Electronic Health Record Requirements for Public Health Agencies

Public Health Informatics Institute
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Overview

Public health agencies have long recognized the need to more effectively integrate and exchange data with their community partners, and recent health federal legislative initiatives have made this integration a priority. There is a strong push among public health partners, such as clinicians’ offices, hospitals, etc., to implement Electronic Health Record (EHR) systems, and many public health agencies are investigating whether they too should move in that direction as a way to support data exchange. One issue that must be considered, however, is whether EHRs can support the wide range of services that public health agencies deliver both inside and outside of a clinical setting.

To understand the functionality public health agencies need from an EHR, the Public Health Informatics Institute (the Institute) initiated the Electronic Health Records for Public Health Agencies project in April of 2011. The project was designed to develop EHR requirements for public health agencies, focusing primarily on person-centric services.¹

The Electronic Health Records for Public Health Agencies project was funded through a cooperative agreement between Public Health Informatics Institute (the Institute) and Centers for Disease Control (CDC). The Institute also partnered with the National Association of County and City Health Officials (NACCHO) and the Association of State and Territorial Health Officials (ASTHO), which allowed the Institute to gather insight from those on the front lines of public health, ensuring that will be readily usable by organizations across jurisdictions.

Purpose

This document provides public health agencies with a set of information system requirements needed to support electronic health records (EHR) for case management and clinical services. These EHR requirements are designed to be general, giving public health agencies a starting point for creating more specific ones based on their organization’s needs.

We encourage public health agencies to review this document to better understand how these requirements support case management and clinical services business processes. Agencies should then identify variances between their specific operations and the processes outlined here. These variances will provide the basis for customizing system requirements, which can then be used in discussions with vendors, as part of a Request for Proposal (RFP), or used as a tool to perform a market analysis of available systems.

¹ The definition of person-centric services was offered in the Electronic Health Records Expert Panel in an attempt to distinguish between services an individual receives from a public health agency (eligibility determination, clinical, social or preventative care) from other types of public health services such as environmental services, community needs assessment, regulatory services, etc.
About the Project

The Electronic Health Records for Public Health Agencies project was broken into two phases, the expert panel and the workgroups. Both are defined below.

Expert Panel

Representatives from state and local public health agencies, associations, and other partner organizations met in Denver, Colorado on April 26-27 to help define the scope of this project. The expert panel generated a list of targeted person-centric processes that are specific to state and local health departments and prioritized a subset of case management processes. The panel determined that because clinical service processes were well-documented, the focus should first be on the non-clinical case management processes. The expert panel also recommended participants for the subsequent workgroups.

<table>
<thead>
<tr>
<th>Expert Panel Participants</th>
</tr>
</thead>
<tbody>
<tr>
<td>Deborah Anderson</td>
</tr>
<tr>
<td>Chicago Department of Public Health</td>
</tr>
<tr>
<td>Kay Henry</td>
</tr>
<tr>
<td>Mississippi State Department of Health Central Office</td>
</tr>
<tr>
<td>Marcus Cheatham</td>
</tr>
<tr>
<td>Ingham County Health Department, Lansing, MI</td>
</tr>
<tr>
<td>Jim Kirkwood</td>
</tr>
<tr>
<td>eHealth- ASTHO</td>
</tr>
<tr>
<td>Valerie Cochran</td>
</tr>
<tr>
<td>Alabama Department of Public Health</td>
</tr>
<tr>
<td>Shawn Messick</td>
</tr>
<tr>
<td>Multnomah County Health Department</td>
</tr>
<tr>
<td>Kathy Cook</td>
</tr>
<tr>
<td>Lincoln-Lancaster County Health Department</td>
</tr>
<tr>
<td>Phred Pilkinson</td>
</tr>
<tr>
<td>Public Health Authority of Cabarrus County</td>
</tr>
<tr>
<td>Shandy Dearth</td>
</tr>
<tr>
<td>Marion County Public Health Department</td>
</tr>
<tr>
<td>Valerie Rogers</td>
</tr>
<tr>
<td>NACCHO</td>
</tr>
<tr>
<td>Seth Foldy</td>
</tr>
<tr>
<td>Public Health Informatics Program Office, CDC</td>
</tr>
<tr>
<td>Joe Schreurs</td>
</tr>
<tr>
<td>Larimer County (CO) Dept. of Health and Environment</td>
</tr>
</tbody>
</table>

Public Health Informatics Institute
Workgroups

The workgroups phase consisted of three meetings with three unique sets of participants. The first two workgroup meetings focused on case management and the last focused on clinical services.

Case Management

The first case management workgroup met on June 7 - 9, 2011 in Atlanta, Georgia and focused on defining and redesigning processes around case management. Participants outlined several case management processes and documented the objectives, triggers, business rules, inputs, outputs, and outcomes.

Using the processes defined in the first workgroup meeting, participants in the second workgroup meeting, which was held July 26 - 28, 2011 in Chicago, Illinois, developed requirements to support the outlined processes. For each task, the workgroup developed and vetted a list of requirements.
Clinical Services

On November 14-16, the clinical services workgroup met in Atlanta, GA to vet a set of “straw man” business process that support clinical and lab services and to develop a set of system requirements to support them. The work around these processes served to complete the processes identified by the expert panel and finalized user requirements for electronic health records for public health agencies.
<table>
<thead>
<tr>
<th>Name</th>
<th>Organization</th>
</tr>
</thead>
<tbody>
<tr>
<td>Michael Coletta</td>
<td>NACCHO</td>
</tr>
<tr>
<td>Angela May</td>
<td>Jefferson County Department of Health</td>
</tr>
<tr>
<td>Michael Cruicich</td>
<td>Chicago Department of Public Health</td>
</tr>
<tr>
<td>Seema Sewell</td>
<td>Maricopa County Department of Public Health (AZ)</td>
</tr>
<tr>
<td>Melanie Henricks</td>
<td>Hamilton County (TN)</td>
</tr>
<tr>
<td>Suzanne Smith</td>
<td>Orange County Health Department (FL)</td>
</tr>
<tr>
<td>Karen Herrington</td>
<td>Mississippi State Department of Health</td>
</tr>
<tr>
<td>Debbie Thompson</td>
<td>Alabama Department of Public Health, Tallapoosa Co.</td>
</tr>
<tr>
<td>Sheila Isbell</td>
<td>Georgia Tech Research Institute</td>
</tr>
<tr>
<td>Daniel Vittum</td>
<td>City of Chicago</td>
</tr>
<tr>
<td>Kimberly Jasken</td>
<td>Maricopa County Department of Public Health (AZ)</td>
</tr>
</tbody>
</table>
Business Process Matrices

The business processes addressed as part of the Electronic Health Records for Public Health Agencies project\(^2\) serve as a starting point for public health agencies to evaluate their own internal processes. Using the detail provided here and in the next section, public health agencies should compare the task flows, inputs and outputs, and business rules in order to identify variances between the outlined processes and how these same services are delivered in their own organization. For added or modified tasks, agencies should determine if they need additional requirements to support the changes. If the tasks don’t currently exist, the agency should confirm that the associated requirements are not need by their organization.

Once this process is completed, the agency will have produced a set of requirements specific to their organization that can then be easily incorporated into a Request for Proposal (RFP) or used as a tool to perform a market analysis of available systems. These customized requirements will provide public health agencies with a basis to evaluate organizational fit of commercial off-the-shelf EHR systems or assist in developing custom systems. As a result, public health agencies and their partners will be better equipped to make informed “buy or build” decisions about their information systems and ensure the system’s interoperability and conformance with national standards.

\(^2\) The “Provide Treatment” process, originally documented during the Case Management workgroups, was consolidated under the Clinic Visit, Intake, and Refer Client processes. Task details and associated requirements were incorporated into the appropriate tasks to support greater continuity in workgroup deliverables.
## Recruitment/Outreach

<table>
<thead>
<tr>
<th>OBJECTIVES</th>
<th>BUSINESS RULES</th>
<th>TRIGGER</th>
<th>TASK SET</th>
<th>INPUTS</th>
<th>OUTPUTS</th>
<th>MEASURABLE OUTCOMES</th>
</tr>
</thead>
</table>
| • To increase awareness of programs and services and increase referrals and reports | • Program criteria  
• Reporting rules/statutes  
• Jurisdictional or agency protocols  
• Funder requirements (Grants, Medicaid, Medicare, Insurance) | • Variation in referrals  
• Outreach maintenance | 1. Variation in Referrals/Reports  
2. Analyze Issue/Information  
3. Referral/Recruitment Needed?  
4. Develop Recruiting Plan  
5. Implement Plan | • Data on referral patterns | • Recruiting plan  
• Implementation plan | • Increase in referrals/reports from appropriate sources |
## Screening

<table>
<thead>
<tr>
<th>OBJECTIVES</th>
<th>BUSINESS RULES</th>
<th>TRIGGER</th>
<th>TASK SET</th>
<th>INPUT</th>
<th>OUTPUTS</th>
<th>MEASURABLE OUTCOMES</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Identify clients with specific needs, diseases, and/or conditions</td>
<td>• HIPAA/other privacy and confidentially regulations</td>
<td>• Test results</td>
<td>1. Identify At Risk Individual(s)</td>
<td>• Test results</td>
<td>• Education/link to other community resources</td>
<td>• Case management process initiated</td>
</tr>
<tr>
<td>• Connect individuals to appropriate care through targeted interventions</td>
<td>• Reporting standards and requirements</td>
<td>• Community incident</td>
<td>2. Conduct Screening</td>
<td>• Referral</td>
<td>• Referral</td>
<td>• Clients are connected to most appropriate interventions</td>
</tr>
<tr>
<td></td>
<td>• Service provision rules/program criteria</td>
<td>• Referral</td>
<td>3. Meet Criteria?</td>
<td>• Contacts (STI, outbreaks)</td>
<td></td>
<td>• Increase in education/understanding by client</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Community risk (specific population)</td>
<td>4. Refer Client</td>
<td></td>
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<td></td>
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<td>5. Resources Available for Case Management?</td>
<td></td>
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<td>6. Accept Case Management?</td>
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<td>7. Initiate Intake</td>
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</tbody>
</table>
## Intake

<table>
<thead>
<tr>
<th>OBJECTIVES</th>
<th>BUSINESS RULES</th>
<th>TRIGGER</th>
<th>TASK SET</th>
<th>INPUTS</th>
<th>OUTPUTS</th>
<th>MEASURABLE OUTCOMES</th>
</tr>
</thead>
</table>
| • Case determination and assignment | • Program protocols  
• Reporting rules/statutes  
• Jurisdiction/agency protocols  
• Funder requirements (e.g., grants, Medicaid, Medicare, insurance) | • Receive report  
• Receive referral | 1. Receive Referral/Report/Case Finding  
2. Existing Client?  
3. Complete Initial Documentation  
4. Update/Combine Record  
5. Eligible/Resources Available?  
6. Refer Client  
7. Assign Case | • Referral or report including name, reason for referral, contact information, referral source, date | • Case assignment or disposition  
• Case record initiated | • Assignment or disposition of 100% of referrals or reports according to protocol  
• 100% of case outcomes documented |
## Assessment

<table>
<thead>
<tr>
<th>OBJECTIVES</th>
<th>BUSINESS RULES</th>
<th>TRIGGER</th>
<th>TASK SET</th>
<th>INPUTS</th>
<th>OUTPUTS</th>
<th>MEASURABLE OUTCOMES</th>
</tr>
</thead>
</table>
| • Gather information to determine client needs/strengths and eligibility for specific services  
• Develop a patient care plan | • HIPAA  
• Mandated reporting  
• Program eligibility  
• Consent and release of Information | • Screening outcome | 1. Case Assigned  
2. Contact Client  
3. Client Reached?  
4. Close Case  
5. Schedule Appointment  
6. Encounter/Visit  
7. Enroll in Program?  
8. Provide Education  
9. Sign Consent Forms  
10. Collect Data  
11. Develop Goals  
12. Develop Care Plan  
13. Accept Plan  
14. Document Impressions/Notes | • Screening  
• Client information  
• Lab results  
• Agency or partner information | • Identify staff time for program planning  
• Connect referrals not enrolled in agency services to resources  
• Care plan  
• Counseling  
• Education  
• Patient data for reporting/analysis | • Identification of client needs  
• Client involvement in setting goals  
• Care plan is created  
• Client agreement  
• Connecting client to the most appropriate services  
• Receive payment for assessment(s)  
• Incidence of cases for a time period and jurisdiction |
### Close Case

<table>
<thead>
<tr>
<th>OBJECTIVES</th>
<th>BUSINESS RULES</th>
<th>TRIGGER</th>
<th>TASK SET</th>
<th>INPUTS</th>
<th>OUTPUTS</th>
<th>MEASURABLE OUTCOMES</th>
</tr>
</thead>
<tbody>
<tr>
<td>To close case</td>
<td>Program or jurisdictional</td>
<td>Client decision</td>
<td>1. Review Care Plan</td>
<td>Care Plan</td>
<td>Updated staff caseload</td>
<td>Percent of clients in which program criteria are met</td>
</tr>
<tr>
<td></td>
<td>requirements</td>
<td>Met client objectives for case management</td>
<td>2. Close Case</td>
<td>Client status/</td>
<td>Closing summary/client chart</td>
<td>Disposition of case documented</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Elapsed time (by rule)</td>
<td>3. Continue/Revise Care Plan</td>
<td>circumstances</td>
<td>Letter</td>
<td>Program capacity</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Lack of resources</td>
<td>4. Develop Transition Plan</td>
<td>Administrative</td>
<td>Duration of case and number of contacts</td>
<td>Program utilization</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Administrative decision</td>
<td>5. Create Closing Summary</td>
<td>reports</td>
<td></td>
<td>Improvement or client changes</td>
</tr>
</tbody>
</table>

- Care Plan
- Client status/circumstances
- Administrative reports
- Updated staff caseload
- Closing summary/client chart
- Letter
- Duration of case and number of contacts
- Percent of clients in which program criteria are met
- Disposition of case documented
- Program capacity
- Program utilization
- Improvement or client changes
## Refer Client

<table>
<thead>
<tr>
<th>OBJECTIVES</th>
<th>BUSINESS RULES</th>
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<th>MEASURABLE OUTCOMES</th>
</tr>
</thead>
</table>
| • Access services for the client  
• Develop and maintain relationship with referral sources | • HIPAA  
• Program or jurisdictional requirements | • Client requests referral  
• Provider assess need for referral  
• Services needed are not available within the agency | 1. Inquire Available Services  
2. Provide Information  
3. Offer Available Services  
4. Accept/Interest?  
5. Update Record  
6. Generate Referral  
7. Provide Services  
8. Follow-up | • Documentation of referral need | • Documented referral to source | • Awareness of available services  
• Client obtains services |
## Provide Education

<table>
<thead>
<tr>
<th>OBJECTIVES</th>
<th>BUSINESS RULES</th>
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<th>TASK SET</th>
<th>INPUTS</th>
<th>OUTPUTS</th>
<th>MEASURABLE OUTCOMES</th>
</tr>
</thead>
</table>
| • Increase client knowledge base and improve healthy lifestyle choices | • Established evidence-based guidelines | • Client requests education  
• Case manager/provider identifies education need  
• Universal education provided by program, time interval, etc.  
• Provider referral for education | 1. Assess Needs  
2. Referral Needed?  
3. Refer Client  
4. Develop Goals  
5. Deliver Education  
6. Receive Education  
7. Provide Feedback  
8. Evaluate Learning  
9. Understand/Comply?  
10. Update Record | • Documentation of client education needs  
• Documentation of request for education | • Documentation of provision of educational services or resources  
• Documentation of client understanding or compliance | • Percentage of clients communicating understanding or demonstrating compliance with education  
• Percentage of clients receiving education and/or materials |

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## Provide Counseling

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<thead>
<tr>
<th>OBJECTIVES</th>
<th>BUSINESS RULES</th>
<th>TRIGGER</th>
<th>TASK SET</th>
<th>INPUTS</th>
<th>OUTPUTS</th>
<th>MEASURABLE OUTCOMES</th>
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</table>
### Coordinate Care

<table>
<thead>
<tr>
<th>OBJECTIVES</th>
<th>BUSINESS RULES</th>
<th>TRIGGER</th>
<th>TASK SET</th>
<th>INPUTS</th>
<th>OUTPUTS</th>
<th>MEASURABLE OUTCOMES</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Improve continuity of care</td>
<td>• HIPAA</td>
<td>• Need to work with more than one agency</td>
<td>1. Identify Need</td>
<td>• Client history</td>
<td>• Interagency care plan</td>
<td>• Improved access to needed services</td>
</tr>
<tr>
<td>• Reduce/eliminate duplication of services</td>
<td>• Program or jurisdictional requirements</td>
<td>• Referral</td>
<td>2. Prepare for Meeting</td>
<td>• Individual provider care plans</td>
<td></td>
<td>• All providers have access to comprehensive patient information</td>
</tr>
<tr>
<td>• Improve interagency communication</td>
<td>• National standards of practice</td>
<td>• Client request</td>
<td>3. Identify meeting Participants</td>
<td></td>
<td></td>
<td>• Reduced duplication of services</td>
</tr>
<tr>
<td></td>
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<td></td>
<td>4. Meet</td>
<td></td>
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<td>5. Continue Care?</td>
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<td>6. Close Case</td>
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<td></td>
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<td></td>
<td>7. Update Care Plan</td>
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<td>8. Update Client</td>
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</tbody>
</table>

- Client history
- Individual provider care plans
- Interagency care plan
## Patient Registration

<table>
<thead>
<tr>
<th>OBJECTIVES</th>
<th>BUSINESS RULES</th>
<th>TRIGGER</th>
<th>TASK SET</th>
<th>INPUTS</th>
<th>OUTPUTS</th>
<th>MEASURABLE OUTCOMES</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Capture patient demographics, contact information, special needs, reason for visit, and billing information</td>
<td>• HIPAA</td>
<td>• Patient enters clinic</td>
<td>1. Patient sign-in</td>
<td>• Patient demographic data</td>
<td>• Billing information</td>
<td>• New or updated patient record</td>
</tr>
<tr>
<td>• Obtain informed consent for services</td>
<td>• Program or jurisdictional requirements</td>
<td>2. Have appointment?</td>
<td>2. Have appointment?</td>
<td>• Insurance</td>
<td>• Patient consent</td>
<td></td>
</tr>
<tr>
<td>• Complete specific program requirements</td>
<td>• Clinical protocols</td>
<td>3. Emergency?</td>
<td>3. Emergency?</td>
<td>• Program eligibility</td>
<td>• Patient record</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Health Resources and Services Administration policies</td>
<td>4. Refer to ER or Urgent Care Center</td>
<td>4. Refer to ER or Urgent Care Center</td>
<td>• Reason for visit</td>
<td>• Appointment status (no-show, arrived, etc.)</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>5. Schedule appointment</td>
<td>5. Schedule appointment</td>
<td>• Special needs</td>
<td>• Clinic appointment statistics (turn away rate, outstanding appointments, productivity)</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>7. Collect patient demographics</td>
<td>7. Collect patient demographics</td>
<td>• Appointment details</td>
<td></td>
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<tr>
<td></td>
<td></td>
<td>8. Establish patient record</td>
<td>8. Establish patient record</td>
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<td></td>
<td></td>
<td>11. Update or prepare any needed forms</td>
<td>11. Update or prepare any needed forms</td>
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<tr>
<td></td>
<td></td>
<td>12. Direct patient to waiting area until called</td>
<td>12. Direct patient to waiting area until called</td>
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</tr>
<tr>
<td></td>
<td></td>
<td>13. Notify staff that patient is ready</td>
<td>13. Notify staff that patient is ready</td>
<td></td>
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</tbody>
</table>
Clinic Visit

<table>
<thead>
<tr>
<th>OBJECTIVES</th>
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<th>INPUTS</th>
<th>OUTPUTS</th>
<th>MEASURABLE OUTCOMES</th>
</tr>
</thead>
</table>
| • Assess, diagnose, and treat patient  
• Bill appropriately for services | • Clinical protocols  
• Program or jurisdictional requirements  
• National standards of practice  
• Insurance regulations | • Patient registered | 1. Patient registration  
2. Record vitals  
3. Interview patient & document medical history  
4. Obtain consent for services  
5. Perform exam and screenings  
6. Lab tests needed  
7. Process lab order  
8. Review lab results  
9. Provide assessment/diagnosis  
10. Provide preventive health services?  
11. Provide preventive health services  
12. Counseling needed?  
13. Provide Counseling  
14. Provide Education  
15. Medication required?  
16. Dispense medication  
17. Provide prescription  
18. Document the visit  
19. Direct patient to check-out | • Patient data  
• Pharmacy inventory | • Grant data  
• Clinical data  
• Diagnosis  
• Patient problem list  
• List of medications  
• Interventions  
• Referrals  
• Updated inventory  
• Billing form  
• Receipt/bill | • Patient receives appropriate services  
• Clinic receives payment for services  
• Accessible clinical data |
### Patient Follow-up

<table>
<thead>
<tr>
<th>OBJECTIVES</th>
<th>BUSINESS RULES</th>
<th>TRIGGER</th>
<th>TASK SET</th>
<th>INPUTS</th>
<th>OUTPUTS</th>
<th>MEASURABLE OUTCOMES</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Ensure patient is completing treatment plan</td>
<td>• Clinical/Department protocols</td>
<td>• Patient misses appointment</td>
<td>1. Receive follow-up report</td>
<td>• Appointment status</td>
<td>• Follow-up report</td>
<td>• Updated treatment plan</td>
</tr>
<tr>
<td></td>
<td>• HIPAA</td>
<td>• Patient cancels appointment</td>
<td>2. Review patient record</td>
<td>• Patient contact information</td>
<td>• Tracking information</td>
<td>• Updated patient record</td>
</tr>
<tr>
<td></td>
<td>• Insurance status</td>
<td>• Time-based trigger</td>
<td>3. Follow-up required?</td>
<td>• Treatment plan</td>
<td>• Rescheduled appointment</td>
<td>• Increase in patient adherence</td>
</tr>
<tr>
<td></td>
<td>• Legal requirements</td>
<td>• Lab results</td>
<td>4. Attempt patient contact</td>
<td>• Templates for contact (letters, emails, etc.)</td>
<td>• Updated record</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Consent status</td>
<td></td>
<td>5. Contact made?</td>
<td></td>
<td>• Contact method</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>6. Reassess needs</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>7. Appointment needed?</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>8. Schedule appointment</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>9. Update record</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

1. Receive follow-up report
2. Review patient record
3. Follow-up required?
4. Attempt patient contact
5. Contact made?
6. Reassess needs
7. Appointment needed?
8. Schedule appointment
9. Update record
### Process Lab Order

<table>
<thead>
<tr>
<th>OBJECTIVES</th>
<th>BUSINESS RULES</th>
<th>TRIGGER</th>
<th>TASK SET</th>
<th>INPUTS</th>
<th>OUTPUTS</th>
<th>MEASURABLE OUTCOMES</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Accurate and consistent ordering of labs</td>
<td>• Procedures dictated by contract with lab</td>
<td>• Lab tests are needed</td>
<td>1. Place order</td>
<td>• Lab procedures/documentation</td>
<td>• Lab results</td>
<td>• Timely, accurate lab results delivered to the right person/place</td>
</tr>
<tr>
<td>• Obtain appropriate consent for services</td>
<td>• Funding based requirements</td>
<td>• Abnormal lab results</td>
<td>2. Additional consent required?</td>
<td></td>
<td>• Incomplete/overdue tasks report</td>
<td>• Billing complete &amp; payment received</td>
</tr>
<tr>
<td>• Bill for services</td>
<td>• Specimen testing protocols</td>
<td>• Standards of care or standing orders, e.g. presumptive TB</td>
<td>3. Consent given?</td>
<td></td>
<td>• Log reports</td>
<td>• Lab test processed</td>
</tr>
<tr>
<td>• Deliver order and specimen to appropriate lab</td>
<td>• Billing procedures</td>
<td>• Inadequate specimen</td>
<td>4. Collect and prepare specimen</td>
<td></td>
<td>• Confirmation order</td>
<td>• Lab data available for statistical reporting</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>5. Internal lab?</td>
<td></td>
<td>• Lab results</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>6. Deliver specimen to lab for processing</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>7. Analyze specimen</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>8. Capture test results</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>9. Disseminate results</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>10. Notify practitioner of results</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>11. Reportable?</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>12. Conditions reporting</td>
<td></td>
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<td></td>
</tr>
</tbody>
</table>
### Review Lab Results

<table>
<thead>
<tr>
<th>OBJECTIVES</th>
<th>BUSINESS RULES</th>
<th>TRIGGER</th>
<th>TASK SET</th>
<th>INPUTS</th>
<th>OUTPUTS</th>
<th>MEASURABLE OUTCOMES</th>
</tr>
</thead>
<tbody>
<tr>
<td>- Lab results are reviewed by the appropriate person in a timely manner</td>
<td>- Standards of care</td>
<td>- Lab tests are processed and results returned</td>
<td>1. Receive lab results and review</td>
<td>- Lab result(s) and/or report</td>
<td>- Communication to patient</td>
<td>- Lab results are reviewed and acted upon</td>
</tr>
<tr>
<td>- Abnormal results are followed-up</td>
<td>- Agency SOPs</td>
<td></td>
<td>2. Follow-up required?</td>
<td>- Patient record</td>
<td>- Referral</td>
<td>- Results are communicated to the correct patient</td>
</tr>
<tr>
<td>- Lab results are reviewed in context with medical history and past results to support diagnosis</td>
<td>- Preventive and Health Maintenance Guidelines</td>
<td></td>
<td>3. Provide new orders or follow standing orders</td>
<td>- Clinical notes</td>
<td>- Graphs/charts/statistics</td>
<td></td>
</tr>
<tr>
<td></td>
<td>- Program/grant guidelines</td>
<td></td>
<td>4. Patient follow-up</td>
<td>- Other lab orders</td>
<td>- Population trending</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>5. Update patient record and ensure follow through</td>
<td></td>
<td>- Treatment plan</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>- QA/End of Day report</td>
<td></td>
</tr>
</tbody>
</table>

- Lab results are reviewed and acted upon
- Results are communicated to the correct patient
## Directly Observed Therapy

<table>
<thead>
<tr>
<th>OBJECTIVES</th>
<th>BUSINESS RULES</th>
<th>TRIGGER</th>
<th>TASK SET</th>
<th>INPUTS</th>
<th>OUTPUTS</th>
<th>MEASURABLE OUTCOMES</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Ensure treatment adherence</td>
<td>• Treatment protocol</td>
<td>• Presumptive diagnosis</td>
<td>1. Receive physician’s orders</td>
<td>• Physician orders</td>
<td>• Dosage counts</td>
<td>• Treatment successfully completed</td>
</tr>
<tr>
<td>• Treatment requirements</td>
<td>• Physician order</td>
<td>2. Contract signed?</td>
<td>• Lab results</td>
<td></td>
<td>• Updated inventory</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Court order</td>
<td>3. Explain the program</td>
<td>• Patient contact information</td>
<td></td>
<td>• Updated patient record</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Positive lab result</td>
<td>4. Complete contract for DOT</td>
<td>• Inventory</td>
<td></td>
<td>• Contract for DOT</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>5. Assess patient</td>
<td>• Medical history</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>6. Confirm orders &amp; instruct patient regarding any regimen changes</td>
<td>• Demographics and patient description/picture</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>7. Ensure correct amount &amp; type of medication is prepared to take</td>
<td>• Templates</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>8. Observe patient swallowing correct dosage of medication</td>
<td>• Clinic appointment schedule</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>9. Update chart and document any other pertinent findings</td>
<td></td>
<td></td>
<td></td>
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</tr>
</tbody>
</table>
Business Process Task Flows

A task flow diagram is a graphical model that illustrates the activities of a business process, as well as who performs those activities, known as functional groups. The task flow provides a “story” for the business process being diagramed. The components of the task flow diagram are defined as listed below:

1. **Pools** – a group, department, organization or unit that contains multiple functional swim lanes (functional groups).
2. **Swim Lanes** – a functional individual or group. These are entities that perform or are accountable for designated activities in the process.
3. **Start Event** – a process mapping shape used to define the “start” of the process.
4. **Activity** – an action performed by the functional individual or group.
5. **Decision** – a required conclusion needed in the process. These are typically approvals or resolutions.
6. **Sub-Process** – a shape used as a call out to another process.
7. **End Event** – a process mapping shape used to define the “end” of the process.
8. **Activity Details / Narrative** – the supporting information for each process.

Figure 1. Task Flow Diagram Legend

![Task Flow Diagram Legend](image)
**Development of User Requirements: Electronic Health Records for Public Health Agencies**

**Recruitment/Outreach**

---

**General Process Notes**

**Objective:**
- To increase awareness of programs and services and increase referrals and reports

**Measurable Outcomes:**
- Increase in referrals/reports from appropriate sources

**General Notes:**
- This process can be a cyclical process in which recruitment/outreach is maintained at some consistent level to meet programmatic needs

---

**Activity Description**

**1. Identify Variation in Referrals**
- Case manager or program staff become aware of changes in referral patterns (could be an increase or decrease depending on the type of referral)

**2. Analyze Issue/Information**
- Appropriate information is analyzed to determine if additional recruitment/outreach is needed
- Data to be analyzed may include: number of referrals/reports, trends and timing of referrals, evidence of non-referral, sentinel events/community events, changes in staffing/procedures/info systems/politics

**3. Referral/Recruitment Needed**
- Case manager determines if a new/revised recruitment plan is necessary to achieve desired level of recruitment/outreach
- There is often a low level steady state of recruitment that is steady state

**4. Develop Recruiting Plan**
- A recruitment plan is developed that addresses target population, partners, internal staff needed, budget, other resources, time frame, and methods of recruiting

**5. Implement Plan**
- The plan is disseminated to the appropriate individuals for implementation

---

**Public Health Informatics Institute**
**Screening/Eligibility Determination**

**Development of User Requirements: Electronic Health Records for Public Health Agencies**

**Activity Details / Narrative**

- **General Process Notes**
  - **Objective:** Identify clients with specific needs, diseases, and/or conditions, connect individuals to appropriate care through targeted interventions.
  - **Measurable Outcomes:** Case management process initiated, clients are connected to most appropriate interventions, increase in education/understanding by client.
  - **General Notes:** Screening can be considered part of an eligibility determination, which filters the number of recipients of case management services from the general population to a more specific population. Assessment is different from screening as it is an ongoing process containing the initial and ongoing assessments. It also uses standard tools and professional training as an input to the decision.

- **Activity Description**
  1. **Identify At Risk Individual(s):**
     - This activity involves several steps including the determination of what, who, how, when and where to screen.
     - The methodology for identification may be based on either a standing protocol or a new definition/procedure.
  2. **Conduct Screening:**
     - This activity may vary depending on the needs of individual case(s), for example, screenings of single individuals, of multiple clients at a time (possibly due to an outbreak), face-to-face, or virtually without the client present (over the phone or from information provided in the referral).
     - May vary by program area.
  3. **Meet Criteria:**
     - Case manager determines if the client meets the defined criteria for the program/service.
     - Eligibility criteria for some programs are established by the funder of the program.
  4. **Refer Client:**
     - The client may receive a referral for services outside of the program which may include clinical treatment, education, etc.
  5. **Resources Available for Case Management:**
     - The case manager determines if the client is a possible candidate for case management.
     - Reasons a client may not be a candidate include example insufficient program funding, need for further evaluation, etc.
  6. **Accept Case Management:**
     - The client must determine if they choose to participate in case management.
  7. **Initiate Intake:**
     - Case management is initiated, leading to the intake process.
Intake

Development of User Requirements: Electronic Health Records for Public Health Agencies

Activity Details / Narrative

<table>
<thead>
<tr>
<th>General Process Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Objective: Case determination and assignment</td>
</tr>
<tr>
<td>Measurable Outcomes:</td>
</tr>
<tr>
<td>• Assignment or disposition of 100% of referrals or reports according to protocol</td>
</tr>
<tr>
<td>• 100% of case outcomes documented</td>
</tr>
<tr>
<td>General Notes:</td>
</tr>
<tr>
<td>• It is possible that based on the jurisdiction/ locale that the functional role and location may differ from Case Manager and Health Department</td>
</tr>
<tr>
<td>• A referral is a request for the evaluation or treatment of a client from one source/ provider to another</td>
</tr>
<tr>
<td>• A report is an account or provision of information about a case. Most jurisdictions have a subset of conditions that must be reported</td>
</tr>
</tbody>
</table>

Activity Description:

1. Receive Referral/Report/Case Finding
   - A referral/report is received by the health department/case manager
   - Referral can be received by phone, fax, email, in person, etc.

2. Existing Client?
   - The case manager determines if the client has an existing record in the system as a result of participation in another program in the health department

3. Complete Initial Documentation
   - Client information is documented in the system

4. Update/Combine Record
   - Existing client record is updated with current information

5. Eligible/Resources Available?
   - Case Manager determines if the client is eligible for program-related services. If resources are available to serve the client, and if the client is willing to participate in the program

6. Refer Client
   - If clients are found to be ineligible or if resources are not available or offered, the report may be forwarded to other programs or services
   - General education may also be provided to the client at this time
   - In some cases (infectious diseases), this step may include an administrative closure without referral or services depending on local resources for follow-up

7. Assign Case
   - The client is assigned a case manager based on current caseload, schedule, etc.
**Assessment**

**Objective:**
- Gather information to determine client needs/strengths and eligibility for specific services
- Develop a patient care plan

**Measurable Outcomes:**
- Identification of client needs
- Client involvement in setting goals
- Care plan is created
- Client agreement
- Connecting client to the most appropriate services
- Receive payment for assessment(s)
- Incidence of cases for a time period and jurisdiction

**Activity Description:**

1. **Case Assigned**
   - The case manager is notified of a newly assigned client/case

2. **Contact Client**
   - The case manager will attempt to contact the client via email, phone, letter, etc.

3. **Client Reached?**
   - If contact is successful, the case manager will determine next steps for the client
   - If no contact is made, attempts will continue

4. **Close Case**
   - If the client is unreachable after a reasonable number of attempts the case status will be changed to closed
   - Number of attempts required to contact the client is determined by the program

5. **Schedule Appointment**
   - An appointment is scheduled with the client
   - The client may choose not to schedule the appointment and the case may be closed

6. **Encounter/Visit**
   - The encounter can take various forms including face-to-face, telephone, letter, etc.

7. **Enroll in Program?**
   - The client determines if they will enroll in the program

8. **Provide Education**
   - If the client chooses not to enroll, the case manager may provide further education or a referral for another program, additional services, etc.

---

**Activity Details / Narrative**

**General Process Notes**

**Objective:**
- Gather information to determine client needs/strengths and eligibility for specific services
- Develop a patient care plan

**Measurable Outcomes:**
- Identification of client needs
- Client involvement in setting goals
- Care plan is created
- Client agreement
- Connecting client to the most appropriate services
- Receive payment for assessment(s)
- Incidence of cases for a time period and jurisdiction
Development of User Requirements: Electronic Health Records for Public Health Agencies

**Assessment**

**Page 2 of 2**

**Activity Details / Narrative**

9. **Sign Consent Forms**
   - Client signs appropriate consent or release of information forms as required (i.e., consent may not be required in investigations of an outbreak/communicable disease)

10. **Collect Data**
    - Various data are collected based on specific program needs (e.g., demographics, medical history, financial information)
    - Data may be verified using driver’s license, address verification, birth certificate, etc.

11. **Develop Goals**
    - Goals are developed with the client and recorded in the client’s record
    - Goals may provide a basis for development of the care plan

12. **Develop Care Plan**
    - A care plan is created for the client including link to services, action items for client and case manager, next steps, etc.

13. **Accept Plan**
    - The client must accept the plan

14. **Document Impressions/Notes**
    - The case manager documents information specific to the assessment appointment, any notes and impressions, and the care plan in the client’s record

---

**Electronic Health Records for Public Health Agencies**
Development of User Requirements: Electronic Health Records for Public Health Agencies

**Close Case**

**: page 1 of 1**

**Electronic Health Records for Public Health Agencies**

**Case Manager**
- Start
- 1. Review Care Plan
- 2. Close Case
- 3. Continue/Revise Care Plan
- Yes
- 4. Develop Transition Plan
- 5. Create Closing Summary
- 6. Sign-Off
- 7. Update Status
- 8. Notify Referring Agency/Partners
- 9. Create Case Closure Letter
- End

**Client/Patient/Individual**
-

**Supervisor**
-

**Administrative**
-

**General Process Notes**
- **Objectives:** To close case
- **Measurable Outcomes:**
  - Percent of clients in which program criteria are met
  - Disposition of case documented
  - Program capacity
  - Program utilization
  - Improvement or client changes

**Activity Details / Narrative**

<table>
<thead>
<tr>
<th>Activity Description</th>
<th>1. Review Care Plan</th>
</tr>
</thead>
<tbody>
<tr>
<td>- This is intended to be a discussion between the case manager and the client about the status of the care plan and goals</td>
<td></td>
</tr>
<tr>
<td>- The care plan is reviewed with the client prior to case closure when possible</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>2. Close Case</th>
</tr>
</thead>
<tbody>
<tr>
<td>- The case manager determines whether to proceed with case closure based on review of the client care plan &amp; program requirements</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>3. Continue/Revise Care Plan</th>
</tr>
</thead>
<tbody>
<tr>
<td>- If the case manager chooses to not close the case, they will maintain or revise the current care plan</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>4. Develop Transition Plan</th>
</tr>
</thead>
<tbody>
<tr>
<td>- Care plan review is conducted and the disposition is recorded including final notes and referrals</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>5. Create Closing Summary</th>
</tr>
</thead>
<tbody>
<tr>
<td>- The closing summary should include reason for case closure, disposition of care plan review, assessments, interventions, status of client goals, etc.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>6. Sign-Off</th>
</tr>
</thead>
<tbody>
<tr>
<td>- A supervisor signs-off on the case closure. This step may or may not be necessary depending on agency/jurisdiction or other factors</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>7. Update Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>- The updated status and approval details are recorded in the system</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>8. Notify Referring Agency/Partners</th>
</tr>
</thead>
<tbody>
<tr>
<td>- The referring agency and/or partners are notified of the case status and other reports as needed</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>9. Create Case Closure Letter</th>
</tr>
</thead>
<tbody>
<tr>
<td>- Case manager communicates to the client that their case has been closed, providing any additional details as needed</td>
</tr>
</tbody>
</table>

*Public Health Informatics Institute*
Development of User Requirements: Electronic Health Records for Public Health Agencies

**Refer Client**

**Case Manager**

1. Inquire Available Services
2. Provide Information
3. Offer Available Services
4. Accept/Interest?
5. Update Record
6. Generate Referral
7. Provide Services
8. Follow-Up

**Health Department**

Start

- **Client/Patient/Individual**
- **Referral Source**
- **General Process Notes**
  - Access services for the client
  - Develop and maintain relationships with referral sources
- **Measurable Outcomes**
  - Awareness of available services
  - Client obtains services

**Activity Details / Narrative**

**Activity Description:**

1. **Inquire Available Services**
   - The case manager maintains ongoing relationships with referral sources to determine available services

2. **Provide Information**
   - The referral source provides information concerning internal and external services available to clients

3. **Offer Available Services**
   - The case manager offers available services to the client

4. **Accept/Interest?**
   - The client decides if they are interested and/or accept the referral to services

5. **Update Record**
   - If the client does not accept the referral, the client record is updated with the documented reason and any applicable notes

6. **Generate Referral**
   - Case manager generates the appropriate referral and assists the client with any required documentation
   - Other assistance may also be provided such as assistance with transportation

7. **Provide Services**
   - The referral source provides services to the client

8. **Follow-Up**
   - The case manager will follow-up with client and/or referral source to determine status of referral

Public Health Informatics Institute
Provide Education

**Activity Details / Narrative**

**General Process Notes**

**Objectives:** Increase client knowledge base and improve healthy lifestyle choices.

**Measurable Outcomes:**
- Percentage of clients communicating understanding or demonstrating compliance with education
- Percentage of clients receiving education and/or materials

**Activity Description:**

1. **Assess Needs**
   - The case manager and client assess the need for education.

2. **Referral Needed; Refer Client**
   - Case manager determines if education needs can be met with internal resources. If not, the client is referred to another provider to receive services.

3. **Develop Goals**
   - Educational goals are developed for the client.

4. **Deliver Education**
   - The case manager provides education to the client based on identified needs and established goals.
   - Some information may be mandated for specific programs/conditions.

5. **Evaluate Learning**
   - The case manager evaluates the client’s understanding and compliance with the education received.

6. **Provide Feedback**
   - The client provides feedback via discussion, surveys, etc. to the case manager upon completion of the education.

7. **Understand Comply?**
   - The case manager assesses whether education provided has improved client compliance and achieved identified goals.

8. **Update Record**
   - The client’s record is updated with appropriate information by the case manager, including education provided, feedback from client, etc.
Provide Counseling

Activity Details / Narrative

**General Process Notes**
- **Objectives:** Improved problem solving skills
- **Measurable Outcomes:**
  - Positive behavior change as evidenced by meeting specific client goals
  - Number of clients receiving counseling services

**Activity Description:**

1. **Assess Needs**
   - The case manager and client assess the need for counseling

2. **Referral Needed?; Refer Client**
   - Case manager determines if education needs can be met with internal resources. If not, the client is referred to another provider to receive services

3. **Develop Goals**
   - Counseling goals are established for the client

4. **Provide Goal Focused Counseling**
   - The case manager provides focused counseling to the client based on needs and goals

6. **Provide Feedback**
   - The client provides feedback to the case manager upon completion of counseling

7. **Behavior Change**
   - The case manager determines if the client has experienced sufficient behavioral changes as a result of the counseling provided

8. **Update Record**
   - The client’s record is updated with appropriate information by the case manager

9. **Goals Met**
   - Case manager assesses whether the client’s goals have been met

10. **New Goals**
    - Case manager determines the need for additional goals
Coordinate Care

**Case Manager**

1. Identify Need
2. Prepare for Meeting
3. Identify Meeting Participants
4. Meet
5. Continue Care
   - No
   - Yes
6. Close Case
7. Update Care Plan
8. Update Client

---

**Health Department**

**Partner Agency**

**Client**

---

**Activity Details / Narrative**

**General Process Notes**
- Improve continuity of care
- Reduce/eliminate duplication of services
- Improve interagency communication

**Measurable Outcomes**
- Improved access to needed services
- All providers have access to comprehensive patient information
- Reduced duplication of services

**Activity Descriptions**

1. Identify Need
   - Identify the need for care coordination between multiple needs or providers
   - The case manager may also be invited to care coordination by the partner agency

2. Prepare for Meeting
   - Preparation includes scheduling, gathering client information, release of information for client and partners, and identifying the appropriate partners to attend

3. Identify Meeting Participants
   - Appropriate partners and the client are identified and invited to participate in the care coordination meeting

4. Meet
   - Information is exchanged concerning the client’s care
   - Client involvement is optional

5. Continue Care
   - A decision point to determine if care will be continued for the client

6. Close Case
   - Following the decision to discontinue care the case must go through the formal case closure process

7. Update Care Plan
   - The client’s care plan is updated with appropriate information by the case manager

8. Update Client
   - The client is made aware of any changes made to their care plan by the case manager
Patient Registration

**Objective:**
- Capture patient demographics, contact information, special needs, reason for visit, and billing information
- Obtain informed consent for services
- Complete program requirements

**Measurable Outcomes:**
- New or updated patient record

**General Notes:**
- COA (Clinical Office Assistant) swim lane represents Medical Office Assistant (MOA), Licensed Practical Nurse (LPN) or Certified Nurse Assistant (CNA) job titles

### Activity Details / Narrative

- **1. Patient sign-in**
  - COA captures name, arrival time, and appointment time, if available

- **2. Have appointment?**
  - COA confirms scheduled appointment slot in clinic schedule or performs search to identify appointment time and scheduled provider and appointment status is updated to “checked-in”
  - If no appointment, COA determines if patient can be accommodated in the schedule

- **Emergency?; Refer to ER or Urgent Care Center**
  - Practitioner determines if the patient is experiencing a medical emergency
  - All medical emergencies are directed to the local emergency room or urgent care center

- **5. Schedule appointment**
  - If the patient did not have an appointment, the COA identifies an available appointment time and schedules the patient for the time slot
  - Certain situations require that the patient be seen that day

- **6. Collect patient demographics**
  - For new patients (no established patient record), demographics and other pertinent data are captured to create a new record
  - Data collected can include name, date of birth, address, telephone number, SSN, legal sex, race, ethnicity, marital status, responsible party, preferred language, eligibility data, and contact information
  - Additional information to complete an income assessment may also be collected at this time

- **7. Establish patient record**
  - COA creates a new electronic health record from the data collected from the patient with a unique patient identifier

- **8. Pull existing record**
  - COA pulls-up the patient record for viewing

- **9. Review with patient**
  - COA reviews patient data with patient and makes any necessary updates
  - Patient may be asked to sign-off on changes made to record or validation of existing data

- **10. Update or prepare any needed forms**
  - Required forms are generated for patient completion and signature
  - Consent forms typically must be presented to patients for agreement and signature on a regular basis
Activity Description, cont.:

12. Direct patient to waiting area until called
   - COA directs patient to appropriate area to wait
     for provider to call patient back for services

13. Notify staff that patient is ready
   - COA initiates alert to notify staff that patient is
     waiting and captures location as applicable
   - System may print stickers, chart/patient form
     may be placed in holding area, or alert may be
     electronic (flashing light, name added to
     display, etc.)

14. Process forms
   - COA processes any paperwork created during
     registration process and links documents to the
     electronic health record for patient
   - Timing may differ. Paperwork may be processed
     at end of the day or immediately following
     registration
   - COA may also at this time print forms and add
     to patient’s paper-based chart
Development of User Requirements: Electronic Health Records for Public Health Agencies

Clinic Visit

1. Patient registration
2. Record vital
3. Interview patient & document medical history
4. Obtain consent for services
5. Perform exam and screenings
6. Lab tests needed
7. Process lab order
8. Review lab results
9. Provide assessment/diagnosis

Activity Description:

1. Patient registration
   - COA registers patient and checks-in appointment
2. Record vital
   - COA records pertinent patient vitals
   - Standard health measures are calculated from vital signs captured
3. Interview patient and document medical history
   - Practitioner captures patient medical history
   - Symptoms and complaints are recorded
   - Information is used to create basis for patient problem list
4. Obtain consent for services
   - Additional consent may be required for specific procedures or services
   - Practitioner obtains consent as needed and records in the EHR
5. Perform exam and screenings
   - Based on patient history and symptoms/complaints, the practitioner completes exams and screenings to collect additional information
   - Results and findings are captured in the EHR
   - Exams/screenings are protocol-driven and specific to clinic or appointment type
6. Lab tests needed
   - Practitioner determines if additional lab tests are required to determine diagnosis or complete assessment
7. Process lab order
   - Practitioner completes order for lab test(s) and specimen is collected and processed
8. Review lab results
   - Results are captured from lab testing and the practitioner reviews to determine next steps
9. Provide assessment/diagnosis
   - Practitioner provides an overall assessment of patient health and a diagnosis, as appropriate
   - Practitioner updates patient problem list

General Process Notes

Objectives:
- Assess, diagnose, and treat patient
- Bill appropriately for services

Measurable Outcomes:
- Patient receives appropriate services
- Clinic receives payment for services
- Accessible clinical data

General Notes:
- Practitioner may vary by location (e.g., RN, LPN, RNP, Physician, etc.)
- COA (Clinical Office Assistant) swim lane represents Medical Office Assistant (MOA), Licensed Practical Nurse (LPN) or Certified Nurse Assistant (CNA) job titles
- Order of tasks in process may change depending on clinic protocols, provider availability, assessments, test results, etc.
Development of User Requirements: Electronic Health Records for Public Health Agencies

Clinic Visit

page 2 of 2

Electronic Health Records
for Public Health Agencies

Activity Details / Narrative

Activity Description, cont.:

10. Provide preventive health services?
   • If clinic provides preventive health services, practitioner may choose to offer these to patient

11. Provide preventive health services
   • Preventive health services include immunization, screening, and educational services designed to support patient health outcomes and prevent disease
   • All services delivered are captured in EHR

12. Counseling needed?
   • Practitioner determines if counseling services are needed based on assessment/diagnosis

13. Provide Counseling
   • Refer to pre-defined sub-process

14. Provide Education
   • Practitioner shares education with patient based on assessment/diagnosis
   • Refer to pre-defined sub-process

15. Medication required?
   • Practitioner determines if medication is required based on assessment/diagnosis
   • Prescription is based on diagnosis/assessment, current medications, contraindications, etc.
   • Clinic may refer patient to a pharmacy assistance program

16. Dispense medication
   • If medication is dispensed in-house, details of the drug that was dispensed, date and time dispensed, prescribing provider information, etc. are captured
   • If system is linked to inventory management, inventory of drug is decremented

17. Provide prescription
   • Details of the drug, dosage, quantity, etc. are captured and provided as e-prescription or paper-based prescription

18. Document the visit
   • Details of the encounter are captured including diagnosis/assessment, problem list, medications, interventions, etc.
   • A billing form documenting services provided is generated

19. Direct patient to check-out
   • Patient receives a list of charges and a receipt for any payments made
   • Insurance/3rd parties/programs are billed for services as applicable
   • The patient may schedule follow-up appointments at this time
Development of User Requirements: Electronic Health Records for Public Health Agencies

**Patient Follow-up**

1. Receive follow-up report
2. Review patient record
3. Follow-up required?
   - Yes
   - No
4. Attempt patient contact
5. Contact made?
   - Yes
   - No
6. Reassess needs
7. Appointment needed?
   - Yes
   - No
8. Schedule appointment
9. Update record
End

---

**General Process Notes**

**Objective:**
- Ensure patient is completing treatment plan

**Measurable Outcomes:**
- Updated treatment plan
- Updated record
- Increase in patient adherence

**General Notes:**
- Practitioner may vary by location (e.g., RN, LPN, RNP, Physician, etc.)
- COA (Clinical Office Assistant) swim lane represents Medical Office Assistant (MOA), Licensed Practical Nurse (LPN) or Certified Nurse Assistant (CNA) job titles.

**Activity Description:**

1. **Receive follow-up report**
   - A report is generated to identify missed or cancelled appointments or is based on a time-based trigger.
   - The report alerts staff to potential need for follow-up.

2. **Review patient record**
   - The practitioner reviews the medical records of those patients listed on the report to determine disposition.

3. **Follow-up required?**
   - Based on review of the record, the practitioner determines if follow-up with the patient is required. Patient list may be forwarded to another role for action.
   - Follow-up is typically indicated by protocol or level of risk.
   - If follow-up is not required, the practitioner updates the record with any additional notes and closes the issue for follow-up.

4. **Attempt patient contact**
   - Contact with the patient is attempted through call, letter, email, etc. The method is dependent on the clinic’s resources and availability of patient contact information.
   - Each contact attempt is documented in the patient’s record with responsible person, time, date, and method.

5. **Contact made?**
   - If contact is made, the practitioner discusses the patient’s current status and needs. If not successful, the practitioner must determine if additional contact is necessary.

6. **Reassess needs**
   - From discussions with the patient, the practitioner assesses the patient’s status and additional needs. If the patient is seeking treatment at another clinic, further treatment may not be required with the clinic.
   - The patient’s current status may also indicate that no further follow-up is required.

7. **Appointment needed?**
   - Based on assessment of the patient’s needs, the practitioner determines if an appointment for the patient to return to the clinic is needed.

8. **Schedule appointment**
   - The patient may be transferred to the COA to schedule the appointment or the practitioner may schedule the appointment themselves.

9. **Update record**
   - All contact attempts, discussions with patient, any changes to the treatment plan, and next steps are documented in the patient’s record.
   - Follow-up status is updated for the report.

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Public Health Informatics Institute
**Objective:**
- Accurate and consistent ordering of labs
- Obtain appropriate consent for services
- Bill accurately for services
- Deliver order and specimen to appropriate lab

**Measurable Outcomes:**
- Timely, accurate lab results delivered to the right person/place
- Billing complete & payment received
- Lab test processed
- Lab data available for statistical reporting

**Activity Description:**
1. **Place order**
   - The practitioner orders the test and the lab order is entered into the system. Patient demographic information is entered
   - Patient instructions and specific procedures for specimen collection are generated by system
2. **Additional consent required?**
   - Additional consent may be required for specific test protocols & must be collected. If consent is not obtained, status is updated and no specimen processing may occur
3. **Consent given?**
4. **Collect and prepare specimen**
   - Patient may have specimen collected at an off-site location
   - Data is collected to identify the patient & billing details, details of specimens that are to be collected & how they should be processed are outlined, & the ordering physician and the person responsible for collection are identified
5. **Internal lab?**
   - If specimen is to be analyzed in-house, no additional processing or packaging may be necessary
6. **Deliver specimen to lab for processing**
   - Specimens are packaged for transit to an external lab where they will be processed
   - For internal labs, the specimen and paperwork are transferred to the lab and do not require additional packaging
7. **Analyze specimen**
   - Details of each specimen are collected in the lab log and specimens are tracked through the testing process
8. **Capture test results**
   - Test results for each specimen and test are captured along with any specimen observations
   - Details of the test method and reference range are documented and abnormal results flagged
9. **Disseminate results**
   - Results are returned to the requesting facility
   - Additional processing may be required at facility to incorporate into patient EHR as results are typically returned separately for each test
10. **Notify practitioner of results**
    - The ordering practitioner is notified of results and must sign-off on receipt
    - May trigger release to web portal, automated call, letter, etc.
11. **Reportable?**
    - Reportable disease results may be reported by both the lab and the clinic to the appropriate authorities
    - Unique identifiers are used to link lab results to patient results in order to de-duplicate reports and provide accurate occurrence
    - Each report is logged to provide an audit trail
12. **Submit Report**

**General Process Notes**
- Practitioner may vary by location (e.g. RN, LPN, RNP, Physician, etc.)
- Lab may be in-house or external
- Labs may be performed anonymously
- Clinical staff often operate under standing orders for specific situations or conditions
**Development of User Requirements: Electronic Health Records for Public Health Agencies**

**Review Results**

**Electronic Health Records for Public Health Agencies**

<table>
<thead>
<tr>
<th>Activity Details / Narrative</th>
<th>General Process Notes</th>
<th>Measurable Outcomes</th>
<th>General Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Activity Description:</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1. <strong>Receive lab results and review</strong></td>
<td>Practitioner reviews lab results. This review may also include past data, clinical notes, and other information from patient’s EHR. While the lab may return normal results, this does not necessarily mean that the patient is well, but may rule out a specific diagnosis.</td>
<td></td>
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</tr>
<tr>
<td>2. <strong>Follow-up required?</strong></td>
<td>Practitioner determines if patient follow-up is required based on review of results and patient record. If no follow-up is necessary the record is updated with the lab results and no further action is required.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. <strong>Provide new orders or follow standing orders</strong></td>
<td>If new orders are necessary based on lab results, they are documented in the patient record and flagged for follow-up. Standing orders may also be indicated to provide next steps for the patient.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. <strong>Patient follow-up</strong></td>
<td>Contact with the patient is initiated to follow-up on treatment plan and next steps. Contact attempts (successful or failed) are documented in the patient’s medical record. Protocols or other standards of care will drive contact and follow-up attempts.</td>
<td></td>
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</tr>
<tr>
<td>5. <strong>Update patient record and ensure follow through</strong></td>
<td>All results, notes, and contact are documented in the record. Follow-up is tracked to ensure standards and protocols are followed and the patient is contacted as appropriate. End of day reports may be generated to track follow-up and outliers.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
### Development of User Requirements: Electronic Health Records for Public Health Agencies

**Directly Observed Therapy**

**Activity Descriptions**

1. **Receive physician’s orders**
   - Staff are alerted of physician’s order for DOT & the status of the order is tracked in the system

2. **Contract signed?**
   - The practitioner determines if an existing contract is in place for the patient and confirms the patient’s identity
   - If a contract is already in place, the practitioner can view details of the established plan and treatment schedule

3. **Explain the program**
   - If a contract is not in place, the practitioner explains the program to the patient and determines their level of understanding

4. **Complete contract for DOT**
   - A contract is completed & signed by the patient and a treatment plan and schedule are set
   - Refusal to sign is documented and triggers notification of the appropriate staff

5. **Assess patient**
   - The practitioner assesses the patient, looking for complaints, possible signs of non-adherence, and side-effects. Patient sign-off may be required
   - A checklist of questions/screenings may be available to walk the practitioner through the assessment. If no contraindications are found, the practitioner can proceed or if needed, the treatment may be rescheduled

6. **Confirm orders & instruct patient regarding any regimen changes**
   - The practitioner confirms the physician’s orders and reviews any changes that have been made since the last visit
   - Any changes are communicated to the patient and level of understanding is reassessed
   - Allergy status is reconfirmed and any changes are updated in the patient’s record

7. **Ensure correct amount and type of medication is prepared to take**
   - The medication with time/date provided and prescribing physician are documented

8. **Observe patient swallowing correct dosage of medication**
   - Drug verification is initiated at initial dispensing and is completed just prior to issuing to patient through confirmation of name, DOB, etc.

9. **Update chart and document any other pertinent findings**
   - All notes and results are captured in the patient’s record including the tracking of incentives. The practitioner may also need to capture the patient’s signature for incentives, log, etc.
   - The patient is informed of next steps and any conditions to look for (side effects, etc.)
   - If any changes are needed to the treatment plan/schedule the record is updated with new location, time, etc. and any pertinent notes
Business Process Requirements

Requirements describe the needed functionality of an information system and answer the question: “How would you see an information system supporting activity X?” Each identified business process is listed below with activity-based requirements, but not all listed activities within the business process have associated requirements. The specifications for each business process are not intended to suggest any physical implementation strategy.

Business Process #1: Recruitment/Outreach

1. Identify Variation in Referrals
   1.1. Allow user to define baseline/threshold for variations in referrals/reports
   1.2. Maintain and display historical referral data: numbers, types, etc.
   1.3. Alert appropriate individuals when referrals reach user-defined thresholds, time intervals, etc.
   1.4. Allow user to edit distribution of notifications
   1.5. Provide ability to query referral history by user-defined criteria (e.g. client, referral source, case manager, date, etc.)

1.2. Analyze Issue/Information
   1.2.1. Print/display report of referrals
   1.2.2. Support analysis of case manager case load, availability, and utilization
   1.2.3. Provide ability to set thresholds for utilization by user-defined criteria (e.g., disease/outbreak)
   1.2.4. Alert appropriate individuals when case manager utilization meets threshold limits
   1.2.5. Compare current referral/report rates against historical rates to identify trends
   1.2.6. Allow user to enter details of local event with search functionality
   1.2.7. Support geographic trending to identify clusters

1.3. Referral/Recruitment Needed
   No system requirements

1.4. Develop Recruiting Plan
   1.4.1. Propose target population for recruitment based on referral history
   1.4.2. Suggest referral sources
   1.4.3. Allow user to create recruitment plan
1.5. Implement Plan
   1.5.1. Display/print recruitment plan report
   1.5.2. Distribute recruitment plan to appropriate individuals

Business Process #2: Screening/Eligibility Determination

2.1. Identify At-Risk Individuals
   2.1.1. Import data from external systems including EHRs, surveillance, lab systems, etc.
   2.1.2. Allow user to easily setup or modify screening parameters
   2.1.3. Assign/capture risk information from electronic referrals/reports
   2.1.4. Allow user to filter/sort based on risk
   2.1.5. Support creation/import of case definitions
   2.1.6. Support creation/import of program eligibility requirements

2.2. Conduct Screening
   2.2.1. Flag clients who meet case definition/eligibility requirements
   2.2.2. Display/print report of eligible clients
   2.2.3. Provide method to contact eligible clients and/or client’s associated care provider(s)
   2.2.4. Record status of client contact and document attempts

2.3. Meet Criteria?
   2.3.1. Capture reason for client ineligibility
   2.3.2. Filter/report based on reason for ineligibility

2.4. Refer Client
   2.4.1. Allow user to initiate referral process

2.5. Resources Available for Case Management?
   2.5.1. Allow user to add client to program or case manager wait list
   2.5.2. Notify client of wait-list status
   2.5.3. Display/print wait-list
   2.5.4. Allow user to manage wait-list

2.6. Accept Case Management?
Development of User Requirements: Electronic Health Records for Public Health Agencies

2.6.1. Capture reason client declined services

2.7. Initiate Intake

2.7.1. Allow user to assign client to case manager

2.7.2. Display/print case load/clients by case manager

2.7.3. Allow user to schedule client appointment(s) with case manager

2.7.4. Generate appropriate forms with client information pre-populated

2.7.5. Route forms to appropriate individuals/clients/case managers for completion

Business Process #3: Intake

3.1 Receive Referral/Report/Case Finding

3.1.1 Provide ability to receive referral/report/case findings electronically

3.1.2 Capture demographics associated with referral

3.1.3 Generate referral report based on user-defined criteria

3.1.4 Allow user to select/sort by referral date, client, provider, referral type, referral source, etc.

3.1.5 Query open/active referrals according to user-defined criteria

3.1.6 Capture household members, contacts, and other potential cases

3.1.7 Provide ability to send and receive referral/client information (e.g., send copy of referral to primary care provider)

3.1.8 Alert/display new, open, active referrals

3.1.9 Allow for de-duplication of referrals

3.1.10 Assign priority based on referral source, program rules, disease definition/acuity, zip code, etc.

3.2 Existing Client?

3.2.1 Match referred client to existing client(s) records

3.2.2 Provide list of potential record matches

3.2.3 Identity current status (closed, active, etc.)

3.2.4 Append new data to existing client record

3.2.5 Allow user to create new client record

3.2.6 Alert/flag if matching client record is existing but not active
3.2.7 Allow user to update status of client

3.3 Complete Initial Documentation
3.3.1 Assign unique client record number
3.3.2 Prohibit assignment of new record number for existing client
3.3.3 Alert/flag missing information in client record
3.3.4 Allow designation of mandatory fields to save a record and assign number
3.3.5 Pre-populate forms with client information; allow manual override

3.4 Update/Combine Record
3.4.1 Allow for de-duplication of client records
3.4.2 Append referral information into existing client record
3.4.3 Edit/update record with current client information
3.4.4 Allow the exchange of client record updates with other systems, including billing

3.5 Eligible/Resource Available?
3.5.1 Generate case manager caseload report
3.5.2 Interface with an inventory system to view available inventory
3.5.3 Provide interoperability with hospitals, clinics, other public health agencies, billable services, labs, etc. in order to exchange patient data, program availability, etc.

3.6 Refer Client
3.6.1 Capture client decision to accept/deny offered services or case management
3.6.2 Capture case manager notes/comments and update record
3.6.3 Allow case manager to initiate case closure

3.7 Assign Case
3.7.1 Generate caseload report to determine recommended staff assignment
3.7.2 Document staff assignments
3.7.3 Calculate weighted case assignments (based on geographic locations, specialties, acuity, full-time versus part-time)

Business Process #4: Assessment

4.1 Case Assigned
4.1.1 Notify case manager of assigned case
4.1.2 Flag case/client as "high risk" based on user-defined criteria
4.1.3 Display caseload using user-defined filter/sort criteria
4.1.4 Generate/display/print caseload summary by case manager
4.1.5 Generate/display/print caseload detail by client
4.1.6 Allow user to edit case manager assignment with supervisor approval
4.1.7 Allow system administrator to limit access to client files based on user, role, or other user-defined criteria
4.1.8 Allow user to flag a case for reassignment

4.2 Contact Client
4.2.1 Auto-generate communication informing client of eligibility and next steps
4.2.2 Display/edit current client information
4.2.3 Log contact attempts
4.2.4 Allow user to suppress email recipient list

4.3 Client Reached?
4.3.1 No system requirements

4.4 Close Case
4.4.1 Allow user to initiate case closure

4.5 Schedule Appointment
4.5.1 Allow user to create/schedule client appointment
4.5.2 Display case manager schedule
4.5.3 Send electronic appointment details along with any additional information needed (e.g., cancellation policy, requirements for appointment, etc.)
4.5.4 Display/print client appointment schedule
4.5.5 Capture appointment disposition (complete, no show, canceled, etc.)
4.5.6 Display/print client appointment history with disposition
4.5.7 Display/update appointment master schedule
4.5.8 Provide ability to schedule recurring appointments
4.5.9 Send appointment reminders (via phone, email, etc.)
4.6 Encounter/Visit
   4.6.1 Display/print overview of services provided
   4.6.2 Allow case manager to document encounter

4.7 Enroll in Program
   4.7.1 Capture reason client declined services

4.8 Provide Education
   4.8.1 Allow case manager to select appropriate educational information

4.9 Sign Consent Forms
   4.9.1 Pre-populate forms with appropriate client information
   4.9.2 Allow user to customize forms based on facility/program
   4.9.3 Track incomplete documents/forms
   4.9.4 Provide alerts to case manager for needed updates to forms based on defined criteria
   4.9.5 Maintain checklist of all consent forms needed/signed

4.10 Collect Data
   4.10.1 Allow import of client data from other programs
   4.10.2 Support topic specific assessment tools and input of assessment results (acuity tool, etc.)
   4.10.3 Allow user to create reminders
   4.10.4 Allow user to define and flag incomplete fields to support chart review

4.11 Develop Goals
   4.11.1 Support program/grant-specific templates
   4.11.2 Capture established goals and differentiate between client and case manager goals
   4.11.3 Allow user to export selected goals to care plan
   4.11.4 Apply user-defined alternative reference notes or attributes (tagging) to documents that are easily searchable
   4.11.5 Allow user to update goals
   4.11.6 Provide reminders to update goals based on user-defined criteria
   4.11.7 Support reporting of goals
   4.11.8 Route goal reports electronically to appropriate individuals, i.e. primary care provider
4.11.9 Allow user to link goals to referrals
4.11.10 Recommend referrals based on goals

4.12 Develop Care Plan

4.12.1 Support creation of a "contract" or document that outlines the plan of action
4.12.2 Support program/grant specific templates
4.12.3 Allow user to display/update/print the care plan
4.12.4 Provide ability to share selected care plan, activities, and goals with authorized providers
4.12.5 Track/monitor progress of client
4.12.6 Provide reminders to update plan based on time, event, etc. triggers
4.12.7 Maintain care plan history

4.13 Accept Plan

4.13.1 Populate calendar with care plan activities, goals, appointments, etc.
4.13.2 Allow user to print or share calendar

4.14 Document Impressions/Notes

4.14.1 Provide ability to capture notes
4.14.2 Support ability for case manager to set client-specific reminders
4.14.3 Lock notes to prevent changes upon case manager sign-off

Business Process #5: Close Case

5.1 Review Care Plan

5.1.1 Display care plan and client progress as a visual representation or dashboard (e.g. percentage of goal achieved, percent of steps in plan completed)
5.1.2 Record status changes/outcomes
5.1.3 Import/receive electronic lab reports, medication administration records, vaccination records, etc.
5.1.4 Document education received by client
5.1.5 Flag missing data elements
5.1.6 Record/display the final disposition of care plan review

5.2 Close Case?
5.2.1 No system requirements

5.3 Continue/Revise Care Plan
5.3.1 Allow user to edit care plan and document notes to support changes

5.4 Develop Transition Plan
5.4.1 Document reason for case closure
5.4.2 Link to community resources in order to provide client with materials and contact information
5.4.3 Create/print client letter outlining reason for case closure and next steps

5.5 Create Closing Summary
5.5.1 Generate/display/print case closing summary including reason for closure, final disposition, and any other pertinent notes
5.5.2 Document next steps/expectations
5.5.3 Document communication or communication attempts with client

5.6 Sign-Off
5.6.1 Provide auto-generated queue of case closures pending approval
5.6.2 Remove closed cases from staff case load
5.6.3 Notify case manager/supervisor/designated individuals of closed case
5.6.4 Capture supervisor approval of case closure

5.7 Update Status
5.7.1 Allow user to update case status
5.7.2 Trigger billing system/procedures
5.7.3 Capture ICD9/ICD10 codes
5.7.4 Provide ability to reopen a case after closure

5.8 Notify Referring Agency/Partners
5.8.1 Generate and route electronically reports and referral summary
5.8.2 Capture date/time stamp and recipients for notifications
5.8.3 Support use of agency letterhead
5.8.4 Allow user to create a customizable note
5.8.5 Manage referring agency/partner contact information
5.9 Create Case Closure Letter
5.9.1 Generate case closure letter for client
5.9.2 Allow user to edit/print/route letter

Business Process #6: Refer Client

6.1 Inquire Available Services
6.1.1 Connect to external systems to determine availability of services
6.1.2 Import/create application forms for available services
6.1.3 Maintain referring agency/partner contact information
6.1.4 Provide helpful hints area or popups that are context dependent and updateable

6.2 Provide Information
6.2.1 Allow user to link to materials from provider or append electronic copies to provider record
6.2.2 Trigger alerts that information may be out-of-date based on user-defined timelines
6.2.3 Allow user to initiate request for updated information from providers

6.3 Offer Available Services
6.3.1 Display/print detailed description of available service and any required documents
6.3.2 Display/print hours of service/locations/phone numbers for services
6.3.3 Display/print specific referral location details including directions, maps bus lines, mass transit, etc.

6.4 Accept/Interest
6.4.1 No system requirements

6.5 Update Record
6.5.1 Allow user to update client record with notes including reason for rejection of services

6.6 Generate Referral
6.6.1 Allow user to update client information (e.g., demographics)
6.6.2 Enable the creation, documentation and tracking of referrals/counseling orders including reason for referral, where referred, appointment date and time, clinical and administrative details of the referral, and consents and authorizations for disclosures as required
Development of User Requirements: Electronic Health Records for Public Health Agencies

6.6.3 Populate forms with client information
6.6.4 Route referral to appropriate providers/programs/etc.
6.6.5 Provide ability to attach relevant information to referral
6.6.6 Allow user to update client record with referral information
6.6.7 Notify client's associated care provider of referral

6.7 Provide Services
6.7.1 Receive confirmation that client accessed services
6.7.2 Receive summary of services provided, appointment information, and referral results via fax, directly entry, scan, or web interface

6.8 Follow-up
6.8.1 Flag referrals that are overdue with no status update or results received
6.8.2 Provide follow-up reminder for case manager
6.8.3 Display referral history for each client
6.8.4 Provide ability to generate referral reports
6.8.5 Require acknowledgement of receipt of results and completion of review
6.8.6 Support case conferencing

Business Process #7: Provide Education

7.1 Assess Needs
7.1.1 Link to internal and external education resources to print/determine availability of materials
7.1.2 Allow user to customize forms based on facility/program

7.2 Referral Needed?
7.2.1 No system requirements

7.3 Refer Client
7.3.1 Allow user to link to referral module

7.4 Develop Goals
7.4.1 Capture/update client education goals

7.5 Deliver Education
7.5.1 Suggest appropriate information by condition
7.5.2 Support different languages for educational materials
7.5.3 Display available inventory of pre-printed educational materials
7.5.4 Allow user to order educational materials
7.5.5 Print/distribute education materials or links to associated materials
7.5.6 Display/print history of education provided to client

7.6 Provide Feedback
    7.6.1 Capture client feedback

7.7 Evaluate Learning
    7.7.1 Capture case manager notes/comments around client understanding/compliance

7.8 Understand/Comply?
    7.8.1 No system requirements

7.9 Update Record
    7.9.1 Append case manager evaluation to patient record

Business Process #8: Provide Counseling

8.1 Assess Needs
    8.1.1 Link to education resources relevant to case and access materials
    8.1.2 Allow user to customize forms based on facility/program

8.2 Referral Needed?
    8.2.1 No system requirements

8.3 Refer Client
    8.3.1 Allow user to link to referral module

8.4 Develop Goals
    8.4.1 Capture/update client goals

8.5 Provide Goal Focused Counseling
    8.5.1 Capture case manager notes/comments

8.6 Provide Feedback
    8.6.1 Capture client understanding/compliance/notes
8.7 Behavior Change?
   8.7.1 No system requirements

8.8 Update Record
   8.8.1 Allow user to update client record with counseling evaluation and update care plan

8.9 Goals Met?
   8.9.1 No system requirements

8.10 New Goals?
   8.10.1 No system requirements

Business Process #9: Coordinate Care

9.1 Identify Need
   9.1.1 No system requirements

9.2 Prepare for Meeting
   9.2.1 Import relevant information from case record to client synopsis ("one pager")
   9.2.2 Generate client release of information document with appropriate information populated
   9.2.3 Generate list of partner agencies associated with a specific client

9.3 Identify Meeting Participants
   9.3.1 Provide ability to schedule care coordination meeting(s) with individuals or group attendees
   9.3.2 Allow user to distribute invitations for care coordination meeting
   9.3.3 Associate care coordination meeting with a client record
   9.3.4 Track attendee responses to invitation (accept/tentative/decline)
   9.3.5 Provide reminders for upcoming meeting
   9.3.6 Generate partner agency release of information form
   9.3.7 Provide links to agency policies and procedures

9.4 Meet
   9.4.1 Capture meeting notes electronically and link to client record
   9.4.2 Distribute meeting notes to appropriate individuals
9.5 Continue Care
   9.5.1 No system requirements

9.6 Close Case
   9.6.1 No system requirements

9.7 Update Care Plan
   9.7.1 Allow user to update care plan
   9.7.2 Generate/display/print care plan
   9.7.3 Distribute care plan to partner agencies and authorized individuals

9.8 Update Client
   9.8.1 Generate communication outlining care coordination outcome
   9.8.2 Provide ability to edit/route communication

Business Process #10: Patient Registration

10.1 Patient Sign-in
   10.1.1 Capture patient name and arrival time
   10.1.2 Capture patient's appointment status (scheduled appointment, walk-in)

10.2 Have appointment?
   10.2.1 Allow user to query appointment schedule by user defined factors (e.g., name, DOB, SSN, etc.)
   10.2.2 Return query with list of possible matches
   10.2.3 Capture appointment status (checked-in, missed, etc.)

10.3 Emergency?
   10.3.1 No system requirements

10.4 Refer to ER or Urgent Care Center
   10.4.1 Provide user with list of local facilities for emergencies or urgent care

10.5 Schedule appointment
   10.5.1 Display appointment schedule by user selected factor (e.g., time slot, appointment type, provider, etc.)
   10.5.2 Provide ability to create and schedule a new appointment
10.5.3 Capture the complaint, presenting problem or other reason(s) for the visit
10.5.4 Maintain multiple, separate schedules for providers, service area, etc.
10.5.5 Provide ability to edit and save existing appointments
10.5.6 Capture minimum required patient information in appointment
10.5.7 Provide patient with notification of scheduled appointment

10.6 Existing patient?
10.6.1 Allow user to query patient record database to determine if existing patient
10.6.2 Return query with list of possible patient record matches
10.6.3 Allow user to select patient and enter into patient record

10.7 Collect patient demographics
10.7.1 Validate data real-time (e.g., format checks, completeness, limit checks, etc.)
10.7.2 Capture data collected from patient in new record including demographics, billing/guarantor information, legal status, consent, etc.
10.7.3 Link to other program systems to determine existing program eligibility and coverage information
10.7.4 Allow propagation of data from existing patient record (e.g., information from parent's record used to register child as new patient (address, guarantor, insurance, etc.))
10.7.5 Store demographic information separately from clinical data to protect patient identity

10.8 Establish patient record
10.8.1 Allow user to create and save a new patient record
10.8.2 Assign a unique patient identifier
10.8.3 Alert user before creating new record if a similar record already exists
10.8.4 Allow user to link unique patient identifiers to indicate family/relationship

10.9 Pull existing record
10.9.1 Allow user to view existing patient record from query

10.10 Review with patient
10.10.1 Provide ability to edit patient data and save changes

10.11 Update or prepare any needed forms
10.11.1 Allow user to select program/visit type
10.11.2 Provide user with list of required forms based on program/visit type
10.11.3 Pre-populate form with data from EHR
10.11.4 Allow user to edit specific fields in form

10.12 Direct patient to waiting area until called
10.12.1 No system requirements

10.13 Notify staff that patient is ready
10.13.1 Create an alert to staff/provider that patient is ready
10.13.2 Allow user to select or edit alert recipients
10.13.3 Track patient through service flow

10.14 Process forms
10.14.1 Append scanned documents generated during registration to the patient record

Business Process #11: Clinic Visit

11.1 Patient registration
11.1.1 No system requirements

11.2 Record vitals
11.2.1 Provide template for recording vitals
11.2.2 Provide graphical display for comparison or trending
11.2.3 Highlight and create alert for abnormal vitals
11.2.4 Provide calculations for typical health measures (e.g., BMI, growth, percent weight gain, etc.)
11.2.5 Provide conversion between metric and imperial systems
11.2.6 Capture accurate electronic data directly from medical devices and equipment
11.2.7 Support updateable order catalog

11.3 Interview patient and document medical history
11.3.1 Provide ability to update medical history from previous history or visit
11.3.2 Provide version control to provide narrative of medical history
11.3.3 Create alerts for certain health conditions including allergies, adverse drug reactions
11.3.4 Prompt for program/disease-specific history
11.3.5 Allow user to update problem list to capture new problems and de-activate problems no longer affecting patient

11.3.6 Allow user to import medical history from an EMR

11.3.7 Distinguish between data reported by patient and clinically authenticated data

11.4 Obtain consent for services

11.4.1 Store standard consent templates for services/procedures

11.4.2 Prompt user if additional consent is required for service

11.4.3 Capture the purposes for which consent was obtained and the associated time frame

11.5 Perform exam and screenings

11.5.1 Present current guidelines and established protocols to practitioner

11.5.2 Provide the ability to create exams/screenings/assessments

11.5.3 Capture results of exams and screenings

11.5.4 Provide check boxes for common results (normal, abnormal)

11.5.5 Allow user to capture comments for all results

11.5.6 Allow user to edit exams/screenings to capture additional services

11.6 Lab tests needed?

11.6.1 Provide recommendations based on protocols

11.7 Process lab order

11.7.1 Provide the ability to generate instructions pertinent to the patient for standardized tests/procedures (e.g., fasting)

11.8 Review lab results

11.8.1 No system requirements

11.9 Provide assessment/diagnosis

11.9.1 Capture diagnosis

11.9.2 Provide ICD9/ICD10 codes

11.9.3 Append problem list based on history and exams/screenings

11.9.4 Support use of standard care plans, guidelines, and/or protocols to manage specific conditions
11.9.5 Identify, track, and provide alert/notification to indicate variances from standard protocols or care plans

11.10 Provide preventive health services?
11.10.1 Generate alerts for preventative services that are due for patient

11.11 Provide preventive health services
11.11.1 Link to immunization registries to import/export immunization history
11.11.2 Allow user to directly enter immunization history into EHR
11.11.3 Provide user with immunization forecast
11.11.4 Alert user that immunization is due
11.11.5 Capture, display and report all immunizations associated with a patient
11.11.6 Print immunization history in standard template
11.11.7 Capture screening history
11.11.8 Display history of all screenings performed with date and results
11.11.9 Capture PHS education delivered
11.11.10 Display cumulative history of education delivered

11.12 Counseling needed?
11.12.1 No system requirements

11.13 Provide counseling
11.13.1 No system requirements

11.14 Provide education
11.14.1 Document what education was delivered
11.14.2 Provide access to educational information relevant to that patient
11.14.3 Print materials from library
11.14.4 Suggest educational materials to be provided based on problem list, diagnosis, etc.

11.15 Medication required?
11.15.1 Display list of medications
11.15.2 Flag contraindications, allergies, drug interactions, and other potential adverse reactions when new medications are prescribed
11.15.3 Auto-populate list of medications from dispense/prescribe orders
11.15.4 Require mandatory data be completed prior to prescribing

11.15.5 Calculate and display drug dose options based on patient parameters including age and diagnostic test results

11.15.6 Present suggested lab monitoring as necessary for prescribed medication

11.15.7 Alert potential errors such as wrong patient, drug, dose, route, or time for administration of medication

11.15.8 Capture allergy, intolerance, and adverse reactions to medications

11.16 Dispense medication

11.16.1 Capture critical information: name of medication, dosage, quantity, lot number, date and time dispensed, provider name, etc.

11.16.2 Link to inventory system

11.17 Provide prescription

11.17.1 Capture critical information: name of medication, dosage, quantity, lot number, date and time dispensed, provider name, etc.

11.17.2 Capture allowable refills, DEA or license number, etc.

11.17.3 Allow user to e-prescribe or print prescription

11.18 Document the visit

11.18.1 Capture encounter details using direct entry of text; structured data entry (templates, forms, lists); or transcription of dictation

11.18.2 Access patient information needed to support coding of diagnosis, procedures, billing

11.18.3 Create summary views or reports of encounter

11.18.4 Receive and incorporate patient encounter data (e.g., diagnostic tests and reports, lab results, images) from external systems

11.18.5 Complete billing form

11.18.6 Provide the ability to link dispersed information for an individual patient

11.18.7 Allow information mistakenly associated with patient to be associated to the correct patient

11.18.8 Identify all providers by name and role associated with a specific patient encounter

11.19 Direct patient to check-out

11.19.1 Allow user to schedule appointments
11.19.2 Display charges for visit
11.19.3 Print receipt
11.19.4 Accept payments
11.19.5 Allow user to refund money
11.19.6 Bill insurance/3rd party/programs for services

**Business Process #12: Patient Follow-up**

12.1 Receive follow-up report
12.1.1 Track status of all scheduled appointments (checked-in, missed, cancelled, etc.)
12.1.2 Generate a follow-up report based on user specifications and time period
12.1.3 Distribute report to appropriate staff
12.1.4 Allow user to designate and edit list of staff or roles for report distribution

12.2 Review patient record
12.2.1 Provide ability to access patient records directly from report

12.3 Follow-up required?
12.3.1 Provide ability to document closure and remove patient from follow-up report
12.3.2 Allow user to edit status of follow-up

12.4 Attempt patient contact
12.4.1 Provide a contact method for patient
12.4.2 Store templates for use in follow-up attempts (email, letter)
12.4.3 Auto-populate fields of template with information from EHR
12.4.4 Provide ability to delegate/refer follow-up to other staff

12.5 Contact made?
12.5.1 Document follow-up attempts to capture method, time, date, result, etc.

12.6 Reassess needs
12.6.1 Provide ability to review previous plans/interventions/problems
12.6.2 Capture notes from reassessment

12.7 Appointment needed?
12.7.1 No system requirements
12.8 Schedule appointment
12.8.1 Provide access to the scheduling system
12.8.2 Allow user to edit/reschedule appointment
12.8.3 Provide notification to patient of appointment details

12.9 Update record
12.9.1 Capture findings and new treatment plan
12.9.2 Capture referral information
12.9.3 Indicate if patient care has been transferred to another facility/provider

Business Process #13: Process Lab Order

13.1 Place Order
13.1.1 Allow selection of orders from catalog and program-specific protocols
13.1.2 Support search queries of lab order catalog
13.1.3 Allow user to edit order to capture additional information such as patient instructions
13.1.4 Allow user to query the status of an order (initiated, placed, received), modify an existing order, and verify that an order has been completed
13.1.5 Provide user with specimen collection instructions (e.g., color of tube, type of specimen, etc.)
13.1.6 Print specimen labels, requisition forms, or other required materials for lab processing
13.1.7 Provide notification to appropriate staff that order has been placed
13.1.8 Pre-fill standard data in order

13.2 Additional consent required?
13.2.1 Flag tests where additional consent is required

13.3 Consent given?
13.3.1 Track status of consent (denied, consented, withdrawn) and date/time stamp
13.3.2 Trigger workflow for lab processing upon recording of consent; prohibit order from proceeding without sufficient patient consent

13.4 Collect and prepare specimen
13.4.1 Capture required information about patient, specimens collected, provider identification, etc.
13.4.2 Capture details of specimen collection including how collected, responsible party, time/date stamp, etc.

13.5 Internal lab?
13.5.1 Provide electronic communication with outside labs
13.5.2 Confirm the order and specimen were received

13.6 Deliver specimen to lab for processing
13.6.1 Provide instructions for packaging and handling of specimens
13.6.2 Provide contact details for external labs
13.6.3 Document shipping of specimens and details of receiving facility

13.7 Analyze specimen
13.7.1 Document receipt of specimens and capture specimen details in lab log
13.7.2 Report variation between type of specimen ordered and actual specimen received
13.7.3 Document status of specimen throughout processing

13.8 Capture test results
13.8.1 Capture test method and reference range used
13.8.2 Capture test results for each specimen/test pair
13.8.3 Flag abnormal/critical/reportable results
13.8.4 Capture additional observations

13.9 Disseminate results
13.9.1 Provide requesting facility with report of test results for each patient/test ordered
13.9.2 Allow data entry of scanned results

13.10 Notify practitioner of results
13.10.1 Create alert/notice when labs results are available for review
13.10.2 Provide alerts for critical values/results
13.10.3 Allow user to designate delegates to ensure timely review

13.11 Reportable?
13.11.1 Generate prompt to report or provide auto-report function for designated results

13.12 Conditions reporting
13.12.1 Transmit appropriate patient-level clinical information (e.g. results) to public health notifiable condition programs

13.12.2 Create log of reportable events

13.12.3 Conform to requirements for surveillance/reporting of notifiable conditions

13.12.4 Enable the automated transfer of required information to and from local disease specific registries and other notifiable registries

13.12.5 Support identification of patients related by living condition, relationship, employer/work location to support surveillance analysis and reporting

13.12.6 Provide the ability to capture and update public health reporting guidelines

**Business Process #14: Review Lab Results**

14.1 Receive lab results and review

14.1.1 Provide ability to group and prioritize results based on user-define criteria

14.1.2 Provide ability to assign results to specific practitioner for review

14.1.3 Indicate lab result status and details (e.g., reviewed (time/date/user) or pending review, etc.)

14.1.4 Bundle labs for review by lab order (e.g., review CBC panel in entirety for individual patient)

14.1.5 Provide alert if lab result has not been acted upon within user-designated window

14.1.6 Reconcile lab results received with log of lab orders

14.1.7 Provide alert if results are overdue

14.1.8 Provide ability to drill down to patient record from results

14.1.9 Support graphical or table-based comparison of trends

14.1.10 Provide alert or flag based on standard of care or best practice

14.2 Follow-up required?

14.2.1 Provide ability to initiate referral from follow-up

14.2.2 Provide ability to refer to/alert additional staff

14.2.3 Indicate status of review (reviewed and completed, follow-up needed, etc.)

14.2.4 Capture additional notes as needed

14.3 Provide new orders or follow standing orders
14.3.1 Provide rule-based prompts or guidelines, i.e., clinical decision support based on standards of care, protocols, etc.
14.3.2 Allow input and transmission of orders
14.3.3 Provide notification of new orders
14.3.4 Allow sign-off of new orders
14.3.5 Support tracking of orders
14.4 Patient follow-up
   14.4.1 Flag patient for follow-up and track progress
   14.4.2 Provide time-based alerts for follow-up based on user-defined window
14.5 Update patient record and ensure follow through
   14.5.1 Capture notes, follow-up actions, changes to treatment plan, new orders, etc.
   14.5.2 Receive and store data elements of lab results in patient record
   14.5.3 Provide ability to create/view charts and graphs
   14.5.4 Print results, notes, and other pertinent medical information
   14.5.5 Link to health maintenance
   14.5.6 Generate end of day report to flag outliers (e.g., pending orders, overdue lab results, abnormal results not reviewed, follow-up not complete, etc.)
   14.5.7 Validate that results are linked to correct patient (i.e., cross-reference specimen identification or other method)

Business Process #15: Directly Observed Therapy
15.1 Receive physician’s orders
   15.1.1 Alert appropriate staff of order for DOT using role or user designation
   15.1.2 Provide required information needed to clarify order (e.g., contact information for originator)
   15.1.3 Indicate status of order
   15.1.4 Provide ability to forward order
   15.1.5 Allow user to print orders
15.2 Contract signed?
   15.2.1 Allow user to view signed contract and associated details
   15.2.2 Alert user of missing documentation
15.3 Explain the program
   15.3.1 Allow user to select materials based on language/culture
15.3.2 Document what materials were given and when
15.3.3 Capture level of understanding

15.4 Complete contract for DOT
15.4.1 Provide standard template for contract
15.4.2 Auto-fill contract fields from patient record
15.4.3 Document "Refusal to Sign" and provide appropriate notifications
15.4.4 Provide patient with copy of contract and schedule
15.4.5 Connect to Case Management/Surveillance module in EHR
15.4.6 Allow user to create new treatment schedule

15.5 Assess patient
15.5.1 Provide protocol-based screening form/template for patient assessment
15.5.2 Provide alerts for contraindications and/or required follow-up based on findings

15.6 Confirm orders and instruct patient regarding any regimen changes
15.6.1 Provide access to physician's orders
15.6.2 Capture patient signoff of order
15.6.3 Provide access to patient contract, schedule, incentives, treatment plan, and clinic appointments
15.6.4 Allow user to append additional information to appointments (e.g., updated location, etc.)
15.6.5 Allow user to reschedule appointments
15.6.6 Allow user to confirm and update allergy status, intolerance, and adverse reactions

15.7 Ensure correct amount and type of medication is prepared to take
15.7.1 Document medication with date/time/provider signature
15.7.2 Provide cumulative count of doses taken during specified timeframe
15.7.3 Link to inventory system to decrement dosage and document patient details for inventory reconciliation

15.8 Observe patient swallowing correct dosage of medication
15.8.1 Document medication taken/refused, time/date, location, etc.
15.8.2 Differentiate between administered and observed

15.9 Update chart and document any other pertinent findings
15.9.1 Allow user to access treatment schedule
15.9.2 Prompt user to confirm appointment if outside of treatment window
15.9.3 Provide ability to create letter or other communication to document that treatment is complete
15.9.4 Capture notes of visit including findings, changes to appointments, etc.
15.9.5 Capture patient data from remote devices or web-based UIs and integrate data into the patient's record
General System Requirements

There are a number of general requirements that are not business process specific, but are important from the perspective of overall system functioning. This section includes general requirements that describe the overall system capabilities to support an electronic health records system.

General Characteristics

1.1 Provide a stable and highly available environment
1.2 Provide a user friendly interface that is consistent throughout the system

Data Capture

2.1 Accept data from multiple input methods including; paper, online web forms, PC asynchronously, PC synchronously, interactive voice response, bar code, RFID
2.2 Enter the value desired directly or from a drop down table of valid values through standard mouse selection procedure
2.3 Allow user to designate mandatory data fields and formats
2.4 Support real time data entry validation and quality control
2.5 Flag incomplete fields/forms
2.6 Provide appropriate calculations at time of data entry
2.7 Log transactions at time of data entry
2.8 Maintain transaction log history
2.9 Provide asynchronous and synchronous data synchronization

Integration

3.1 Support multiple versions of interchange standards
3.2 Incorporate clinical data and documentation from external sources and maintain content as originally received as required
3.3 Allow export of data from EHR to personal health record, web portal, other providers, financial systems, etc.
3.4 Provide patients with access to electronic health record through web portal, kiosks, etc.
3.5 Support integrated patient care including collaborative care and case management across different healthcare settings
3.6 Provide the ability to use registry services and directories to identify patients, providers, payers, health plans, etc.

Reporting

4.1 Provide reporting capabilities (define, generate, distribute)
4.2 Provide the ability to export or retrieve data required to evaluate patient outcomes, quality of care, performance, and accountability
4.3 Aggregate data from patient EHRs per user-defined criteria

Security/Privacy

5.1 Support definitions of roles and assigned levels of access, viewing, entry, editing and auditing
5.2 Require user authentication
5.3 Provide flexible password control to align to national policy and standard operating procedure
5.4 Create and maintain a registry of all personnel authorized to access the system that is accessible only by a system administrator
5.5 Restrict user passwords to compliant combinations of characters of a standard minimum length
5.6 Track user password revisions and force users to change their passwords at determined intervals
5.7 Terminate log-on screen after determined number of unsuccessful tries by a user to login
5.8 Automatically log off idle workstations after a predetermined period of time
5.9 Prevent a user from being logged on to multiple workstations at the same time
5.10 Trace actions performed to the unique actor and provide audit reporting/change histories
5.11 Create unique user rights based on function, screen displays information type, etc.
5.12 Store data centrally in a physically secure location
5.13 Support secure data encryption and exchange
5.14 Fully comply with patient privacy standards and requirements in accordance with a user’s scope of practice, organizational policy, or jurisdictional law

5.15 Maintain provider information as required including full name, specialty, address and contact information

5.16 Allow user to obscure data and mask parts of the electronic health record from disclosure

**System Administration**

6.1 Allow administrator(s) to maintain data masters

6.2 Allow system administrator to create user accounts and define/update specific permissions and levels of access

6.3 Allow system administration by local staff

**Technical Design**

7.1 Support ability to choose data entry devices and form factors

7.2 Allow users to access the system at all levels/locations

7.3 Software development life cycle should be well described and documented

7.4 Enable electronic data interchange (EDI)

**System Access and Navigation**

8.1 Allow user to access any allowed function from any workstation on the system

8.2 Provide access to user screens through the use of menus and appropriate icons

8.3 Allow user to move easily from one screen to another utilizing appropriate icons or function keys

8.4 Support user-defined information views

**Reliability and Recovery**

9.1 Provide query response time within designated tolerances

9.2 System must be made available within a designated timeframe (e.g., 15 minutes) in the event of a system failure

9.3 System must be restored to its condition of no more than one hour before corruption or system failure occurred
9.4 Archive and retrieve data and documentation as required

Workflow

10.1 Allow user to view workflows for orders, reviews, etc.
10.2 Provide the ability to create and update workflow control rules
10.3 Provide the ability to create and manage workflow (task list) queues
10.4 Allow routing of notifications and tasks based on system triggers
10.5 Support escalation, redirection, and reassignment of workflow
10.6 Provide ability to designate roles/users for notifications

Miscellaneous

11.1 Generate and assign unique record numbers
11.2 Enable flexible search criteria for accessing transactions
11.3 Support multiple languages
11.4 Generate and print forms
11.5 Support access through mobile technology
11.6 Capture electronic signatures
11.7 Provide ability to scan documents (e.g., consent forms, insurance/eligibility documentation, and proof of identity) and link to client or patient record
11.8 Maintain patient record, notes, and results in chronological order
11.9 Provide support for different types of data and associated units and precision
11.10 Allow the creation, retrieving, updating & reporting of structured and unstructured data
11.11 Apply changes in terminology to all new clinical content
11.12 Support management of business rules
11.13 Provide the ability to create, import, or modify decision or diagnostic support rules
11.14 Trigger billing system/procedures
11.15 Capture ICD9/ICD10 and procedure codes
Appendix A: Glossary of Business Process Terms

**ACTIVITY.** A generic term for the work that is performed in the business process. The types of activities are task and sub process.

**AUTOMATING.** Attempting to reduce an existing manual job to a set of computer programs that can replace the existing manual effort with the minimum of human effort or understanding.

**BEST PRACTICE.** A technique or methodology that, through experience and research, has shown to reliably lead to a desired result.

**BUSINESS PRACTICE.** Habitual or customary actions or acts in which an organization engages. Also used in the plural to describe a set of business operations that is routinely followed.

**BUSINESS PROCESS.** A set of related work tasks designed to produce a specific desired programmatic (business) result. The process involves multiple parties internal or external to the organization and frequently cuts across organization boundaries.

**BUSINESS PROCESS ANALYSIS.** The effort to understand an organization and its purpose while identifying the activities, participants and information flows that enable the organization to do its work. The output of the business process analysis phase is a model of the business processes consisting of a set of diagrams and textual descriptions to be used for design or redesign of business processes.

**BUSINESS PROCESS REDESIGN.** The effort to improve the performance of an organization's business processes and increase customer satisfaction. Business process redesign seeks to restructure tasks and workflow to be more effective and more efficient.

**BUSINESS RULES.** A set of statements that define or constrain some aspect of the business process. Business rules are intended to assert business structure or to control or influence the behavior of the health agency (business).

**CONTEXT.** Organizational groupings or entities involved in the business process and how they relate to one another to achieve the goals and objectives of the process.

**CRITICAL TASK.** An action or set of actions that adds an identifiable value to a given business process objective.

**CUSTOMER.** Groups or individuals who have a business relationship with the organization—those who receive and use or are directly affected by the services of the organization. Customers include direct recipients of treatment and services, internal customers who provide services and resources for final recipients and other organizations and entities that interact with an LHD to provide treatment and services.

**ENTITY.** A person or a group of people who performs one or more tasks involved in a process. The entities are the participants in the process. Entities are represented by circles in context diagrams.
FRAMEWORK. A defined support structure in which other components can be organized and developed. A logical structure for classifying and organizing complex information. A system of rules, ideas or principles that provides a unified view of the needs and functionality of a particular service.

GOAL. The major health goal that the business process supports. The goal is the end state to be achieved by the work of the health agency and should be defined in terms of the benefits provided to the community/population or individual/client.

INFORMATION SYSTEM. A tool that supports work.

INPUT(S). Information received by the business process from external sources. Inputs are not generated within the process.

LOGICAL DESIGN. Logical design describes textually and graphically how an information system must be structured to support the requirements. Logical design is the final step in the process prior to physical design, and the products provide guidelines from which the programmer can work.

OBJECTIVE. A concrete statement describing what the business process seeks to achieve. The objective should be specific to the process such that one can evaluate the process or reengineer the process and understand how the process is performing towards achieving the specific objective. A well-worded objective will be SMART (Specific, Measurable, Attainable/Achievable, Realistic and Time-bound).

OPERATION. A task series that completes a transaction.

OUTCOME. The resulting transaction of a business process that indicates the objective has been met. Producing or delivering the outcome satisfies the stakeholder of the first event that triggered the business process. Often, measures can be associated with the outcome (e.g., how much, how often, decrease in incidents, etc.). An outcome can be, but is not necessarily, an output of the process.

OUTPUT(S). Information transferred out from a process. The information may have been the resulting transformation of an input, or it may have been information created within the business process.

RESULT. A task output that may be used in one of three ways: (a) as an input to the next sequential step, (b) as an input to a downstream step within a task series; or (c) as the achievement of an organizational objective.

REQUIREMENTS. The specific things the information system must do to make the process efficient and achieve its purpose.

REQUIREMENTS DEFINITION. The purpose of requirements definition is to refine our understanding of the workflow and then to define database outputs needed to support that work. Requirements definition serves to specifically define the functionality to be supported. In addition, the physical constraints are examined, and the specific project scope determined. Requirements definition answers the question: “How would you see information systems supporting Task X?”
REQUIREMENTS DEVELOPMENT METHODOLOGY. A logical, step-wise approach to think through the tasks that are performed to meet the specific public health objectives (analyze business processes), rethink the tasks to increase effectiveness and efficiency (redesign business processes), and describe what the information system must do to support those tasks (define system requirements).

STAKEHOLDER. A person, group, or business unit that has a share or an interest in a particular activity or set of activities.

SUBPROCESS. A process that is included within another business process.

TASK. A definable piece of “work” that can be done at one time; i.e., what happens between the “in-box” and the “out-box” on someone’s desk. A business process is made up of a series of work tasks.

TASK FLOW DIAGRAM. Graphical description of tasks showing inputs, processes, and results for each step that makes up a task.

TRANSACTION. Information exchanges between entities. May also be the exchange of goods (e.g., a vaccine or payment) or services (e.g., an inspection) between two entities. Transactions are represented by arrows in context diagrams.

TRIGGER. Event, action, or state that initiates the first course of action in a business process. A trigger may also be an input, but not necessarily.