2 provides examples from the California Healthcare Foundation's report on *Using Computerized Registries in Chronic Disease Care* of registry functions that may require communication of standards-based information between providers:

Figure B-2. CHCF Examples of Practice-Based Registry Functions[iii]

Elements of Chronic Care Management[iv]	Registry Functions	
	Basic	**Advanced**
Ensure regular follow-up by the care team	• Track desired intervals for next visit, test, or contact based on care guideline. • Allow clinicians to record patient-specific interval for next visit or intervention. • Provide patient lists sorted according to overdue status (e.g., no HbA1c during last 6 months) or patient status according to management control (e.g., HbA1c>8 or personal goal. • Provide outreach or exception lists for each physician or care team.	• Provide telephone call lists and/or mailing labels and patient reminder letters for follow-up. • Display next appointment date for patients on outreach or exception lists.
Embed evidence-based guidelines into daily clinical practice	• Incorporate information about care management guidelines into reports and displays for care teams.	• Include prompts to recommend changes in patient care plan using guideline-based algorithms and patient specific information.
Integrate specialist expertise and primary care	• Incorporate care guidelines for primary care with input from relevant specialists.	• Incorporate information about decision criteria for patient referral to specialist in patient displays and reports for care teams. • Include prompts recommending referrals for specific patients using guideline-based algorithms and patient-specific information.
Provide timely reminders for providers and patients	• Track desired intervals for next visit, test, or contact based on care guideline. • Allow clinicians to record patient-specific interval for next visit or intervention. • Include information about due dates for visits and other interventions in patient reports and displays.	• Send email notification to physicians or care team when registry patients are seen in emergency department.

Figure B-3. CHCF Examples of Practice-Based Registry Functions (cont.)[iii]

Elements of Chronic Care Management[iv]	Registry Functions	
	Basic	**Advanced**
Identify relevant subpopulations for care	• Track information for identified subpopulations of patients with a designated chronic condition. • Manage the list of active and engaged patients for each PCP and care team.	• Assist with identification of new patients with a chronic condition by reviewing electronic information in external systems. • Stratify patients according to severity of condition.
Facilitate individual patient care planning	• Provide a condition-specific view of current patient status and progress.	• Recommend changes in patient care plan using guideline-based algorithms and patient-specific information.
Share information with patients and providers to coordinate care	• Patient information available to all members of the primary care team. • Record patient self management plan for subsequent access by care team.	• Patient information available to case managers, specialists, and others involved in care. • Patient version available from registry including information on status, care plan, and self-management plan.
Monitor performance of practice team and care system	• Provide population reports for lists of patients and user-specified conditions of management control (e.g., HbA1c<8) or guideline compliance status (e.g., two HbA1c tests in past year). • Provide tabular analysis of trends in any of the above. • Provide population reports for individual physicians and care teams, clinics, and medical groups. • Provide peer comparison reports for individual physicians and care teams and clinics.	• Provide graphic displays of trends in user-specified conditions of management control and guideline compliance in population reports.

[i] AAFP, AAP, ACP, and AOA, "Joint Principles of the Patient-Centered Medical Home", March 2007. www.medicalhomeinfo.org/Joint%20Statement.pdf

[ii] Center for Medical Home Improvement (CMHI) 2008, www.medicalhomeimprovement.org.

[iii] California Healthcare Foundation, "Using Computerized Registries in Chronic Disease Care", February 2004; http://www.chcf.org/documents/chronicdisease/ComputerizedRegistriesInChronicDisease.pdf.

[iv] Improving Chronic Illness Care, www.improvingchroniccare.org.