Curriculum Development
Centers Program

Awardee of The Office of the National Coordinator for
Health Information Technology

Component 10 –
Fundamentals of Workflow
Process
Analysis and Redesign

Unit 6-3

Process Redesign

This material was developed by Duke University, funded by the Department of Health and Human Services, Office of the National Coordinator for Health Information Technology under Award Number IU24OC000024.

Objectives

- Identify the factors that optimize workflow processes in health care settings.
- Describe how information technology can be used to increase the efficiency of workflow in health care settings.
- ID aspects of clinical workflow that are improved by EHR
- Propose ways in which the workflow processes in health care settings can be redesigned to ensure patient safety and increase efficiency in such settings.
- Use knowledge of common software functionality to inform a process redesign for a given clinic scenario.

Topics – Unit 10.6

- Objectives, Skills and Knowledge for Process Redesign
- Common process problems
- Solutions to process problems
- Human-Centered Design Framework applied to Process Redesign
- Matching common clinic system functionality to solve process problems

Big D and Little d

- For large software systems such as electronic health records, we distinguish two types of design:

  D – design of the software itself

  d – configuration of the system to make it work for a particular clinic's processes

To select an electronic health record that matches well with clinic needs and to configure one once it has been purchased, you need to be familiar with the functionality of such systems.
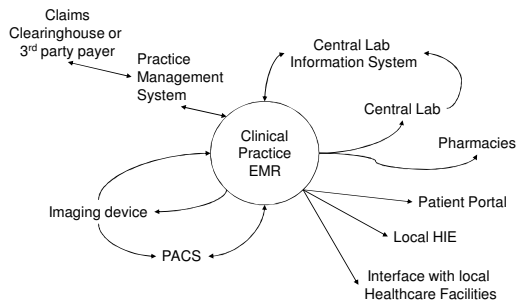

Common Software Interfaces in Small to Mid-size Clinics

Claims Clearinghouse or 3rd party payer

Practice Management System

Central Lab Information System

Central Lab

Clinical Practice EMR

Pharmacies

Patient Portal

Imaging device

Local HIE

PACS

Interface with local Healthcare Facilities

Practice Management System (PMS)

PMS systems handle clinic office functions

- Store
  - Patient demographic information
  - Provider information
  - Patient insurance information
  - Store contact information for third party payers
- Schedule appointments
- Perform billing tasks
  - Electronically
- Track status of claims
- Generate reports on stored information

PMS-EHR Workflow

- Pushed to EHR
  - Patient demographics captured at registration
  - Scheduled appointment in PMS
- Pushed to PMS
  - Diagnoses and services captured in EHR
    - For billing

Lab Information Management System (LIMS) Functions

LIMS is a general term for software that handles and automates the functions of a clinical or research laboratory

| | Electronic interface | |
	wants	Doesn't want
Tests done In-clinic	✓ ✓	✓ ✗
Tests not Done in clinic	✗ ✓	✗ ✗

LIMS Functionality

- Printing sample labels
- Sample tracking
- Lab instrumentation interface
- EMR/EHR interface
  - Ordering lab tests
  - Results reporting
- Lab quality control support
- Billing support

LIMS-EHR Workflow

- Pushed to LIMS
  - Lab tests ordered in EHR
  - Label printing enabled
- Pushed to PMS
  - Lab tests ordered in EHR
  - Codes for labs
  - For billing
- Pushed to EHR
  - LIMS lab test results

Imaging Functions

- When a clinic provides image-based diagnostic testing services, the imaging device will produce images
  - Static
  - Moving pictures
  - Both
- Images require storing and organizing,
  - Usually done by a Picture Archiving and Communications System (PACS)
- Clinics may have just an imager
  - Or may also have a PACS
- Images may be viewed in the imager software
  - Or through the EHR
  - Ifintegrated with an EHR

Imager-PACS-EHR workflow

- Image ordered in HER
- Order pushed to imager
- Imager creates images
- Pushes to PACS
- Images from imager or PACS
  - Viewable through EHR

Patient Portal

- Used for healthcare facilities to interact with patients
- Most offer self-service features
  - Appointment scheduling
  - Advance registration or payment
  - Viewing health data
  - Communicating with providers
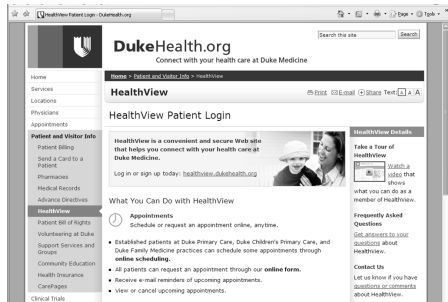- Can come with a clinic HER
  - Or be independent systems

Example Patient Portal

Screenshot from publically available website: http://www.dukehealth.org/

Health Information Exchange

- Ability to do this is one of the requirements of meaningful use
- Regional infrastructure that facilitates exchange of such health information

HIE Workflow

- Patient is seen in the local emergency department
- Information pushed to primary care provider
- Primary care provider refers a patient to a specialist
- Pushes relevant information to specialist
- Specialist pushes back documentation from the specialist visit
- Reportable disease documented in HER
- EHR pushes to local health department

The previous slides conclude the system functionality section of the unit.

The next several slides synthesize this unit on Process Redesign.

Process Redesign Example

A fairly new five-provider clinic has been in business for seven years. They have a practice management system in place, and they are fairly happy with it but are not determined to stay with that product. The diagnostic services that the clinic provides are blood counts from an in-house analyzer and urine dipstick (glucose, keytones, urine blood, protein, nitrite, pH, urobilinogen, bilirubin, leucocytes, and specific gravity, and pregnancy). Other blood-based samples and urine, are sent to the local office of a national laboratory testing chain for processing. Today, results are returned to the lab on paper sheets. The practice currently does not do ePrescribing but would like to.

Q1: Context Diagram
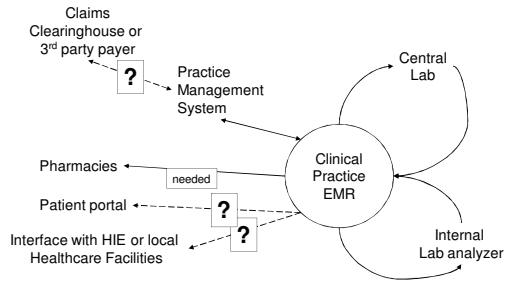
Claims Clearinghouse or 3rd party payer

?

Practice Management System

Central Lab

Pharmacies

needed

Clinical Practice EMR

Patient portal

?

Interface with HIE or local Healthcare Facilities

?

Internal Lab analyzer

Q2: Two things about which you need more information to make redesign recommendations

– Local HIEs or health facilities with which you need an interface?
– Patient portal?
– Electronic claims?

Q3: Two redesign recommendations and what EHR functions are needed?

1. ePrescribing, requires EHR with this functionality
2. Integration with existing PMS or EHR that has PMS functionality and migrating data from current PMS will be harder implementation, but workflow and ongoing maintenance may be easier
3. Patient portal to increase self-service opportunities
4. Automate appointment reminders

Q4: System interfaces

- PMS
- Internal lab analyzer
- Central lab
- ePrescribing
- Patient portal
- Need more information to know about HIE and interfaces with local healthcare facilities

Summary

You are now ready to
- Identify the factors that optimize workflow processes in health care settings,
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- ID aspects of clinical workflow that are improved by EHR,
- Propose ways in which the workflow processes in health care settings can be redesigned to ensure patient safety and increase efficiency in such settings, and
- Use knowledge of common software functionality to inform a process redesign for a given clinic scenario.