Appendix M

USE CASES

1.0 PAeHCO Use Case Structure

Use Cases provide a high-level abstract view of what the HIE-NETWORK will enable, ultimately providing benefits to patients and/or providers, payers and other healthcare organizations.

The Use Cases presented here are valuable early pursuits of electronic health information exchanges. They aim to ensure patient information protection while increasing the effectiveness of information flow via electronic exchanges. They also aim to align electronic exchanges with federal rules, regulations and guidelines.

Throughout the explanation and definition of these Use Cases, the concept of health record maintenance and patient access should be universal. Our Use Case structure contains the following sections:

- **Description** - Describing the role, purpose, and flow of the use case.
- **Primary Actor(s)** - Identify the people or systems who will participate in the use case.
- **Primary Goal(s)** - Describe the achievable goal that is to be accomplished as a result of performing the use case.
- **Trigger** - A trigger specifies the event that starts the use case executing. Often the trigger is the first step in the flow of events / scenario(s).
- **Pre-conditions** - Pre-conditions describe the state of the system before the use case runs, and only apply to the state of the system, not the outside environment.
- **Post conditions** - Post conditions describe the state of the system as a result of the use case executing.
- **Primary Scenario and Alternate Scenarios** - Describe the high-level flow of events involved in performing the use case, and capture any significant alternate paths or error scenarios. Also indicate which Actor performs which step, if possible.
- **Business Rules**: If desired, capture any current or future-state business rules that will be useful in planning the future-state processes and application architecture.
- **Aligned to Meaningful Use**: We believed it was appropriate and beneficial to add this section to keep in mind what specifically we are trying to do in each case with regard to Meaningful Use (re “Meaningful Use Stage 1 Final Rule - The White Board Story _ Version 2 _ June 5 2011_FINAL_Group by attest methodv3”).

2.0 PAeHCO Use Cases

The following Use Cases strive to address relevant and timely issues that will have downstream effects on the establishment of statewide Health Information Exchanges (HIEs). These Use Cases are fully supported by the statewide HIE-NETWORK Strategic Model, and should provide viable implementation guides to begin our HIE-NETWORK deployment. The Use Cases are presented in a priority order, with the priority having been set by score sheet tabulation based upon feedback obtained from our Stakeholders.
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2.1 **Discharge Information** is provided by hospitals and emergency rooms to patients and consists of written instructions for follow-up care. It compliments a Continuity of Care Document (CCD), and should provide the Primary Care Physicians (PCPs), specialists, and caregivers the clinical information they need to ensure appropriate follow-up care. This Use Case was originally titled: “Discharge Summaries”, but after discussions, the stakeholders could see the need for timeliness, and since Discharge Summaries may take up to 30 days after discharge to be completed, the formal document is of limited clinical value for follow-up care. The discharge information, on the other hand, should be available immediately.

<table>
<thead>
<tr>
<th>Use Case Name:</th>
<th>PAeHCO – Use Case #1 Discharge Information</th>
</tr>
</thead>
<tbody>
<tr>
<td>Owner:</td>
<td>Direct Tiger Team</td>
</tr>
<tr>
<td>Last Updated:</td>
<td>12/2/2011</td>
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<tr>
<td>Version:</td>
<td>2mu1</td>
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<tr>
<td>Update History:</td>
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</tbody>
</table>

**Summary**

**Description:**

- This document describes the high-level requirements for the generation, distribution and receipt of discharge information for admitted patients, primarily from hospitals to the patient’s primary care and specialist providers but potentially allowing the same content to be sent to other relevant recipients.

- Effective communication between hospital and PCPs is essential for continuity of care. This has become even more important with the increasing number of patients using ambulatory care services to continue their recovery at home, reducing their length of stay but increasing PCPs need for relevant information to help prevent readmissions.

- Historically, investments in e-health have not had a significant impact on availability and quality of information due to:
  
  - Lack of a common vision and agreement
  - Lack of unique identifiers for patients and providers
  - Lack of a common way to name medications, problems, adverse reactions, alerts, procedures, tests, etc.
  - Inconsistent use of standards for structured discharge summaries, referrals, prescriptions, diagnostic results, etc.
  - Too few or too many different locations for storing/accessing shared information
  - Quality - completeness and correctness of information
  - Education – guidelines on how to write a good discharge script
  - Change Management (moving from ‘where we are now’ to ‘where we need to be’)
  - Interoperability – inability to share

- CCD’s on discharge from a hospital are essential for quality
healthcare by improving the capacity for the handover of care between participating parties via the exchange of relevant information (including Continuity of Care and Transfer of Care instances).

- Using standards-based technology, CCD’s on discharge from a hospital can be:
  - Sent from Inpatient, Skilled Nursing Facilities, Intermediate and Long Term Care Facilities
  - Received in Primary Care facilities
  - Accessed by health care providers
  - Understood consistently
  - Delivered faster, more accurately and reliably

**Primary Actor(s):** Referring Provider, Patient, PCP, Hospitals, Inpatient Facilities, SNF’s, and Other facilities discharging a patient from their care.

**Primary Goal(s):** To provide timely CCD’s on discharge from a hospital, by improving the capability and capacity for the transfer of care between participating parties via the exchange of relevant medical information.

**Conditions**

**Trigger(s):** The discharge information process can be initiated based on any of the following events:
- Patient checks out or is discharged.
- Referring Provider or other provider requests in preparation for discharge

**Preconditions:** (inputs)
- Patient checks out or is discharged and has a PCP or other provider selected to assume further care.
- All providers scheduled or planned for follow-up care are identified.

**Post-conditions:** (outputs)
- Completed CCD’s on discharge from a hospital or other facility. These need to be timely (major problem at times, is failure to create and transmit in timely fashion).
- All providers scheduled or planned for follow-up care receive a copy of the CCD on discharge and are identified to each other to maximize coordination of care.
- Important to review “Alignment to Meaningful Use” below.

**Flows**

**Primary Scenario:**
- Self-Service:
  1. step 1 (Patient)
- Low Touch:
  1. step 1 (Referring Provider)
  2. step 2 (Patient)
  3. step 3 (Hospital)
<table>
<thead>
<tr>
<th><strong>High Touch:</strong> [if a certain condition occurs?]</th>
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<tbody>
<tr>
<td>1. step 1 (Hospital)</td>
</tr>
<tr>
<td>2. step 2 (Referring Provider)</td>
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<tr>
<td>3. step 3 (PCP)</td>
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<tr>
<td>4. step 4 (Patient)</td>
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<table>
<thead>
<tr>
<th><strong>Alternate Scenario(s):</strong></th>
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<tr>
<td>(Instructions: Capture any significant alternate paths or error scenarios.)</td>
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<table>
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<tr>
<th><strong>Additional Information</strong></th>
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<tr>
<td><strong>Business Rules:</strong> (optional)</td>
</tr>
<tr>
<td>(Instructions: If desired, capture any current- or future-state business rules that will be useful in planning the future-state processes and application architecture.)</td>
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<table>
<thead>
<tr>
<th><strong>Aligned to Meaningful Use:</strong></th>
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<tbody>
<tr>
<td>• The EP, eligible hospital or CAH who transitions their patient to another setting of care or provider of care or refers their patient to another provider of care should provide summary of care record for each transition of care or referral</td>
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<tr>
<td>• Record advance directives for patients 65 years old or older.</td>
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<tr>
<td>• Provide patients with an electronic copy of their health information (including diagnostic test results, problem list, medication lists, medication allergies), upon request.</td>
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<tr>
<td>• Provide patients with an electronic copy of their discharge instructions at time of discharge, upon request.</td>
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<tr>
<td>• Capability to exchange key clinical information (for example, problem list, medication list, medication allergies, diagnostic test results), among providers of care and patient authorized entities electronically.</td>
</tr>
<tr>
<td>• Protect electronic health information created or maintained by the certified EHR technology through the implementation of appropriate technical capabilities.</td>
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<tr>
<td>• For Meaningful Use measures aligned with the above objectives, see:</td>
</tr>
<tr>
<td>o “Meaningful Use Stage 1 Final Rule (The White Board Story _ Version 2 _ June 5 2011_FINAL_Group by attest method v3)”</td>
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</table>

**Supplemental Materials:** None
2.2 **Active Care Coordination** can come in many different forms, but is usually geared towards partnering to sustain and coordinate ongoing care. There also needs to be a strong requirement to exchange information with the clinical team not only at the point of service but also through transitions of care. All members of the health care team, including patients and their family caregivers, need access to key pieces of information in order to make transitions of care smooth, safe and effective. Effective care coordination requires “timely” transfer of information from each care setting to the next.

<table>
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<tr>
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<td>Last Updated:</td>
<td>12/2/2011</td>
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<tr>
<td>Version:</td>
<td>2 mu1</td>
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<tr>
<td>Update History:</td>
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**Summary**

**Description:**
- There is a strong requirement, with regard to active care coordination, to exchange information with the clinical team not only at the point of service but also through transitions of care.
  - One of the primary benefits of using technology in delivering health care is the ability to ensure that the right information is available at all stages of the health care process, especially before, during and after critical times of transition.
  - All members of the health care team including - patients, and their family caregivers – need access to key pieces of information in order to make transitions of care smooth, safe and effective.
  - Effective care coordination requires timely transfer of information from each care setting to the next.
  - “Timeliness” is often undefined leaving significant room for interpretation leading to inconsistency of care delivery.

**Primary Actor(s):**
- Patient, Providers, Specialists, Inpatient and outpatient facilities, SNF’s, Home Health Care agencies, DME suppliers and others

**Primary Goal(s):**
- Develop, use, and retrieve pertinent patient information in a timely manner.

**Conditions**

**Trigger(s):**
- Patient visits Provider that requires:
  - On-site care,
  - Specialist care,
  - Lab visit,
  - DME assistance, or
  - Hospitalization
| Preconditions: | • If this is the patient’s first visit:  
  o The office staff asks the Patient if they are on a health care plan.  
  o Patient provides them with their Health Care Plan Enrollment card.  
  o The office staff makes a copy of the card for that patient’s record.  
  o The staff then calls, or goes online or through a service of some kind, and verifies the patient’s actual status with that Health Care organization.  
  o The patient’s status is confirmed, and this needs only to be verified at future appointments.  
  o The patient is then added to the provider’s EHR.  

  • Once on the provider’s EHR, additional information will be required:  
    o Gender,  
    o Race,  
    o Ethnicity,  
    o Date of birth,  
    o Smoking status for patients 13 years old or older.  
    o Height,  
    o Weight,  
    o Blood pressure,  
    o Etc. |
| Post-conditions: | • Provider may or may not order lab tests, therapy, DME, refer to a specialist, or refer for hospitalization.  
• Follow-up visit may be required.  
• Medications may be prescribed.  
• **Important to review “Alignment to Meaningful Use” below.** |

| Flows | Primary Scenario:  
• Patient visits Provider, establishes relationship,  
• Provider needs to refer, provide consents, routing, and preferences sent to HIE service,  
• The HIE service submits referral authorization request to payer,  
• The HIE service checks for routing /sends referral request to consulting provider(s),  
• The consult report is transmitted to HIE network,  
• The Patient visits the consulting provider, receives services, and details are noted in the patient’s chart , EHR, or another result is created (e.g., at lab), and  
• The HIE service checks routing preferences, routes discharge summary to Providers, specialist(s), others (e.g., health insurance case manager, health record proxy, etc.). |
|        | Alternate Scenario(s):  
• Patient is electronically referred from the Provider’s EHR, to Hospital EHR for submission for surgery, along with the |
patient’s Summary of Care records.

- Hospital receives the electronic referral, and the Summary of Care records into their EHR
- Hospital’s EHR works out scheduling etc. for Patient surgery.
- Hospital completes the surgery, updating the patient’s records regularly.
- When the patient is discharged, the CCD is forwarded to the referring Provider’s EHR.
- The Provider’s EHR is also given the electronic version of the Patient’s discharge instructions.

### Additional Information

#### Business Rules:

(Instructions: If desired, capture any current- or future-state business rules that will be useful in planning the future-state processes and application architecture.)

#### Aligned to Meaningful Use:

- Record demographics:
  - Preferred language,
  - Gender,
  - Race,
  - Ethnicity,
  - Date of birth,
  - Date and preliminary cause of death in the event of mortality in the eligible hospital or CAH *(Hospitals only)*, and
  - Smoking status for patients 13 years old or older.

- Record and chart changes in vital signs:
  - Height,
  - Weight,
  - Blood pressure,
  - Calculate and display BMI, and
  - Plot and display growth charts for children 2-20 years, including BMI.

- Maintain:
  - An up-to-date problem list of current and active diagnoses.
  - An active medication list.
  - An active medication allergy list.

- Implement one clinical decision support rule, relevant to specialty/high clinical priority, along with the ability to track compliance to that rule.

- Provide:
  - Clinical Summary for patients at each office visit *(EP only)*,
  - An electronic copy of the Patient’s health information (including diagnostic test results, problem list, medication lists, medication allergies), upon their request *(Hospital and EP)*, and
  - The patient with timely electronic access to their health information (including lab results, problem list,
medication lists, medication allergies) within four business days of the information being available to the EP (EP only).

- Capability to exchange key clinical information electronically (for example, problem list, medication list, medication allergies, diagnostic test results), among providers of care and patient authorized entities.
- Send reminders to patients per patient preference for preventive/follow up care [EP only]
- The EP, eligible hospital or CAH who receives a patient from another setting of care or provider of care or believes an encounter is relevant should perform medication reconciliation.
- Use certified EHR technology to identify patient-specific education resources and provide those resources to the patient if appropriate.
- Protect electronic health information created or maintained by the certified EHR technology through the implementation of appropriate technical capabilities.
- For Meaningful Use measures aligned with the above objectives, see:
  - "Meaningful Use Stage 1 Final Rule (The White Board Story _ Version 2 _ June 5 2011_FINAL_Group by attest method v3)".

**Supplemental Materials: None**
2.3 **Computerized Physician Order Entry (CPOE)** systems allow physicians to use computer-based systems to place orders for procedures or diagnostic tests. The results delivery is simply the flow of information in the other direction, i.e., results from a diagnostic test or procedure moving from the provider who performs the service or test back to the provider who ordered it. This electronic delivery often links information directly into the electronic health record (EHR) system of the ordering provider, and helps to reduce administrative burden and avoid clinical errors, that may occur due to manual transcription.

<table>
<thead>
<tr>
<th>Use Case Name:</th>
<th>PAeHCO - Use Case #3 CPOE and Results Delivery</th>
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</thead>
<tbody>
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<td>Owner:</td>
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<tr>
<td>Last Updated:</td>
<td>12/2/2011</td>
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<td>Version:</td>
<td>2 mu1</td>
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<tr>
<td>Update History:</td>
<td></td>
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</tbody>
</table>

**Summary**

**Description:**
- Computerized Provider (Physician) Order Entry consists of providers using an electronic system, normally an EHR, in order to generate an order for procedure(s) or diagnostic test(s), hereafter called collectively "orders".
- Use CPOE for medication orders directly entered by any licensed healthcare professional who can enter orders into the medical record per state, local and professional guidelines
- CPOE is used to help a provider’s workflow. Physicians are able to translate all of the things they normally do throughout the day -- ordering labs, radiology, meds, etc. that connects all of the appropriate departments within the hospital and healthcare community.
- Results Delivery is the automated delivery of results for an order for those that are designated by the provider.
- CPOE and Results delivery improve timeliness, and reduce administrative burden and clinical errors due to manual transcription errors.
- Enabling CPOE and Results Delivery via an HIE reduces the need for providers to establish and maintain separate interfaces to individual labs or lab firms (or similar entities), including the HIE as a recipient of the order, and the results allows any appropriate provider to see the orders and results of orders of all other providers.
- There are third party software systems such as “PatientKeeper CPOE” that are designed for this use.

**Primary Actor(s):**
- Patient
- Primary Care Provider
- HIE
- EHR

**Primary Goal(s):**
- Maximize the number of orders/results accessed by non-
ordering provider (HIEs). This can be used for either as a “push” or “pull”.

<table>
<thead>
<tr>
<th>Conditions</th>
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<tbody>
<tr>
<td><strong>Trigger(s):</strong></td>
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</tbody>
</table>
| **Preconditions:** (inputs) | ● Network infrastructures enable secure, appropriate, and accurate information exchange across data sources and systems to view the data. This includes, but is not limited to:  
  ○ Methods to identify and authenticate users, and  
  ○ Methods to identify and determine applicable providers.  
  ○ Enable measurement of use of CPOE for medication orders directly entered by any licensed healthcare professional that can enter orders into the medical record per state, local and professional guidelines. |
| **Post-conditions:** (outputs) | ● Order details – what was ordered, by whom, and when (Participating Providers)  
  ● Response details – what orders were fulfilled and when (Participating Providers)  
  ● Compliance rates (Orders with corresponding response-“fulfilled orders”, less redundant unfulfilled orders)  
  ● Redundancy rates (Order details, see also measurement notes and intervening variables below)  
  ○ By particular tests or categories thereof.  
  ○ Defined as same test run for same patient within a particular time frame by different providers where clinicians estimate low probability of clinical value in the repeated test.  
  ● Average cost information for targeted tests (Participating Payers)  
  ● Average cost for a practice or facility to independently establish an interface with a diagnostic service provider (i.e. labs and radiology centers)  
  **Important to review “Alignment to Meaningful Use” below.** |

<table>
<thead>
<tr>
<th>Flows</th>
</tr>
</thead>
</table>
| **Primary Scenario:** | ● Patient visits PCP  
  ● PCP diagnoses, discusses options with patient, agrees to mutually acceptable course of action; may prescribe meds or order lab tests.  
  ● Receives lab results, contacts patient, and records all data onto patient’s EHR. |
| **Alternate** | If patient chooses an alternate specialist, location, lab, site of care, |
### Scenario(s):
this needs to be accounted for by a “pull” action, if that provider did not receive the “push” data from the original order.

### Additional Information

<table>
<thead>
<tr>
<th>Business Rules: (optional)</th>
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<tbody>
<tr>
<td>- Deadlines need to be set to trigger “non-compliance” and the EHR must be able to trigger internal messaging, or be messaged by the HIE that the order has or has not been fulfilled.</td>
</tr>
<tr>
<td>- The ability or “skill set” to get the information out of the EHR needs to be trained.</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Alignment to Meaningful Use</th>
</tr>
</thead>
<tbody>
<tr>
<td>- Use CPOE for medication orders directly entered by any licensed healthcare professional who can enter orders into the medical record per state, local and professional guidelines.</td>
</tr>
<tr>
<td>- Implement drug-formulary checks.</td>
</tr>
<tr>
<td>- For Meaningful Use measures aligned with the above objectives, see:</td>
</tr>
</tbody>
</table>
|   - “Meaningful Use Stage 1 Final Rule (The White Board Story _ Version 2 _ June 5 2011_FINAL_Group by attest method v3)”.

### Supplemental Materials: None
2.4 **Historical Lists** may include Pharmacy, Allergy, Conditions, Lab, Imagery, Procedures, and other information. Most providers today rely on patients to provide information on all these things, but patient memory may be incomplete or inaccurate, especially if they are severely ill or critically injured. Enabling historical lists allows providers to quickly and easily get accurate and nearly comprehensive information, reduces the burden on patients, helps providers to make faster and better diagnoses, avoids prescription of ineffective or even harmful treatments, and in some cases helps to avoid unnecessary expense due to repeated procedures and tests.

<table>
<thead>
<tr>
<th>Use Case Name:</th>
<th>PAeHCO - Use Case #4 Historical Lists (Rx, Allergies, Conditions, etc)</th>
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<td></td>
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<td>Last Updated:</td>
<td>10/20/11</td>
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<td>Version:</td>
<td>2mu1</td>
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</table>

**Summary**

**Description:** **Historical Lists** may include Pharmacy, Allergy, Conditions, Lab, Imagery, Procedures, and other information. Most providers today rely on patients to provide information on all these things, but patient memory may be incomplete or inaccurate, especially if they are severely ill or critically injured. Clinical decisions based on this potentially flawed information can, in turn, produce errors. At the very least, the clinical decision process takes longer and costs more as providers seek to uncover information that may be readily available elsewhere. Moreover patients become frustrated when they are asked to provide essentially the same information about their medical history to each provider they encounter.

Enabling historical lists via HIE:

- Allows providers to quickly and easily get accurate and nearly comprehensive information,
- Reduces the burden on patients,
- Helps providers to make faster and better diagnoses,
- Avoids prescription of ineffective or even harmful treatments, and
- In some cases helps to avoid unnecessary expense due to repeated procedures and tests.

**Primary Actor(s):** Patient, Providers, Data Providers, Pharmacy, Insurers, Labs, Public Health Agencies (Federal, State, Local), Schools

**Primary Goal(s):**

- To gain wide adoption of a PHR and an EHR that are easy-to-use, portable (PHR), longitudinal, and affordable.
- To deploy a widely available pre-populated medication history, that can be periodically updated.
- To reduce consumer's burden of having to complete multiple forms and medication histories that can help to reduce errors, eliminate unnecessary treatments, and improve the diagnosis, treatment, and management of illnesses.
- Ease of access to data users
### Conditions

**Trigger(s):**
- Patient visits their Provider.
- Patient visits a health care facility.

**Preconditions:**
- Network infrastructures enable secure, appropriate, and accurate information exchange across data sources and systems to view the data. This includes, but is not limited to:
  - methods to identify and authenticate users;
  - methods to identify and determine providers of care;
  - methods to ensure the veracity of data; and
  - methods to correctly match patients across systems.
- Ability to apply notes, corrections and comments on original entries is available.
- Appropriate standards are developed, approved, and widely adopted supporting data content and structure, allowing universal access by compliant systems.
- Core datasets are defined and adhered to.

*Note:* The above does not allow the consumer to alter/change their EHR.

**Post-conditions:**
- Consumers and providers have information needed to identify, reconcile, and use this health care data.
- Consumers know who has access to their data and can view who accessed or updated their registration or medication history.
- With the consumer’s consent, authorized health care providers are able to locate and retrieve registration summary and medication histories to facilitate care.
- **Important to review “Alignment to Meaningful Use” below.**

### Flows

**Primary Scenario:**
- **Patient arrives at the Emergency room of a local hospital**
  - Once logged in, the hospital is able to retrieve the patient’s medical information electronically via the Patient’s EHR.
  - After diagnosis and treatment, all the pertinent treatment information (lab results, medications ordered, etc.) is used to electronically update the patient’s EHR.
  - The patient is discharged, and may request the new EHR data be given to them to update their PHR.

**Alternate Scenario(s):**
(Instructions: Capture any significant alternate paths or error scenarios.)

### Additional Information

**Business Rules:**
(optional)
**Aligned to Meaningful Use:**

- Protect electronic health information created or maintained by the certified EHR technology through the implementation of appropriate technical capabilities.

- For Meaningful Use measures aligned with the above objectives, see:
  - “Meaningful Use Stage 1 Final Rule (The White Board Story _ Version 2 _ June 5 2011_FINAL_Group by attest method v3)”.

**Supplemental Materials:**

*Allows for patient to ask for his PHR to be updated via his latest EHR entries.*
### 2.5 ePrescribing

ePrescribing is an electronic way to generate and deliver prescriptions through an automated data-entry process. Not only do these electronic systems simplify administrative processes, they also help to avoid clinical errors due to poorly written instructions. More advanced systems also include clinical decision support (CDS) features such as dosage and alternative medication suggestions, duplicate therapy warnings, and drug-drug and drug-allergy interaction checking.

<table>
<thead>
<tr>
<th>Use Case Name:</th>
<th>PAeHCO - Use Case #5 ePrescribing</th>
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<td>Version:</td>
<td>2 mu1</td>
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<td>Update History:</td>
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</tbody>
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#### Summary

**Description:**

Generate and transmit permissible prescriptions electronically (eRx).

Electronic prescribing is a critical component in the overall strategy to enhance health care quality. By delivering clear and accurate information throughout the prescribing process, ePrescribing can help reduce the estimated 3 million preventable adverse drug events (CITL, 2004) and reduce the estimated 7,000 deaths from medication error (Institute of Medicine, 1999) that occur each year.

The definition of what constitutes ePrescribing varies widely; this variation contributes to the wide range of reported utilization levels of ePrescribing in the United States. For the purpose of this use case, we define “true” ePrescribing as a state wherein all aspects of the prescribing process are conducted via electronic means and at no time is there a reversion to a paper-based process.

**Primary Actor(s):**

Primary Care Physician, Patient, Pharmacist, Nurse, Administration staff, Payer(s), PBMs, etc.

**Primary Goal(s):**

To allow a physician to send a prescription instantly to the pharmacy electronically, checking for dangerous drug-drug interactions, allergies and formulary requirements.

#### Conditions

**Trigger(s):**

- Patient visits doctor and requires a prescription medication.
- Patient needs to reorder a medication via a refill

**Preconditions:**

- Physician has electronic order entry system
- Network infrastructures enable secure, appropriate, and accurate information exchange across data sources and systems to view the data. This includes, but is not limited to methods to:
  - Identify the patient and any:
- Allergies and contra-indications,
- Current medication list,
- Prior Authorizations needed, are satisfied, and that
  - Order sets are available.
  - Identify and authenticate users, and
  - Identify and determine applicable providers.
- Receiving Pharmacies are technologically able to transact with ePrescribing provider.

**Post-conditions:** (outputs) Utilizing ePrescribing enables:
- Appropriate delivery of pharmaceutical to patient,
- Appropriate and timely payment for order,
- Elimination of handwriting interpretations and patients will not have to wait at the pharmacy or shuttle back and forth when there is a prescribing problem.
- **Important to review “Alignment to Meaningful Use” below.**

### Flows

| Scenario 1: Physician - Driven | Event: Physician determines that medication order is necessary  
|                               | • Order may be for a refill, or a new medication.  
|                               | • Need to check for Prior Authorization (Prior Authorization (PA) is a process employed by many payers and Pharmacy Benefit Managers (PBMs) to ensure the appropriate use of certain prescription drugs). |

| Scenario 2: Pharmacist - Driven | Event: Pharmacist receives or requests an order from a physician.  
|                               | • Order may be for a refill, discontinuation of medication and/or new medication.  
|                               | • Need to check for Prior Authorization |

| Scenario 3: Patient - Driven | Event: Patient may initiate request as in the case of a refill (after ensuring no PA is needed). |

### Additional Information

**Business Rules:**

**Obstacles to Implementation of ePrescribing Use Case**
- Dissimilar formularies
- Inaccurate preliminary diagnoses
- Prior Authorization (PA) is a process employed by many payers and Pharmacy Benefit Managers (PBMs) to ensure the appropriate use of certain prescription drugs.
Alignment to Meaningful Use:

- Generate and transmit permissible prescriptions electronically (ePrescribing – EP Only)
  - Maintain active medication list
  - Maintain active medication allergy list
  - Implement drug-drug and drug-allergy interaction checks
- Implement drug-formulary checks.
- Protect electronic health information created or maintained by the certified EHR technology through the implementation of appropriate technical capabilities.
- For Meaningful Use measures aligned with the above objectives, see:
  - “Meaningful Use Stage 1 Final Rule (The White Board Story _ Version 2 _ June 5 2011_FINAL_Group by attest method v3)”.

Supplemental Materials:

**ePrescribing Proposed Workflow**

- **Patient** Visits Physician
- **Prescriber**
  - Writes Prescription
  - Completes Q&A
  - Submits PA Request
  - Transmits Prescription
- **Pharmacy**
  - Obtains Pharmacy PA
  - Dispenses Drugs
  - Files Drug Claims
- **Payer**
  - Determines PA Status
  - Determines Criteria, Rules
  - Processes PA Request
  - Processes Drug Claims
- **Drug Claims are Submitted via NCPDP Telecommunications**
- **Pharmacy Pas are Submitted via NCPDP Telecommunications**
- Drugs can be flagged as requiring PA, and simple rules applied via NCPDP Formulary and Benefit Standard
- Submit Required Patient Info via X12N-278 X12N-275 With HL7 Attachment

---

**Notes:**

- Alignments are subject to change.
- Implementations in progress.
2.6 **Clinical Messaging** is electronic coordination of care between providers by data exchange, and information sent between a provider and a patient not covered elsewhere. Benefits of electronic clinical messaging, which can be enabled via push/pull or Direct technology, includes decreased data errors, enhanced physician-to-physician and physician-to-patient communication, faster treatment decisions, and more complete and efficient coordination of care.

<table>
<thead>
<tr>
<th>Use Case Name:</th>
<th>PAeHCO - Use Case #6 Clinical Messaging</th>
</tr>
</thead>
<tbody>
<tr>
<td>Owner:</td>
<td></td>
</tr>
<tr>
<td>Last Updated:</td>
<td>101911</td>
</tr>
<tr>
<td>Version:</td>
<td>2mu1</td>
</tr>
<tr>
<td>Update History:</td>
<td></td>
</tr>
</tbody>
</table>

**Summary**

**Description:** Clinical summaries are central to good communication when patients cross the boundaries of care.
- A discharge summary encapsulates the key information that a practitioner might need when a patient returns after hospitalization.
- A referral letter synthesizes a referring practitioner’s knowledge of a patient and the clinical questions that need to be answered.
- A specialist’s letter summarizes what is needed for a patient to return into the referring practitioner’s care.

These documents are created by a single clinician for a specific purpose, and are prime targets for computerization.

Electronic referrals and discharge summaries are natural extensions of existing clinical tasks and have been shown to improve the quality and timeliness of clinical communication.

**Primary Actor(s):** PCP, Hospitals (All types, including acute, rehab, LTAC, sub acute), Specialists, HIE’s, HISP’s, Home Health Care, SNF’s, Care/Case/Disease Managers

**Primary Goal(s):** To improve the quality and timeliness of clinical communication through the meaningful use of electronic clinical records, clinical messaging, electronic discharge summaries and letters, and services such as decision support.

**Conditions**

**Trigger(s):** A clinical event occurring away from the patient’s primary source of care.

**Preconditions: (inputs)** Referring provider has provided email address(es) of all applicable recipient(s) who should receive the discharge information. These addresses are provided at point of admission and need to be validated as valid Direct
- Ability to add new care provider(s) to the distribution list at any point after admission.
- Either the Direct email address is stored by HISP used by Hospital or it is stored in the Authoritative Participants Service Directory (APSD).
- The ability to identify who receives the discharge information independently of the APSD.

### Post-conditions: (outputs)

- Chart completion. We are able to provide an alternate means for completing chart deficiencies to our affiliated physicians. This function allows physicians to complete their chart deficiencies from their office or home.
- For those who support EMR, this should eliminate printing and distribution of paper based reports, saving staff time and printing /mailing costs.
- **Important to review “Alignment to Meaningful Use” below.**

### Flows

#### Scenario 1: Sender to Sender’s HISP

Mr. I.M. Goodman, a patient of referring provider Dr. Sam Albright, has recently completed a hospitalization stay at Healthy-U Memorial Hospital. A Health Information Management professional at the hospital initiates a message using technology such as an EHR to generate a discharge CCD and sends it to Dr. Albright using a Direct email address that Dr. Albright provided. The EHR system authenticates the initiator of the message to establish its identity to a HISP, then it encrypts and sends (pushes) the message including the attached discharge information to the hospital’s HISP.

- What if an EHR is not capable of sending the discharge information?

**Assumptions:**

- Hospital’s EHR can interface with a HISP.
- User is authenticated by (sender) HISP as a valid sender of this message.
- Sender and receiver could be using two different HISPs, or the same HISP.
- Intra-network is not part of the scope.

#### Scenario 2: Sender’s HISP to Receiver’s HISP

Healthy-U Memorial Hospital’s HISP, after locating the address of the Receiver’s HISP, must communicate with the Receiver’s HISP through similar steps of authentication, encryption and message transmission. Once the message has arrived at the Receiver’s HISP, it needs to be delivered to the intended recipient.

**Assumptions:**

- Sender and receiver could be using two different HISPs, or the same HISP.

#### Scenario 3: Receiver’s HISP to Receiver

**a. No EHR Available**

Dr. Albright doesn’t have an EHR, but he already uses e-mail software that is capable of handling secure (encrypted) messages. Dr. Albright’s e-mail software authenticates to the...
HISP that Healthy-U is using to provide it with Direct Project services and gets the message, displaying it within an inbox of messages. Dr. Albright has chosen to keep multiple e-mail accounts to separate his Direct messages from his normal e-mail, so his inbox contains only clinical messages sent via the Direct Project. He sees the message from Healthy-U. Dr. Albright uses the procedure that his e-mail software requires to open encrypted e-mails, in order to open the attached discharge information.

b. **EHR Available**

Dr. Albright has an EHR that has Direct compliant secure e-mail software capable of handling secure (encrypted) messages and attachments. Dr. Albright’s e-mail software authenticates to the HISP and gets the message, uploading it within the EHR system. Dr. Albright uses the EHR system to access the message and attachment (discharge information).

**Assumptions:**
- Dr. Albright’s EHR can interface with a HISP and is Direct compliant.

<table>
<thead>
<tr>
<th>Additional Information</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Business Rules:</strong></td>
</tr>
<tr>
<td>Justifications</td>
</tr>
</tbody>
</table>
| - Discharge information is critical to share between providers and institutions (hospitals, ERs, etc.) to improve patient safety and long-term care coordination.  
- Helps improve staff efficiency by automated sharing of critical info.  
- Is another form of care document that is part of the grant requirements. |
| 
| **Alignement to Meaningful Use:** |
| - Capability to exchange key clinical information (for example, problem list, medication list, medication allergies, diagnostic test results), among providers of care and patient authorized entities electronically.  
- Protect electronic health information created or maintained by the certified EHR technology through the implementation of appropriate technical capabilities.  
- For Meaningful Use measures aligned with the above objective, see:  
  - "Meaningful Use Stage 1 Final Rule (The White Board Story _ Version 2 _ June 5 2011_FINAL_Group by attest method v3)" |

**Supplemental Materials:**

**Technical Implementation**

In general, a Direct Project implementation is responsible for packaging message content, securing it, and transporting it from one location to another.
2.7 **Clinical Quality Reporting** is the process by which providers report certain events to various state and federal entities. In many cases, these reports allow public health officials to receive fast, accurate information on things like immunizations, chronic diseases, infectious diseases, and medication or medical device usage. The reports help the entities to react and alert providers and the public more rapidly when potential threats emerge, as in the case of an infectious disease outbreak or a medical device or medication recall. Accurate and timely information also allows regulatory entities to greatly enhance their ability to accomplish their goals.

<table>
<thead>
<tr>
<th>Use Case Name:</th>
<th>PAeHCO - Use Case #7 Clinical Quality Reporting</th>
</tr>
</thead>
<tbody>
<tr>
<td>Owner:</td>
<td></td>
</tr>
<tr>
<td>Last Updated:</td>
<td>10/17/11</td>
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<tr>
<td>Version:</td>
<td>2mu1</td>
</tr>
<tr>
<td>Update History:</td>
<td></td>
</tr>
</tbody>
</table>

**Summary**

**Description:** These use case scenarios were developed by the American Health Information Community to create consensus around the workflows and information exchanges necessary to:

- Incorporate quality measurement, feedback, and reporting into electronic health record (EHR) systems for provider service improvements
- Use quality measures data in clinical decision making for direct patient care improvements
- Aggregate quality reporting across providers, provider organizations, health plans, and other interested parties (such as but not limited to, employer groups, quality reporting entities, advocacy groups and others) for accountability and transparency to all interested parties for public health and commercial service improvements.

The use cases contain two scenarios for quality information collection and reporting: one for hospital-based care and another for office-based clinician care. The two scenarios are largely analogous in their representation of suggested work and information flows, but they reflect the markedly different legacy and maturation of processes supporting quality measurement and reporting in the two environments.

The quality use case covers the roles of healthcare providers, health information exchanges, quality data measurement and reporting facilities, and other information sources and recipients relevant in the measurement of healthcare quality. In addition, the two scenarios describe analogous quality-related information exchanges between participants.

A third case was added to address what happens when both clinician and hospital care are used.
Primary Actor(s):  
- Patient, Patient’s Family, PCP, other Healthcare Providers, EHR, HIE, and HISP

Primary Goal(s):  
- To promote care improvement activities for patients, providers, health plans, communities, and in the public health arena.

## Conditions

| Trigger(s): | • Provider’s Visit  
• Provider Visit results in immediate hospitalization  
• Need for Immediate Health Care via Emergency Room |
|--------------------------------------------------|--------------------------------------------------|
| Preconditions: (inputs) | • PCP or other Provider Consultation  
• Hospital Care |
| Post-conditions: (outputs) | • Diagnosis  
• Treatment  
• In-Patient Care  
• Out-Patient Care  
• Important to review “Alignment to Meaningful Use” below. |

## Flows

### Scenario 1: Hospital-based Care Quality Information Collection and Reporting

<table>
<thead>
<tr>
<th>Priority Info. Exchanges</th>
<th>Use Case Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Information Exchange A</td>
<td>Defined quality measurement specifications to be reported are sent to hospitals.</td>
</tr>
<tr>
<td>Information Exchange B</td>
<td>Hospital quality data is sent either via an intermediate entity or point-to-point for onward transmission to the Multi-Hospital Measurement and Reporting entity (patient-level – identifiable).</td>
</tr>
<tr>
<td>Information Exchange C</td>
<td>Distributed data is available to users (aggregate hospital-level data).</td>
</tr>
</tbody>
</table>

### Scenario 2: Office-based Clinician care

<table>
<thead>
<tr>
<th>Priority Info. Exchanges</th>
<th>Use Case Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Information Exchange A</td>
<td>The clinician documents care into the EHR, which collects data attributed to the quality measures in a standardized fashion.</td>
</tr>
<tr>
<td>Information Exchange B</td>
<td>The clinician or clinician practice’s internal quality improvement program receives the listing of defined quality measures and their associated abstraction guidelines and works with its EHR vendor to update internal systems such as the EHR accordingly. A database with Query capability and trained clinicians facilitates this activity to its fullest.</td>
</tr>
</tbody>
</table>
### Scenario 3: Both office-based clinician care and hospital-based care

#### Priority Info. Exchanges

<table>
<thead>
<tr>
<th>Information Exchange A</th>
<th>Use Case Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>The exchange of patient-level quality data from provider systems to quality data measurement and reporting facilities (where aggregate quality measure results are actually calculated and reported)</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Information Exchange B</th>
<th>Use Case Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>The exchange of population-level quality measure results (aggregate, cross-patient) from a measurement and reporting facility to quality data recipients</td>
<td></td>
</tr>
</tbody>
</table>

#### Assumptions:
- Data Collection Infrastructures have been established for adequate record and measurement capabilities for applicable information and meaningful metrics.
- Patient, clinician, facility identification is standardized throughout the system.
- Information shared among facilities and clinicians in medical practice.
- Feedback to clinician includes all measures for which patient is eligible, due date, and latest result, assuming there are no gaps in care.
- Prompts for new patients if eligible for (at least) preventive services – i.e., prompts care even though not able to be fully included in some reportable quality measures.

### Additional Information

#### Business Rules:

<table>
<thead>
<tr>
<th>Optional</th>
</tr>
</thead>
<tbody>
<tr>
<td>Report ambulatory clinical quality measures to CMS or the States</td>
</tr>
<tr>
<td>Protect electronic health information created or maintained by the certified EHR technology through the implementation of appropriate technical capabilities.</td>
</tr>
<tr>
<td>For Meaningful Use measures aligned with the above objective, see:</td>
</tr>
<tr>
<td>o “Meaningful Use Stage 1 Final Rule (The White Board Story _ Version 2 _ June 5 2011_FINAL_Group by attest method v3)“.</td>
</tr>
</tbody>
</table>

Supplemental Materials: None
2.8 **Referrals / Consultations** is when one provider sends a referral or consults with another provider. Referrals are for services that are outside the referring provider’s scope of practice, as when a PCP refers a patient to a specialist. Consultations are similar to a referral, except there is no referral used, and the consulted provider helps the requesting provider based on information already available, without requiring a visit by the patient. Electronic referrals make it easier to transfer clinical information between key users: inpatient facility to primary care provider, and primary care provider to specialist. Electronic referrals also improve the readability of information transferred, thereby improving overall quality care, and allow for automated follow-up to alert the referring provider if the patient doesn’t follow-through on a referral.

<table>
<thead>
<tr>
<th>Use Case Name:</th>
<th>PAeHCO - Use Case #8 Referrals / Consultations</th>
</tr>
</thead>
<tbody>
<tr>
<td>Owner:</td>
<td></td>
</tr>
<tr>
<td>Last Updated:</td>
<td>101711</td>
</tr>
<tr>
<td>Version:</td>
<td>2mu1</td>
</tr>
<tr>
<td>Update History:</td>
<td></td>
</tr>
</tbody>
</table>

**Summary**

**Description:**
- **Referral** is when one provider sends a patient to another provider for services that are outside the first provider’s scope of practice, as when a PCP refers a patient to a specialist.
- **Consultation** is similar to referral, except the second provider helps the first provider based on information the first has requested (i.e. opinion, further care required, etc.), without requiring a visit by the patient.

Electronic referrals and consultation make it easier to transfer clinical information between key users: to primary care provider and primary care provider to specialist. Electronic referrals also improve the readability of information transferred, thereby improving overall quality care, and allow for automated follow-up to alert the referring provider if the patient doesn’t follow-through on a referral.

**Primary Actor(s):**
- Patients, PCP’s, Physicians or other Providers, HIE, HISP, Labs, Pharmacy

**Primary Goal(s):**
- To demonstrate ability to share patient information across multiple care provider systems and then provide the information from the care event to the patient’s HER and PHR.

**Conditions**

**Trigger(s):**
- Patient Visit
- Provider creates a referral for another provider, and forwards pertinent labs, x-rays and other clinical data to that provider.
- PCP diagnosis requires a specialist for a referral / consultation.
- Specialist would like the patient to have a PCP.

**Preconditions:**
- A referral request has been requested.
- A referral request has been initiated by referring provider.
- A referral has been accepted, and resulting summary notes are available.
**Post-conditions:**

- The receipt of the request has been acknowledged.
- The original request is modified
- An order status code
- The original order is withdrawn / cancelled. The medical records submitted with the referral are archived.
- Resulting document has been returned to the patient/PCP.
- **Important to review “Alignment to Meaningful Use” below.**

**Flows**

**Scenario 1:**
- A patient is being referred from their PCP to a Dermatologist to investigate a suspicious growth on the patient’s shoulder. The patient is then referred for consultation to decide whether or not a biopsy is appropriate. Once the need is determined, the biopsy is taken, and the specimen is transferred to a lab with the order request. The scenario demonstrates the ability for providers to refer patients to a specialist and then have all care givers have access to encounter summaries and associated lab reports.

**Scenario 2:**
- A patient is being referred from his PCP to a urologist to investigate an elevated PSA test result. The patient is referred for consultation to decide whether or not further investigation is necessary. Eventually, a tissue specimen is sent to the lab. This scenario demonstrates the ability for providers to refer patients to a specialist and then have all care givers have access to encounter summaries and associated lab reports.

**Scenario 3:**
- A patient with an EHR is being referred from their PCP to an endocrinologist to investigate an enlarged Thyroid. This scenario demonstrates the ability to share patient information and relevant care documents across multiple care provider systems and then provide the information from the care events to the patient.

**Additional Information**

**Business Rules:**

(Optional)

**Aligned to Meaningful Use:**

- The EP, eligible hospital or CAH who transitions their patient to another setting of care or provider of care or refers their patient to another provider of care should provide summary of care record for each transition of care or referral.
- Protect electronic health information created or maintained by the certified EHR technology through the implementation of appropriate technical capabilities.
- For Meaningful Use measures aligned with the above objectives, see:
  - "Meaningful Use Stage 1 Final Rule (The White Board Story _ Version 2 _ June 5 2011_FINAL_Group by attest method v3)".

**Supplemental Materials:** None
2.9 Longitudinal Medical Records are similar to historical lists, just on a more comprehensive level, including things like family and social histories and lifestyle information. A longitudinal record via HIE can be seen as being simply a full medical record for a patient that incorporates data from all known digitized sources.

<table>
<thead>
<tr>
<th>Use Case Name:</th>
<th>PAeHCO - Use Case #9 Longitudinal Health Record</th>
</tr>
</thead>
<tbody>
<tr>
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<td></td>
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<tr>
<td>Last Updated:</td>
<td>101811</td>
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<td>Version:</td>
<td>4mu1</td>
</tr>
<tr>
<td>Update History:</td>
<td></td>
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</tbody>
</table>

**Summary**

**Description:** Longitudinal Health Record is the accumulation of all health-related information about an individual from many clinical encounters over a long period of time. This information may be contained in many different healthcare provider locations, but it is ultimately the patient’s responsibility to continually get their PHR updated from these locations.

**Primary Actor(s):** Patients, All Emergency Providers, HIE’s, HISP’s, Study Coordinators, Trial Sponsors, Patient Advocacy Groups, Researchers, Data Analysis Services

**Primary Goal(s):** To establish criteria and a methodology about how electronic health records (EHRs) and emerging health information exchanges (HIEs) can be used to more easily connect providers with the necessary medical history for use in their diagnosis and treatment of the patient.

**Conditions**

**Trigger(s):**

- Patient is taken to a provider for emergency treatment.

**Preconditions:**

- Established network and policy infrastructures to enable secure, consistent, appropriate, reliable, and accurate information exchange.
- Systems must be able to exchange components of patient health data in a way that links all data from one patient together to make up the health record.
- Healthcare facilities’ (i.e., hospitals, clinics, physician practices, laboratories, ancillary clinical facilities) ability to electronically collect, process, and transmit pertinent health data in a secure fashion using existing data exchange and vocabulary standards.
- All health information source systems must be connected to health information networks that can share the data necessary to make up the longitudinal health record of a patient.
**Post-conditions:**
.outputs
- Data provided will support the privacy and security of patient health information.
- Post treatment data will be able to be sent to the PCP for update of the patient’s EHR.
- **Important to review “Alignment to Meaningful Use” below.**

<table>
<thead>
<tr>
<th>Flows</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Primary Scenario:</strong></td>
</tr>
<tr>
<td>The patient is at work and is found unconscious and is taken to the ER via ambulance.</td>
</tr>
<tr>
<td>- Medical staff has patient’s name and locates the patient’s PCP.</td>
</tr>
<tr>
<td>- ER Staff requests the patients Longitudinal EHR, to assist in the diagnosis and treatment of the patient.</td>
</tr>
<tr>
<td>- Records are received via email</td>
</tr>
<tr>
<td>- Patient is successfully treated and released.</td>
</tr>
<tr>
<td>- Patient’s discharge information (CCD) is electronically forwarded to the PCP and other appropriate providers.</td>
</tr>
</tbody>
</table>

| Alternate Scenario(s): |

<table>
<thead>
<tr>
<th>Additional Information</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Aligned to Meaningful Use:</strong></td>
</tr>
<tr>
<td>- Protect electronic health information created or maintained by the certified EHR technology through the implementation of appropriate technical capabilities.</td>
</tr>
<tr>
<td>- For Meaningful Use measures aligned with the above objectives, see:</td>
</tr>
<tr>
<td>- “Meaningful Use Stage 1 Final Rule (The White Board Story _ Version 2 _ June 5 2011_FINAL_Group by attest method v3)”.</td>
</tr>
</tbody>
</table>

**Supplemental Materials: None**
2.10 **Quality, Safety Analysis, and Reporting** is a function that allows administrators to obtain information from providers to study, identify trends, and draw conclusions. An HIE may implement tools to actually perform the analysis, and may even make results of these analyses available. Additional quality/safety programs, both currently existing and being developed by various organizations focus on safety such as the Healthcare Effectiveness Data and Information Set (HEDIS). HEDIS is a tool published by the National Committee for Quality Assurance (NCQA) and used by more than 90 percent of America’s health insurance plans to measure provider performance on important dimensions of care and service.

<table>
<thead>
<tr>
<th>Use Case Name:</th>
<th>PAeHCO - Use Case #10 Quality, Safety Analysis, and Reporting</th>
</tr>
</thead>
<tbody>
<tr>
<td>Owner:</td>
<td></td>
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<tr>
<td>Last Updated:</td>
<td>101711</td>
</tr>
<tr>
<td>Version:</td>
<td>2mu1</td>
</tr>
<tr>
<td>Update History:</td>
<td></td>
</tr>
</tbody>
</table>

### Summary

**Description:**

- This function allows for administrators to obtain information from providers to study, identify trends, draw conclusions, or allows providers to obtain such information for self-evaluation. An HIE may implement tools to actually perform the analysis, and may even make results of these analyses available.

- The Healthcare Effectiveness Data and Information Set (HEDIS) is a tool published by the National Committee for Quality Assurance (NCQA) and used by more than 90 percent of America’s health insurance plans to measure provider performance on important dimensions of care and service.
  - HEDIS consists of 75 measures across 8 domains of care.
  - HEDIS makes it possible to compare the performance of health plans and providers on an “apples-to-apples” basis. Health plans also use HEDIS results to see where they need to focus improvement efforts, and many provider “pay-for-performance” programs are based, at least in part, on provider performance against HEDIS and HEDIS-like measures.
  - Please note, while HEDIS may be reasonable to use now, we still have a long way to go in deciding which metrics are the best indicators of “quality”, however we choose to define that.

- Additional quality/safety programs, both currently existing and being developed by various organizations focus on safety and efficacy of medications, procedures, medical devices, and so on.
An HIE can play several roles in these kinds of quality/safety analysis and reporting programs.

<table>
<thead>
<tr>
<th>Primary Actor(s):</th>
<th>Patient, physicians and other providers (including medical groups and health systems), Hospitals, HIE’s, HISP’s, health insurance plans, community and regional health quality entities and other quality stakeholders.</th>
</tr>
</thead>
</table>
| Primary Goals:    | - To make it much easier for administrators of such programs to get information from providers needed to conduct the analysis, or the HIE may implement tools to actually perform the analysis.  
- To make results of these analyses available, on a near real-time basis to providers, normally via a provider portal. This allows providers to review their standings, identify shortcomings, and address problem areas before they have an impact on patient care and/or compensation.  
- To make quality and safety analysis results available for patients to review via a patient portal. This may help healthcare consumers to make more informed choices about their healthcare.  
- To make results of these analyses available to identify problem areas so that improvements can be made. |

<table>
<thead>
<tr>
<th>Conditions</th>
<th></th>
</tr>
</thead>
</table>
| Trigger(s):       | - Patient visit to Provider  
- Patient admitted to Hospital or other facilities or services  
- Sentinel events  
- Adverse trends  
- Event clusters |
| Preconditions:    | - Patient receiving medical care:  
  - In-Patient Services  
  - Out-Patient Services |
| Post-conditions:  | - Quality care provided due to patient’s data availability  
- Quality by Analysis and Performance Improvement Initiatives  
**Important to review “Alignment to Meaningful Use” below.** |

<table>
<thead>
<tr>
<th>Flows</th>
<th>Analysis of quality data for a region reveals poor compliance with a key health maintenance issue. The analysis reveals an issue with availability of the service in the region. A performance improvement initiative is begun using tele-medicine to provide the service at the local level, and a re-measure a year later reveals significant improvement for that issue.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alternate Scenario(s):</td>
<td>(Instructions: Capture any significant alternate paths or error scenarios.)</td>
</tr>
</tbody>
</table>
## Additional Information

### Business Rules:
(conditional)

<table>
<thead>
<tr>
<th>Aligned to Meaningful Use:</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Report ambulatory clinical quality measures to CMS or the States.</td>
</tr>
<tr>
<td>• Protect electronic health information created or maintained by the certified EHR technology through the implementation of appropriate technical capabilities.</td>
</tr>
<tr>
<td>• For Meaningful Use measures aligned with the above objectives, see:</td>
</tr>
</tbody>
</table>
|   o “Meaningful Use Stage 1 Final Rule (The White Board Story _ Version 2 _ June 5 2011_FINAL_Group by attest method v3)”.

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### Supplemental Materials:
None
2.11 **Enrollment / Eligibility Verification** is when providers take on a new patient, and then confirm the patient’s enrollment, eligibility, and benefits with a medical plan/payer. Verification via HIE should automate the process between the primary care provider’s office and the payer, freeing up precious resources to perform other tasks.

<table>
<thead>
<tr>
<th>Use Case Name:</th>
<th>PAeHCO - Use Case #11 Enrollment / Eligibility Verification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Owner:</td>
<td></td>
</tr>
<tr>
<td>Last Updated:</td>
<td>101811</td>
</tr>
<tr>
<td>Version:</td>
<td>5mu1</td>
</tr>
<tr>
<td>Update History:</td>
<td></td>
</tr>
</tbody>
</table>

**Summary**

**Description:** A common problem in most healthcare providers’ offices is ascertaining whether a patient (new or ongoing alike) is enrolled in a health plan or not. And if enrolled, what benefits the patient is eligible for. Eligibility Verification is when providers confirm patient eligibility and benefits with a medical plan/payer.

The following use case is aimed at addressing the information flow and the impact it may have on a provider’s office workflow. If present manual tasks, related to enrollment/eligibility verification, could be replaced by automated information exchanges between the health plans and the providers’ offices, it would free up precious resources to perform other tasks.

Today, in paper-based practices, the following usually happens:

- Patient visits a provider for the first time.
- The office staff asks the Patient if they are on a health care plan.
- Patient provides them with their Health Care Plan Enrollment card.
- The office staff makes a copy of the card for that patient’s record.
- The staff then calls, or goes online or through a service of some kind, and verifies the patient’s actual status with that Health Care organization.
- The patient’s status is confirmed, and this needs only to be verified at future appointments.

**Primary Actor(s):** Patients, Providers, Provider offices, Health Plans/Payers

**Primary Goal(s):** To reduce the office workload through electronic systems interfaces.

**Conditions**

**Trigger(s):**

- When patients visit a provider, they get asked enrollment info to allow the Provider’s office to determine coverage, co-pay, etc.
### Preconditions: (inputs)
- Training via Health Care Insurers
- Data systems interface with Health Plans/Payers

### Post-conditions: (outputs)
- The patient’s enrollment is now on file and their eligibility will be verified at each future appointment.
- **Important to review “Alignment to Meaningful Use” below.**

### Flows

#### Primary Scenario:
- Patient wants to make a telephonic appointment with a provider for the first time.
- The office staff asks the Patient if they are on a health care plan.
- Patient provides them with their Health Care Plan Enrollment details.
- The office staff interfaces with the health plan enrollment system real-time online, via the shared services and receives applicable enrollment/eligibility status for that patient.
- If the patient’s enrollment status is confirmed, the office staff can proceed booking the appointment.

#### Alternate Scenario(s):
- Patient wants to make a telephonic appointment with a provider they have visited before.
- The office staff calls up the Patient’s records and interfaces with the patient’s health plan enrollment system real-time online, via the shared services and receives applicable enrollment/eligibility status for that patient.
- If the patient’s enrollment status is confirmed, the office staff can proceed to use that insurer for that visit.
- If the patient’s enrollment status is not confirmed, the office staff can seek newer or more updated insurance information, or inform the patient of alternate payment arrangements.

### Additional Information

#### Business Rules: (optional)

#### Aligned to Meaningful Use:
- Protect electronic health information created or maintained by the certified EHR technology through the implementation of appropriate technical capabilities.

- For Meaningful Use measures aligned with the above objectives, see:
  - “Meaningful Use Stage 1 Final Rule (The White Board Story _ Version 2 _ June 5 2011_FINAL_Group by attest method v3)”.

### Supplemental Materials: None
2.12 Centralized Provider Credentialing is when practicing healthcare providers who want to bill the insurance companies for services must become credentialed in order for insurance companies and their plans to accept them. Unfortunately, providers often must go through this credentialing process several times with different insurers, facilities, and/or practices. The Community Shared Services (CSS) could make this process much easier by serving as a centralized repository for all the documentation needed for the credentialing process. More aggressively, the CSS could work with all entities within the state to standardize the credentialing process across organizations, managing the credentialing and merely affirm credentialing to other organizations.

<table>
<thead>
<tr>
<th>Use Case Name:</th>
<th>PAeHCO - Use Case #12 Centralized Provider Credentialing</th>
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<tbody>
<tr>
<td>Owner:</td>
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<tr>
<td>Last Updated:</td>
<td>10/17/11</td>
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<tr>
<td>Version:</td>
<td>4mu1</td>
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<tr>
<td>Update History:</td>
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</tr>
</tbody>
</table>

**Summary**

**Description:** Centralized Provider Credentialing - When a healthcare provider is hired or chooses to work at or in a hospital, clinic or specialty practice, or participate on an insurance plan, the provider must have all required qualifications reviewed in order to be credentialed, which permits reimbursable care for patients through their insurance plans. Basically, doctors who want to bill the insurance companies for services shall be credentialed in order for insurance companies and their plans to accept them and to be allowed to work in some facilities. Unfortunately, providers, who want to practice, must go through this credentialing process many times with different insurers, facilities, and/or practices.

- The Community Shared Services (CSS) could make this process much easier by serving as a centralized repository for all the documentation needed for the credentialing process. More aggressively, the CSS could work with all entities within the state to standardize the credentialing process across organizations, managing the credentialing and merely affirm credentialing to other organizations.

**Primary Actor(s):**
- Providers, State and National License and Certification Boards and Agencies, DEA, NPPES, CMS, Medicaid Plans, Social Security Administration, All health plans, PPOs, ECFMG, CAQH, OIG, FDA, and Medical Groups, medical schools, residencies and other training facilities.

**Primary Goal(s):**
- The APSD will become the authoritative primary source of provider credentialing information and will be used to feed other systems in need of such credentialing information.
### Conditions

| Trigger(s): | Providers, and all health Care entities need to use credentialing information for:  
| o Patient visits,  
| o Consults,  
| o Referrals,  
| o Results Reporting, and  
| o Other Services provided in a facility that requires credentialing. |

| Preconditions:  
| Provider’s authentication already exists,  
| Joint Commission and NCQA organization qualification are acceptable and can be used  
| The CSS should conduct provider verification both at initial enrollment in the HIE and for subsequent transaction requests at a frequency to be determined by the HIE’s governing body (i.e., every three months or six months or annually).  
| Facilities agree to use the APSD for credentialing |

| Post-conditions:  
| The APSD is updated in real-time.  
| Re-verification - The ongoing periodic re-verification is important because after enrollment, unpredictably a provider may pass away, retire, move to another state, and allow his / her license to expire and/or get sanctioned.  
| **Important to review “Alignment to Meaningful Use” below.** |

### Flows

| Primary Scenario:  
| To prevent inappropriate access to PHI and/or SHI by a provider, the following shall be done:  
| 1. For a new provider, verify the provider’s professional identity with a real time web-based check of a provider’s state license, DEA number (if applicable), and sanctions status prompted by xml queries to the APSD.  
| 2. For initial Provider Enrollment, partner with an experienced and reliable third party to store and maintain newly enrolled provider information in the APSD; and,  
| 3. Verify a provider’s personal identity to confirm that he/she is who he/she say’s he/she is. This should be done with two factor authentication which requires two of the following:  
| • something that the person is (i.e., biometrics),  
| • something that the person has (i.e., government issued ID card), or  
| • something that the person knows (i.e., answers to secret questions). |

| Alternate Scenario: |
## Additional Information

### Business Rules:
(Instructions: If desired, capture any current- or future-state business rules that will be useful in planning the future-state processes and application architecture.)

### Aligned to Meaningful Use:

- Protect electronic health information created or maintained by the certified EHR technology through the implementation of appropriate technical capabilities.

- For Meaningful Use measures aligned with the above objectives, see:
  - “Meaningful Use Stage 1 Final Rule (The White Board Story _ Version 2 _ June 5 2011_FINAL_Group by attest method v3)”.

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**Supplemental Materials: None**
2.13 **Registries** are centralized repositories where reports to various entities, such as state or federal agencies, are housed. Some health data, including reportable disease information and some immunizations, must be submitted to existing state level registries on an ongoing basis. HIE services can provide such reporting, when and where required by law. In addition to the type of aforementioned registry, there may also be **Administrative Registries**, which can be a “document” registry supported by the planned Authoritative Participants Service Directory (APSD). The APSD serves as both the Patient Data Repository, which contains an identifier and location of documents of patients stored in the Local HIEs. It does not contain clinical data. The APSD also includes the Provider Services Directory and may also contain credentialing information, amongst a number of other services.

<table>
<thead>
<tr>
<th>Use Case Name:</th>
<th>PAeHCO - Use Case #13 Clinical Registries</th>
</tr>
</thead>
<tbody>
<tr>
<td>Owner:</td>
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<td>101811</td>
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<tr>
<td>Version:</td>
<td>4mu1</td>
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<td>Update History:</td>
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</table>

**Summary**

**Description:** Registries can encompass “home-grown” systems, vendor products, or specially designed systems; they can be stand-alone structures or more advanced registries that interface with other electronic systems. Registry tools can support a variety of functions:

- Enhanced reporting capabilities:
  - Views of panels of patients defined by specific characteristics

- Clinical decision support features includes:
  - Ability to identify potential chronic patients who have not yet been diagnosed
  - Tools to track patients’ health status and gaps in care (tests recommended by age, sex, and or diagnosis, and not obtained.)

- Provide capabilities that some current EHR products do not:
  - EHRs traditionally designed to document individual patient encounters.
  - Limited out-of-the-box reporting capabilities for quality improvement.
  - Fewer features enabling data collection on quality measures.
  - Concerns about using EHR production database for reporting purposes due to the impact on system speed.

An example of a clinical registry is an Immunization Registry. Immunization Registries are confidential, population based, computerized information systems that attempt to collect vaccination data about all children within a geographic area. It
is an important tool to increase and sustain high vaccination coverage by consolidating vaccination records of children from multiple providers, generating reminder and recall vaccination notices for each child, and providing official vaccination forms and vaccination coverage assessments.

<table>
<thead>
<tr>
<th>Primary Actor(s):</th>
<th>Physicians and other providers, medical groups, medical specialty organizations, state agencies, HIE, HISP, APSD, EHR System, insurers, schools, and other interested stakeholders.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Primary Goal(s):</td>
<td>Ability to identify and electronically exchange information describing the immunizations of the population, both routine and emergency. This gives both providers and public health the capability to request real time information from the registry.</td>
</tr>
</tbody>
</table>

### Conditions

<table>
<thead>
<tr>
<th>Trigger(s):</th>
<th>Patient requires an immunization, treatment/diagnosis, or service from their provider.</th>
</tr>
</thead>
</table>
| Preconditions: (inputs) | • Health care provider or a tracked service has administered an immunization or a tracked service to an individual.  
• Provider’s EHR will be able to record data elements required.  
• Message and queries sent from a provider’s EHR to HIE (Immunization Registry) adhere to the approved data exchange file specifications. |
| Post-conditions: (outputs) | • In a public health emergency, central storage of immunization data would improve the ability to track vaccinations given and where vaccine is needed.  
• Patient receives needed immunization or service at appropriate time and can check PHR to know when future immunizations or services are due.  
• Clinician has access to previous immunizations and services given and can make appropriate clinical decisions on what additional immunizations or services are needed.  
• **Important to review “Alignment to Meaningful Use” below.** |

### Flows

**Scenario 1:**

1. Patient comes to physician for a general check-up, and finds he/she is due for immunization or service  
2. Physician orders an immunization or service  
3. Nurse administers the immunization or service is obtained or given.  
4. Nurse enters data in the Electronic Health Record (EHR) system  
5. Nurse or EHR electronically sends data to the HIE registry  
6. HIE registry receives data

### Additional Information

| Business Rules: (optional) | (Instructions: If desired, capture any current- or future-state business rules that will be useful in planning the future-state) |
processes and application architecture.

Aligned to Meaningful Use:

- Protect electronic health information created or maintained by the certified EHR technology through the implementation of appropriate technical capabilities.
- For Meaningful Use measures aligned with the above objectives, see:
  - "Meaningful Use Stage 1 Final Rule (The White Board Story _ Version 2 _ June 5 2011_FINAL_Group by attest method v3)".

Supplemental Materials: None

Associated Registry:

<table>
<thead>
<tr>
<th>Use Case Name:</th>
<th>PAeHCO - Use Case #13a Administrative Registries</th>
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<tbody>
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<td>Last Updated:</td>
<td>101811</td>
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<tr>
<td>Version:</td>
<td>1mu1</td>
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<td>Update History:</td>
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</tr>
</tbody>
</table>

Summary

**Description:** Registries can encompass “home-grown” systems, vendor products, or specially designed systems; they can be stand-alone structures or more advanced registries that interface with other electronic systems.

An example of an Administrative Registry is the Authoritative Participants Service Directory (APSD). The APSD serves as both the Patient Data Repository which contains an identifier and location of documents of patients stored in the Local HIEs. It does not contain clinical data. The APSD also includes the Provider Services Directory and providers credentialing information.

**Primary Actor(s):** Physicians and other providers, medical groups, medical specialty organizations, state agencies [HC4], HIE, HISP, APSD, EHR System, and other interested stakeholders.

**Primary Goal(s):** To create a registry that provides for queries on type of service provider, specialty focus if pertinent, name, location, and a “hyperlink” email or web address.

Conditions

**Trigger(s):**

- Patient requires treatment/diagnosis or service from someone other than the current provider
- Patient has issues with their current provider.
### Preconditions:  
**(inputs)**

- Scenario 1 and 2:
  - Direct care provider refers patient to hospital including summary care record
  - The provider describes the order, including the hospital facility s/he is ordering the service required.
- Scenario 3:
  - The license/certification of a provider has expired.

### Post-conditions:  
**(outputs)**

- Scenario 1 and 2:
  - The name, contact information, and up-to-date certifications/service information is made available to the requesting provider.
- Scenario 3:
  - Manage APSD content
- **Important to review “Alignment to Meaningful Use” below.**

---

### Flows

#### Scenario 1:  
**Look up Provider By Organization or Location**

1. Based on the requesting provider's request, the EHR System/HIE/HISP connects to the Authoritative Participant Services Directory (APSD) and looks up the organization intended as the destination for the referral.
2. Search for an organization that match services offered, location, name, etc., versus what is required.
3. Identify the matching organization(s)
4. If the identity of a specific provider is known, then the EHR System will look up the provider by name, specialty, etc. in the APSD
5. If the provider's identity is not known then a generic request for provider will be issued to the destination HIE/HISP using the specialty or the services required for the referral.

#### Scenario 2:  
**Look up Provider by Specialty**

1. Based on the requesting provider's request, the EHR System/HIE/HISP connects to the Authoritative Participant Services Directory (APSD) and looks up the organization intended as the destination for the referral.
2. Search for an organization that match services offered, location, name, etc., versus what is required.
3. Identify the matching organization(s)
4. If the identity of a specific provider is known, then the EHR System will look up the provider by name, specialty, etc. in the APSD
5. If the provider's identity is not known then a generic request for provider will be issued to the destination HIE/HISP using the specialty or the services required for the referral.
### Scenario 3: Update Provider License Information

1. **APSD** automatically triggers a license verification to relevant certification board/directories.
2. **APSD notifies** the provider if the renewal is not available.

### Additional Information

#### Business Rules:

(Instructions: If desired, capture any current- or future-state business rules that will be useful in planning the future-state processes and application architecture.)

#### Aligned to Meaningful Use:

- Protect electronic health information created or maintained by the certified EHR technology through the implementation of appropriate technical capabilities.

- For Meaningful Use measures aligned with the above objectives, see:
  - "Meaningful Use Stage 1 Final Rule (The White Board Story _ Version 2 _ June 5 2011_FINAL_Group by attest method v3)".

### Supplemental Materials:
2.14 **Meaningful Use Reporting** and the associated requirements, are what many providers are now familiar with in order to qualify for EHR adoption incentives under the American Recovery and Reinvestment Act of 2009 (ARRA) HITECH Act. Essentially, MU measures seek to prove that providers are using their EHR to support improved health care. Many of the HIE services listed above help to facilitate MU, but there remains the issue of providers building and sending reports related to MU. HIE could facilitate quality and safety reporting, and meaningful use analysis and reporting, via a provider portal. This would permit providers to see how they are doing and to identify and correct any areas in which they are falling short of objectives on a near real-time basis.

<table>
<thead>
<tr>
<th>Use Case Name:</th>
<th>PAeHCO - Use Case #14 Meaningful Use Reporting</th>
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<tbody>
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<td>Version:</td>
<td>2mu1</td>
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<tr>
<td>Update History:</td>
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</tbody>
</table>

**Summary**

**Description:** Meaningful use is a central concept under the American Recovery and Reinvestment Act of 2009 (ARRA) HITECH Act Purchasing EHR does not, on its own, qualify you to receive stimulus dollars. A provider must actually make “meaningful use” of this technology, as defined by CMS. HITECH specified three requirements for meaningful use:

1. Using Certified EHR Technology in a meaningful manner (which includes e-prescribing for EPs);
2. Connecting Certified EHR Technology in a manner that provides for the electronic exchange of health information to improve the quality of care; and
3. Using the technology to submit to CMS information on clinical quality measures and other measures selected by CMS.

In the Final Rule on the EHR Incentives Programs that was released in July 2010, CMS defines a series of criteria that EPs must meet in order to demonstrate that they are "meaningful users" in order to qualify for the incentive payments.

**Primary Actor(s):** Providers, HIE’s, HISPs, Hospitals

**Primary Goal(s):**

- To focus on finding an integrated EHR and practice management (PM) solution that will accomplish key objectives, including:
  - Improve quality, safety, and efficiency as well as reduce health disparities.
  - Engage patients and families in their healthcare.
  - Improve care coordination. Improve population and public health.
  - Ensure adequate privacy and security protections for health information.
## Conditions

<table>
<thead>
<tr>
<th>Trigger(s)</th>
<th>Participants involved in HIE/HISP formulation.</th>
</tr>
</thead>
</table>

### Preconditions:
**_inputs**
- Statewide HIE structure in place
- Have established reporting infrastructure to measure Stage 1 Core Set Measures – Eligible Professionals, Eligible Hospital, or CAH required to satisfy all Core Set of objectives.

### Post-conditions:
**_outputs**
- Actual use of the technology, with quality measures operational.
- Provide Stage 1 Measures
- **Important to review “Alignment to Meaningful Use” below.**

## Flows

### Scenario 1:
This use case features a patient arriving in the emergency room that requires medical imaging. The image was later reviewed by the patient’s care provider within their own EMR as well as by the patient within their EHR. The scenario demonstrates ability to share patient information across multiple care provider systems. And using both HIE services and point-to-point HISP services to complete the healthcare info exchanges. Using Stage 1 requirements:

- Patient Demographics and smoking status obtained
- Patient vital signs entered along with diagnosis and Problem list started
- Imaging ordered through CPOE
- EPrescribing, Medication list, and Medication Allergies recorded if applicable
- Electronic copy of Health Info provided to patient
- Electronic copy of Discharge Instructions made for hospital use.
- Clinical Summary completed

### Alternate Scenario

## Additional Information

### Business Rules:
(optional)

### Aligned to Meaningful Use:
- Protect electronic health information created or maintained by the certified EHR technology through the implementation of appropriate technical capabilities.

- For Meaningful Use measures aligned with the above objectives, see:
  - “Meaningful Use Stage 1 Final Rule (The White Board Story _ Version 2 _ June 5 2011_FINAL_Group by attest method v3)”.
Supplemental Materials:

**Direct**

<table>
<thead>
<tr>
<th>Exchange Mechanism</th>
<th>Use Case</th>
<th>Sequence of Direct Messages</th>
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</thead>
<tbody>
<tr>
<td><strong>One-way Directed Exchange</strong></td>
<td>Simple Referral</td>
<td>• Provider &gt; Provider: Clinical Summary</td>
</tr>
<tr>
<td></td>
<td>Lab Results Report</td>
<td>• Lab &gt; Provider: Lab Results Report</td>
</tr>
<tr>
<td></td>
<td>Public Health Report from Labs</td>
<td>• Lab &gt; ELR System: Reportable Lab Test Results</td>
</tr>
<tr>
<td></td>
<td>Public Health Report from Providers</td>
<td>• Provider &gt; IIS: Reportable Disease Diagnoses</td>
</tr>
<tr>
<td><strong>Two-way Directed Exchange</strong></td>
<td>Hospital Admit/Discharge</td>
<td>• Hospital &gt; Primary Care: ADT Notification&lt;br&gt;• Primary Care &gt; Hospital: Clinical Summary</td>
</tr>
<tr>
<td></td>
<td>Immunization Request</td>
<td>• EHR &gt; HISP/IIS: ADT Notification&lt;br&gt;• HISP/IIS &gt; EHR: Updated Immunization</td>
</tr>
<tr>
<td></td>
<td>Closed Loop Referral</td>
<td>• PCP &gt; Specialist: CCD&lt;br&gt;• Specialist &gt; PCP: Updated CCD</td>
</tr>
<tr>
<td></td>
<td>Medical Home Update</td>
<td>• Medical Home &gt; EHR: Longitudinal Record Update&lt;br&gt;• HIE &gt; Medical Home: Gap in Care, Updated Record</td>
</tr>
</tbody>
</table>
2.15 Public Health focuses on the secure exchange of information between providers' EHRs, public health organizations, State and Federal agencies, manufacturers, and laboratories. Those performing public health functions may request and receive various types of appropriate authorized information when performing their investigations. The information exchanges and analysis conducted during investigations will assist public health in case status and refine reporting criteria. This can also help when performing contact tracing to determine who else may have been exposed, assess the impact, determine management and response plans, and communicate appropriate public health information.

<table>
<thead>
<tr>
<th>Use Case Name:</th>
<th>PAeHCO - Use Case #15 Exchange of Public Health Reporting</th>
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<tr>
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<td>Version:</td>
<td>2mu1</td>
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**Summary**

**Description:** This Public Health Case Reporting Use Case focuses on the secure exchange of information between providers EHRs, public health organizations, State and Federal agencies, manufacturers, laboratories, and describes the following scenarios:

- **Reporting from EHRs** - Reporting criteria such as case criteria, including trigger data and events are identified and incorporated into providers EHRs for the reporting of possible PH Cases. Information within EHRs and the ability to augment EHR information may assist providers in reporting possible PH Cases. The queuing of a standardized EHR template model with standardized report forms if needed, for completion by clinical support personnel and the pre-population of available EHR data, will help to minimize provider burden.

- **Public Health Case Investigation and Information Sharing**
  In evaluating the need for further actions, those performing public health functions may request and receive various types of appropriate authorized information when performing their investigations. The information exchanges and analysis conducted during investigations will assist public health in case status, refining reporting criteria, performing contact tracing to determine who else may have been exposed, assessing impact, determining management and response plans, and communicating appropriate public health information.

**Primary Actor(s):** Patients, PCP, EHR’s, HIE’s, Labs, Public Health

**Primary Goal(s):** To establish a pathway, based on common data and technical standards that facilitates and incorporates interoperable reporting criteria including trigger data and events and reporting specifications for EHRs.
# Conditions

| Trigger(s): | Reportable Disease Investigation  
|            | Influenza Surveillance and Response  
|            | Asthma Surveillance  
|            | Maternal and Infant Health Surveillance  
|            | Immunizations  
|            | CDC Alerts |

| Preconditions: (inputs) | Patient Information  
|                         | Symptom List  
|                         | Problem List  
|                         | Medications ordered, frequency and dose  
|                         | Scheduled Vaccinations |

| Post-conditions: (outputs) | Completed tests with lab results.  
|                           | Provider record updates  
|                           | Vaccination Records  
|                           | **Important to review “Alignment to Meaningful Use” below.** |

| Assumptions: | This Use Case assumes the developing presence of electronic systems such as EHRs, HIEs and other local or web-based solutions supporting providers, laboratories, and public health.  
|             | This Use Case also assumes the variations in requirements for reporting across local, state, tribal, and territorial boundaries as well as voluntary versus mandatory requirements. Whereas mandated requirements for PH Case reporting at the federal level do not exist for most notifiable conditions, the federal government accepts and currently receives information which has been voluntarily reported. In some cases, disease prevention and control programs may provide funding that requires compliance with reporting requirements and in some cases, public health emergencies require more intense management of cases. |

---

# Flows

| Primary Scenario: Patient visits PCP  
| Publish data for Outbreak Tracking  
| Vaccination data  
| Patient visits Specialist  
| Publish data for Outbreak Tracking  
| Patient visits Hospital  
| Publish data for Outbreak Tracking |

| Alternate Scenario(s): Patient visits PCP  
| Lab Order  
| Perform Test; Return Result  
| Lab Result  
<p>| Automated Detection and reporting |</p>
<table>
<thead>
<tr>
<th>Alignment to Meaningful Use</th>
</tr>
</thead>
<tbody>
<tr>
<td>Capability to:</td>
</tr>
<tr>
<td>o Submit electronic data to immunization registries or Immunization Information Systems and actual submission in accordance with applicable law and practice,</td>
</tr>
<tr>
<td>o Submit electronic data on reportable (as required by state or local law) lab results to public health agencies and actual submission in accordance with applicable law and practice (Hospital only).</td>
</tr>
<tr>
<td>o Submit electronic “syndromic surveillance data” to public health agencies and actual submission in accordance with applicable law and practice.</td>
</tr>
<tr>
<td>• Generate lists of patients by specific conditions to use for quality improvement, reduction of disparities, research or outreach.</td>
</tr>
<tr>
<td>• Protect electronic health information created or maintained by the certified EHR technology through the implementation of appropriate technical capabilities.</td>
</tr>
<tr>
<td>• For Meaningful Use measures aligned with the above objectives, see:</td>
</tr>
</tbody>
</table>
|     o “Meaningful Use Stage 1 Final Rule (The White Board Story _ Version 2 _ June 5 2011_FINAL_Group by attest method v3)”.

**Supplemental Materials: None**
2.16 **Lab Results** focuses on the electronic sharing of laboratory test results with ordering and other providers and the retrieval of historic lab results within and across partner HIEs. There are important functional pre-conditions that must be in place before the start of this activity. These include a secure infrastructure that insures the privacy, integrity and availability of all personally identifiable health information as prescribed by HIPAA, and all other applicable laws and regulations, and terms of any contracts and agreements. It also ensures the Patient's consent has been obtained, and that the Provider has the proper identification/authorization via the APSD, to access patient-specific information.

<table>
<thead>
<tr>
<th>Use Case Name:</th>
<th>PAeHCO - Use Case #16 Lab Results</th>
</tr>
</thead>
<tbody>
<tr>
<td>Owner:</td>
<td></td>
</tr>
<tr>
<td>Last Updated:</td>
<td>11/15/11</td>
</tr>
<tr>
<td>Version:</td>
<td>1</td>
</tr>
<tr>
<td>Update History:</td>
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**Summary**

**Description:** This Use Case focuses on the electronic sharing of laboratory test results with ordering and other providers and the retrieval of historic lab results within and across partner HIEs. Please note the functional pre-conditions that must be in place before the start of this activity.

**Primary Actor(s):** Providers, Clinics, Labs, HISPs, HIEs, Community Shared Services (CSS) Record Locater Service

**Primary Goal(s):** To enable the fast and economical transmission of lab orders and results into the EHRs, and to support the white space via the ability to transmit/receive unstructured lab results.

**Conditions**

**Trigger(s):** The trigger for the transmission of a lab result is that it is deemed as releasable, and:

- Patient encounter, either primary care (front desk or nurse might request labs) or emergency department, or where there is a clinical need for pertinent information.
- There is a clinical need for the patient laboratory result(s)
- Processing request for results by the repository is initiated by query from Provider’s clinical data system or web application.
- Lab to HIE transmissions are triggered by results messages originating from Lab source system(s).
- HIE to Provider data system interactions are triggered by pull (from clinical data system) or push (to clinical data system).
- Provider notification will vary by EHR system. Common notification schemes include e-mail ‘ticklers’, EHR inbox messaging, etc.

**Preconditions:** The implementer must ensure that the implementing systems operate within a secure infrastructure that insures the privacy,
integrity and availability of all personally identifiable health information as prescribed by HIPAA, all other applicable laws and regulations, and terms of any contracts and agreements.
- The Patient’s consent has been obtained,
- The Provider should have proper identification/authorization via APSD, to access patient-specific information everywhere such information exists,
- The Provider should be able to uniquely identify patient for which information has been requested,
- The Provider’s request will return all information available for the specific patient, and
- The CSS Record Locator Service should have lab data locations for that specific patient.

**Post-conditions:**
(outputs)
- Laboratory results are accurately reported and successfully transmitted electronically from the laboratory system to the Ordering Provider's EHR System, module or other results receiver (as determined by the laws in each locale).
- The provider’s EHR system has electronically received the laboratory results, incorporated in a standardized structured format, and if available, associated with a patient and laboratory order.
- Locations of lab results should be known to CSS Record Locator Service;
- Provider should have proper identification/authorization to access (via APSD) and review patient-specific information.
- **Important to review “Alignment to Meaningful Use” below.**

**Flows**

**Scenario 1:** Provider orders testing for a patient, and receives the results via their EHR.
- An order has been generated by the Provider for testing of a patient.
- The Laboratory receives the order electronically.
- The Patient visits the Lab and the Laboratory extracts the necessary samples and performs the ordered test.
- The Laboratory processes the properly identified specimen(s) related to the ordered test(s).
- The lab is ready to post the test results and sends the results electronically to the provider’s EHR.

**Scenario 2:** Provider queries CSS Record Locator Service for test results and gets results into their EHR, or are viewed via clinical data system (non-EHR system)
- Provider queries CSS Record Locator Service for patient’s relevant test results.
- CSS Record Locator Service sends to the Provider the location(s) of the test results in the data repository.
- The Provider sends a request for test results to the data repository.
- The data repository sends the test results to the Provider’s EHR (local or remote) or other clinical data system.
### Scenario 3:
**Clinical Lab to Clinic Exchange - Push Scenario**
- Lab results are sent from Clinical Lab system to Ordering Provider’s (or other care team provider) EHR or existing receiving system capable of interpreting Direct protocol (can open email client).
- Ordering Provider’s EHR system receives the lab result and incorporates it into the patient’s record in the EHR or existing receiving system capable of interpreting Direct protocol (can open email client).

### Additional Information

<table>
<thead>
<tr>
<th>Business Rules: (optional)</th>
<th>Key Assumptions (These assumptions will apply to all information flows):</th>
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<tbody>
<tr>
<td></td>
<td>- Established network and policy infrastructure to enable consistent, appropriate, and accurate information exchange across Provider systems, laboratories, data repositories and locator services. This includes, but is not limited to:</td>
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<tr>
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<td>- Methods to identify and authenticate users;</td>
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<td>- Methods to identify and determine providers of care;</td>
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<td>- Methods to enforce data access authorization policies;</td>
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<td>- Methods to ensure the veracity of data; and</td>
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<td>- Methods to correctly match patients across systems.</td>
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<td>- Providers have registered with the HISP/HIE and consumer access consents have been established (APSD).</td>
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<td>- Providers securely access lab test results either through an EHR system (local or remote) or a clinical data system.</td>
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<td>- Security and privacy policies, procedures and practices are commonly implemented to support acceptable levels of patient privacy and security.</td>
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<td>- Appropriate standards protocols; patient identification methodology; consent; privacy and security procedures; coding, vocabulary and normalization standards have been agreed to by all relevant participants.</td>
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<td>- Legal and governance policies regarding data access authorizations, data ownership, and data use are in effect.</td>
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<tr>
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<td>- Secure electronic transport and consent as defined by the HISP/HIE security and privacy constructs is assumed between sender(s) and receiver(s).</td>
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</tbody>
</table>

### Aligned to Meaningful Use:
- Incorporate clinical lab-test results into certified EHR technology as structured data.
- For Meaningful Use measures aligned with the above objectives, see:  
  - "Meaningful Use Stage 1 Final Rule (The White Board Story _ Version 2 _ June 5 2011_FINAL_Group by attest method v3)".

**Supplemental Materials: None**