Curriculum Development
Centers Program

Component 10 – Fundamentals of Workflow Process
Analysis and Redesign

Unit 6-2
Process Redesign

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 HER
- 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

Human-Centered Design (HCD)

HCD is an approach to systems design and development that aims to make interactive systems more usable by focusing on the use of the system and applying human factors/ergonomics and usability knowledge and techniques.[4]

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

Decisions about how electronic health record software is used in the clinic workflow heavily impacts how clinic providers and staff interact with the system.

Human-Centered Design Principles
ISO 9241-210[4]

a) The design is based upon an explicit understanding of users, tasks and environments
b) Users are involved throughout design and development
c) The design is driven and refined by user-centered evaluation
d) The process is iterative
e) The design addresses the whole user experience
f) The design team includes multidisciplinary skills and perspectives

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ISO HCD Framework[4]
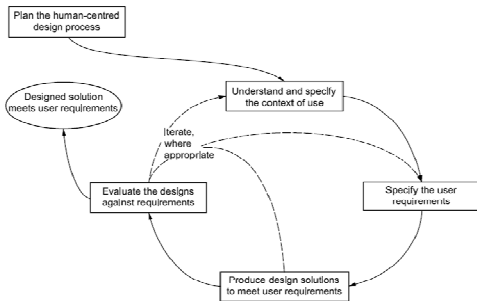
Design Solutions

- Methods
  - Copying and further developing other designs
  - Logical progression from previous designs
  - Innovative creativity
- Perspectives
- Alignment

Design Methods

Copying and further developing other designs
- Design guidelines and standards
- Best practices from other industries
- Other clinics which have implemented EHR
- Other clinics which have a proven process that doesn't depend on EHR
- Prior quality improvement projects at your clinic
- Problems with current clinic workflows

Design Methods cont.

Logical progression from previous designs
- Gap Analysis between as-is and clinic's ideal
- Leveraging technology, i.e., automation
- Workflow diagram analysis

Design Methods cont.

Innovative creativity
- Brainstorming
- Parallel Design
- Storyboarding
- Affinity Diagrams
- Organizational Prototyping

Design Perspectives

- Patient
- Clinic providers and staff

Design Alignment

- Organizational structures
  - i.e., Roles, responsibilities, authority
- Available talent
- Physical layout
- Information flow
- Information use
- Regulatory requirements
  - Accreditation and "Meaningful Use"

Three Key Considerations

Emphasize impact of:
- Clinical decision support
- Physical layout
- System interfaces on workflow

Impact of CDSS on Workflow

- Information must be available when providers and staff need it
  - i.e., At the point of decision making
    - Are they logged into the system?
    - Do they need to be or will they be in front of a computer to get the alert?
    - Do they need to be with the patient?
    - Do they have what they need to act on the alert?
- Decision must be supported
  - Representation
  - Information
- Right place, right time, right resources

Impact of Physical Location on Workflow

- Location of computers
- Other office hardware
- Office lay-out:
  - Patient, provider and staff flow
  - Traffic congestion
  - Number of steps
  - Standing or sitting

Impact of System Interfaces on Workflow

- Common interfaces
  - Practice Management System for billing
  - Local lab systems
  - Imaging
  - Local hospital
  - Local Health Information Exchange
- Interfaces impact what information will be available electronically and when

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Review of New Process

- Providers and Staff look for:
  - Points of failure
  - Potential confusion
  - Bottlenecks
- Design Team considerations
- Technology Vendor's determinations:
  - Technology Leveraged
  - Pot holes

Summary

- Human-Centered Process Design
- Impact on workflow of:
  - Clinical decision support
  - Physical layout
  - System interfaces

References

1. Carlos Avina, *Community Health clinic Ole, Case Study*. Accessed on August 28, 2010, Available from http://www.rchc.net/Public/OHIT/ClinicProcessRedesign-PPT.pdf
2. Mansar, S.L., Reijers H.A, *Best Practices in business process redesign: validation of a redesign framework*. Computers in Industry 56 (2005) 457-471.
3. Coiera, Enrico, *Guide to Health Informatics, 2nd ed*. 2003. Hodder Arnold, London.
4. ISO 9241-210:2010(E) *Ergonomics of human–system interaction —Part 210:Human-centred design for interactive systems*.