Fundamentals of Workflow Analysis and Process Redesign

Unit 10.5a

Process Analysis

Welcome to the Process Analysis unit. This unit is from the Fundamentals of Health Workflow Process Analysis and Redesign component. In two parts, this unit covers the background and methodology for process analysis.

Objectives

- Describe the purpose of Process Analysis
- Describe skills and knowledge necessary for Process Analysis
- Perform a process analysis for a given clinic scenario
- Given results of a process analysis draft a summary report.
- Given results of a process analysis identify desired electronic medical record functionality.

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After successful completion of this unit, you should be able to:

- Describe the purpose of Process Analysis
- Describe skills and knowledge necessary for Process Analysis
- Perform a process analysis for a given clinic scenario
- Given results of a process analysis draft a summary report.
- Given results of a process analysis identify desired EMR functionality.

Topics – Unit 10.5

- Objectives of Process Analysis
- Process Analysis skills and knowledge
- Steps for Process Analysis
- Clinical Practice Processes
- Process Variations and Exceptions
- Identifying EHR functionality from Process Analysis

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The six topics covered in this unit include:

Objectives of Process Analysis

Process Analysis skills and knowledge

Steps for Process Analysis

Clinical Practice Processes

Process Variations and Exceptions

Identifying EHR functionality from Process Analysis

You can only elevate individual performance by elevating that of the entire system.

- W. Edwards Deming

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Healthcare is comprised of individuals working in processes. As W. Edwards Deming stated, the way to consistently improve the performance of individuals is to improve the system or process. Process Analysis is a way to examine a process and identify these opportunities for improvement.

There are different ways to analyze processes, often the methods concentrate on one or more process aspects. The process analysis methodology covered in this unit focuses on 1) identifying processes in use at a clinic, and 2) translating information about the processes into a list of Electronic Medical Record functions that are needed at that clinic. The purpose of this type of process analysis is to make the best match possible between an EMR and a clinic and to optimally leverage health information technology to improve patient care.

Definitions

Definitions:
- Process
- Process Analysis
- Process Improvement

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Before we start, and in a way, as an introduction, we will cover the following definitions:

•Process

•Process Analysis

•Process Improvement

Process

a series of actions or operations conducing to an end

a continuous operation or treatment

process. (2010). In *Merriam-Webster Online Dictionary*.
Retrieved July 17, 2010, from http://www.merriam-webster.com/dictionary/process

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Merriam-Webster defines process as a **series** of **actions** or **operations** conducing to an end; especially, a **continuous operation** or treatment. Similarly, the American Society for Quality defines Process as "a set of interrelated work activities characterized by a set of specific inputs and value added tasks that make up a procedure for a set of specific outputs".

The word Procedure is related to process. ASQ defines a **Procedure** as: The steps in a process and <u>how these steps are to be performed</u> for the process to fulfill a customer's requirements; usually documented.

Important characteristics of Processes for our work are that processes have 1) sequence or order, 2) steps, also called activities, actions, operations, or tasks, 3) inputs and outputs, and 4) happen over and over, i.e., are ongoing. For example, appointment scheduling is a common process in healthcare facilities.

Process Analysis

1) understanding process elements and the relationships between them

AND

2) identification of opportunities for improvement

Merriam-Webster provides several definitions for the word analysis. The one most relevant for our work here is: an examination of a complex process, its elements, and their relations or a statement of such an analysis.

So, a **Process Analysis** is an examination of a process to understand it's elements such as steps and actions;   and the relationships between them, including:

• the order of steps,

•what things can be done in parallel versus sequentially,

•who or what performs the steps, and

•maybe where they are performed.

However, because the goal of our "analysis" is to ultimately improve a process, we also look for things like gaps, lack of conformity with best practice, undue delays, redundancy, rework, and lack of efficiency. For us, the combination of 1) understanding process elements and the relationships between them AND **2)** identification of opportunities for improvement comprise Process Analysis !

analysis. (2010). In *Merriam-Webster Online Dictionary*. retrieved July 17, 2010, from http://www.merriam-webster.com/dictionary/analysis

Process Improvement

Making changes to a process to make it better in some way

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If we define a Process as a continuous **series** of **actions** or **operations** conducing to an end, then Process improvement is making changes to a process to make it better in some way. In healthcare, the Institute of Medicine listed six areas or goals for healthcare quality improvement: Safe, Effective, Efficient, Timely, Patient centered, and Equitable. We improve processes by analyzing them and identifying things that could be made better.

Process Analysis Skills

- At ease with data and data system concepts
- At ease with clinical workflow concepts
- Able to communicate such concepts
- Able to identify problem areas

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DeMarco further outlines Process analysis skills helpful to overcome the challenges inherent in Process Analysis. These are:

- Knowledge of data and data system concepts
- Knowledge of clinical workflow concepts, and the
- Ability to communicate these concepts

We added the ability to identify problem areas.

Framework for Process Analysis

1. Form an objective picture of the process, process variations and exceptions
2. Translate this information into a list of Electronic Medical Record functions needed at a clinic

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There are many different methods of analyzing processes, and they have been contributed from different fields, including business, quality improvement, industrial engineering, cognitive science, computer science, and informatics. It is impossible to review all of the perspectives and methods in this unit.

We take a very pragmatic approach in the framework presented here. Our approach is based on 1) forming an objective picture of clinic processes, process variations, and exceptions and 2) translating information about the processes into a list of Electronic Medical Record functions that are needed at that clinic. The purpose of this type of process analysis is to make the best match possible between an EMR and a clinic and to optimally leverage health information technology to improve patient care.

The unit on Process Redesign focuses on identify areas for improvement and ways to change clinic processes to improve health care.

Steps for Process Analysis

1. Start with process Inventory & diagrams
   - Context diagram showing clinic functions
   - Flowchart for each process
2. For each process, list
   - Variations applicable to the clinic
   - Exceptions
3. Report findings
   - Major observations
   - EHR functionality necessary to support clinic functions
   - Opportunities for improvement

Like process diagrams, process analysis can occur at different levels. A detailed process analysis examines each process, usually using a process diagram, and looks for clues to inefficiency, redundancy or opportunity for error. An analysis at this level might also collect some data about how the process operates, for example, time from patient check-in to time seen by the provider, as well as interview practice providers and staff to understand their perceptions of opportunities for improvement. While this level of detail in process analysis is often necessary to trouble shoot problems, it is not routinely necessary for the task of identifying an EHR that is a good match for a particular a clinic. For this, we recommend a less detailed approach. By less detailed, we mean identifying the major things that, based on a clinic's core functions, the EHR needs to do and understanding how the clinic does each.

We adopt the less detailed approach here. 1) Start with process Inventory & process diagrams (Units 2 and 3). These should provide a context diagram showing clinic functions and a Flowchart for each process. 2) For each process, list the process variations applicable to the clinic as well as exceptions that often occur. For example, for a patient visit, a common exception would be that a patient cancels or does not show up. The last step in Process analysis is 3) Report findings. The findings from a process analysis would include -- Major observations, -- a list of EHR functionality necessary to support clinic functions, and --Opportunities for improvement (technology assisted and otherwise).

Process Inventory

- Identification of main clinic processes
- Analyst works with clinic leadership to identify high priority processes
- Select processes are analyzed
  - Some can't be improved
  - Some the gain is too small
  - Some can be improved, but by means other than use of health IT

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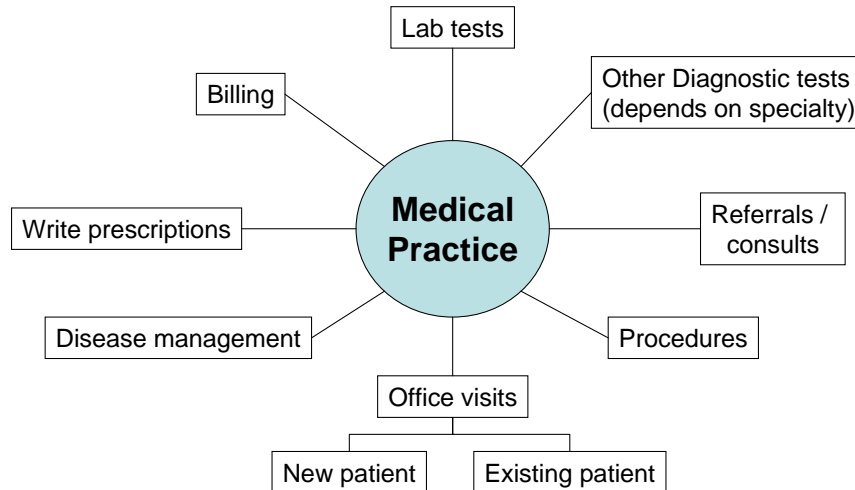Version 1.0/Fall 2010

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A separate unit mentioned identification of major processes in use at a health care facility. After the process are listed, the analyst works with leadership at the healthcare facility to identify those that are of high priority for analysis and improvement. All of the processes can't be assessed. Some can't feasibly be improved with the available resources, for others the gain would be too small to make the effort worthwhile. Still others can be improved, but by means other than use of health IT.

After the processes for analysis have been identified, the analyst, working with people from the clinic creates diagrams of the processes. These graphical representations of the process are used in the process analysis and redesign. We start with a process inventory and diagrams because:

1. Sometimes they are all that is needed

2. They point to areas where different types of objective information may be needed

A separate unit covers creating process diagrams. This unit assumes that students are familiar with at least one method of creating a graphical representation of a process, for example, a flow chart.

Practice Functions

Lab tests

Billing

Other Diagnostic tests (depends on specialty)

Write prescriptions

Medical Practice

Referrals / consults

Disease management

Procedures

Office visits

New patient

Existing patient

Practices have a set of core functions. Some functions are performed by most practices, like billing, prescription writing, office visits, and referrals. Other functions vary according to the type of practice, for example, a small practice may draw blood but may not perform any lab tests, while large practices may have equipment to perform common blood and urine based lab tests. The lab tests, other diagnostic tests, and procedures vary by practice size and by specialty.

The first step in Process Analysis is understanding the main processes that are performed by a practice. A context diagram, like the one on this slide, should always be created to make sure the analyst and clinic staff working with the analyst are aware of the main tasks that a clinic performs. As a context diagram, the depiction is purposely at a very high level, has less than 20 or 30 boxes, and usually fits on one page of paper. The purpose of this diagram is to **"understand the whole"**. A diagram like this shows areas where data exchange is needed and depicts the main processes at a clinic or other health care facility.

Practice Process List

- Patient check-in
- Patient visit
- Prescriptions
- Assimilating received documentation
- Labs
- Other Diagnostic Tests
- Referral / consult
- Disease Management
- Billing

A process inventory is a list of the main processes used by a practice. If there are more than 20 or 30 processes on your inventory for a practice, you may be working at too detailed of a level. If the practice consists of multiple specialties, you will have a larger number of processes on the inventory, and the analysis will take longer.

For each process, the main activities, roles, locations, flow, and information needs are identified, either in writing or by using process diagrams as described in other units. These steps are preparatory to Process Analysis and are covered in separate units.

Process Inventory

- A process inventory is a list of the main processes used by a practice.
- Specifies common variations and exceptions.

An inventory should also specify which of the common process variations are in use at the practice. For example, virtually all practices need to obtain biological samples and have the samples analyzed, however, how and where the lab samples are processed varies among clinics. The common variations are 1) all lab tests processed and analyzed at the clinic, 2) blood drawn at the clinic but samples sent to central lab for processing, or 3) some of both depending on type of sample and tests that are needed on the sample. The workflow, data flow, and information needs for each of these variations differs.

In the following Scenario, which of the following process variations are used?

"PA James tells Patient Paul that there is an unusually high number of strep cases in the community over the past month, and that based on the appearance of his throat that he may have strep throat, and that she would like to swab his throat and do a rapid strep test. Patient Paul agrees. PA James swabs his throat with a long cotton tipped swab, and does the test. Five minutes later, PA James returns and tells Patient Paul that the test was positive…"

In this Scenario, for the rapid strep test, the practice is obtaining the sample (a throat swab) and performing the test in the clinic. Importantly, most clinics will use multiple process variations. The occurrence of multiple variations is a signal to the analyst that 1) the EHR must support multiple options, and 2) that there are criterion for making the decision of which variation is used, and that the EHR will likely need to show different screens or otherwise facilitate the process variants based on the criterion. Process choices, sometimes called branches, indicate important functionality needed in an EHR.

Process Variations and Exceptions

Variations: processes used by the clinic

Exceptions: errors or common odd things
that com up during the process.

Process variations are processes used by the clinic, i.e., the way a particular clinic does something, the clinic's process. They are called variations because they vary from clinic to clinic. For example, some clinics only schedule appointments by phone, while others use online scheduling or both online and phone. There should be a process diagram for the variation or variations used by the clinic.

Process exceptions are errors or common odd things that happen up during the clinic's processes. Things like, a lab sample goes bad, or a patient has to leave the appointment early. You will most likely not have the time and resources to create process diagrams that include exceptions. They are important to note, because EHR functionality needs to cover expected exceptions, and needs to have a generic way to handle the unexpected.

On the following slides, we will list common process variations and exceptions for processes used by most clinics.

This concludes the first of two lectures for the Process Analysis unit.

You may go on to the second lecture or stop and return to the second lecture at a later time.