



Curriculum Development  
Centers Program

---

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

# Fundamentals of Health Workflow Process Analysis and Redesign

## Process Redesign

### Lecture a

*This material Comp10\_Unit6a 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.*

# Process Redesign

## Learning Objectives

1. Identify the factors that optimize workflow processes in health care settings (Lecture a)
2. Describe how information technology can be used to increase the efficiency of workflow in health care settings (Lectures a, b)
3. Identify aspects of clinical workflow that are improved by EHR (Lecture b)
4. Propose ways in which the workflow processes in health care settings can be re-designed to ensure patient safety and increase efficiency in such settings (Lecture c)
5. Use knowledge of common software functionality and meaningful use objectives to inform a process redesign for a given clinic scenario (Lectures c, d, e)

# Process Redesign Topics – Lecture a

- Objectives and goals of Process Redesign
- Unproductive work
- Twenty seven strategies for optimizing processes
- An example of each optimization strategy

# Individual Performance

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

- W. Edwards Deming



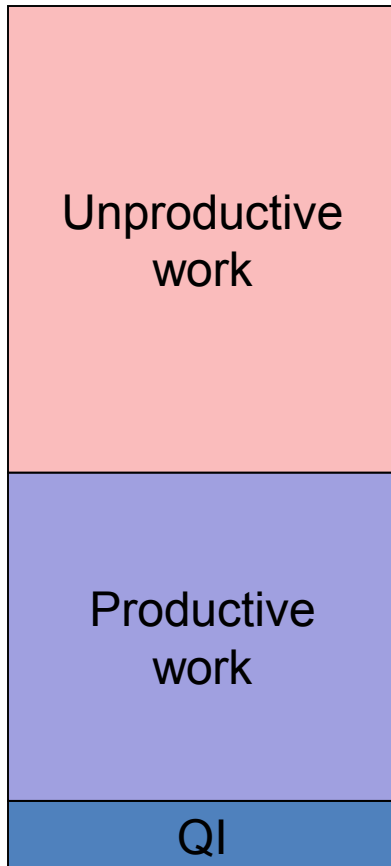
(Deming, 1982)

# Goals of Redesigning Processes

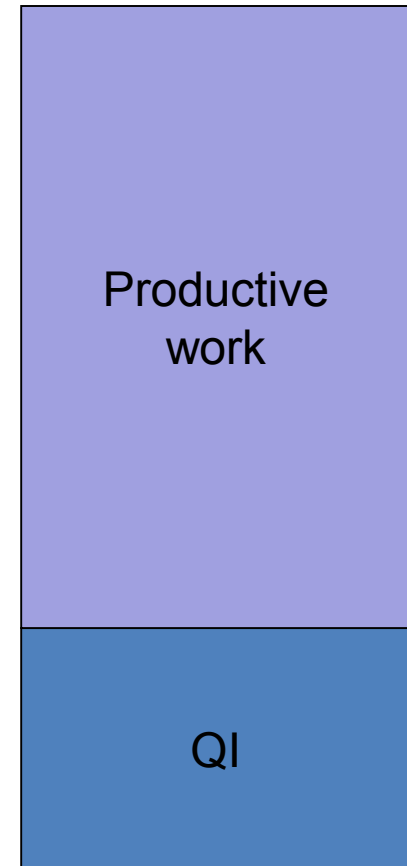
- Improving quality and safety of care
- Enhancing the patient's care experience
- Decreasing the cost of care
- Making clinic processes more efficient

# Performance

Typical Performance



Goal Performance



# Unproductive Work

## Tasks not necessary for providing patient care

- Waiting
- Transportation / unnecessary motion
- Doing things twice
- Errors
- Repetitive tasks
- People with higher level of training than necessary performing tasks

# Problem - Solution

Unproductive work = problem

Redesign strategies = solution



# See Things Right

Before you attempt to set things right, make sure you see things right.

– Blaine Lee

# Why not just implement technology?

- In a recent case study, introduction of technology accounted for 25% improvement in invoicing time
- Addition of process redesign in addition to technology resulted in 80% improvement
- Technology is often necessary, but is seldom sufficient

# Redesign Strategies

- Automation
- Buffering
- Centralization
- Control addition
- Control relocation
- Contact reduction
- Customer teams and case managers
- Empower
- Exception
- Extra resources
- Flexible assignment
- Integration
- Interfacing
- Knock-outs

# Redesign Strategies

(cont.)

- Numerical involvement
- Outsourcing
- Order-based work
- Order assignment
- Order types
- Parallelism
- Split responsibilities
- Task composition
- Task elimination
- Triage
- Trusted party
- Resequencing
- Specialist-generalist

# Optimization Method: Automation

- Design decisions determine the extent to which a given job, task, function or responsibility is to be automated or assigned to human performance
- Consider the relative capabilities and limitations of human vs technology
- Basing decisions solely on the capabilities of the technology is not advised

# Automation Examples

Opportunities to use computer systems to automate clinic processes:

- Triggering prescription refills
- Alerting clinicians to abnormal lab results
- Triggering planned assessments
- Subscribing to automatic information updates
  - Rather than waiting and requesting information when needed
  - Buffering

# Optimization Method: Centralization

- Centralization can mean common coordination of activities at multiple locations such that they are done the same way
- Can also mean carrying out tasks at one location rather than having them be carried out by multiple organizations or individuals

# Centralization Examples:

- Claims clearing house
- Assigning one person in the clinic to answer the phone



# Optimization Method: Control Addition

- Control addition means adding checks in a process
- Addition of a control step identifies errors before they have a negative impact
- Can be performed by a human or a computer

# Control Addition Examples

- Checking
  - Insurance eligibility
    - Planned procedure
    - Co-pay
    - Prescription
      - Prior to sending it home with a patient
  - Drug-to-drug interactions
    - Prior to writing a prescription
  - Drug allergies
    - Prior to writing a prescription

# Control Addition Examples (cont.)

- Counting sponges and instruments before closing a surgery site
- Double checking the name on the medication and the patient arm band prior to administration
- Marking the surgery site and confirming with the patient prior to surgery

# Control Relocation

- Control relocation is changing who performs a task, triggers a task to be done, or approves a task
- In principle, control relocation usually means pushing control to the “front line” or even to the customer

# Control Relocation Examples

There are several notable examples of control relocation in health care:

- Home monitoring devices
- On-line
  - Appointment scheduling
  - Data entry of patient information before a visit
- Patient portals that enable patients to share their health records

# Contact Reduction

## Decreasing the

- Number of times
- Length of contact
- Other resources devoted to customer contact

# Contact Reduction Examples

- Completion of patient information forms before a visit
- Automated appointment reminders
- Pushing tasks down to the lowest level of staff with appropriate training

# Care Teams & Case Managers

- Help customers navigate complexity
- Called case managers
- Care teams are similar



# Exception Handling

- Exception
  - A case that is somehow different from the rest
  - Is incomplete, has errors, special circumstances or special needs
- Exception handling:
  - Designing a process to handle the ordinary cases
  - “Shunting” the exceptions into a different work stream
- Frees the process to operate at maximum efficiency

# Exception Handling Examples

- Special process for contacting no-shows and rescheduling
- When one lab test in a batch is held up, available results are returned and others are reported when available

# Extra Resources

- Identifying those process steps that are known bottlenecks
  - i.e., Cause downstream delays
  - Adding extra resources at those steps to optimize the overall process
- Examples:
  - Staffing the front desk
  - Eliminating provider wait time

# Flexible Assignment

- “Hedging your bet”
  - Minimizing risk
- Things might not always work out
- Flexible assignment
  - Not backing yourself into a corner
- Example:
  - Hiring a medical office assistant who can also do blood draws in case having nurses draw blood causes an imbalance in workload

# Integration

- Designing clinic processes so that they mesh well with high volume/high interaction organizations
- Example:
  - Electronic interface with
    - Claims clearinghouse
    - Lab or high volume diagnostic service
    - Local hospital

# Interfacing

- Interfacing means providing common and standard interaction points for high volume interactions
- Example:
  - All labs come through a lab interface
  - On-line appointment scheduling
  - All documents are received in one place and processed

# Knock-out

- Fail fast
- Decisions that decrease workload should be made as early in the process as possible
- Examples:
  - Checking insurance eligibility first thing
  - Early initiation of insurance approval
  - Screening patients for issues requiring urgent care immediately

# As Few Hands as Possible

- Design processes to involve as few roles / people as possible
  - Eliminates unnecessary delays
  - Hand-offs
  - Communication errors
- Avoid splitting responsibilities across departments or organizations



# Outsourcing, Trusted Party

- If others can do things better or more efficiently than the clinic, consider outsourcing
- Examples:
  - Responding to requests for records
  - Using an external lab or diagnostic testing service
  - Hosting the medical record software and IT support

# Process Types

- Process analysis should have identified:
  - Main clinic work streams
  - Processes

# Eliminate Queues and Batching

- Queues and batches cause delays and wait time
- Instead assign work as it comes in to a person responsible for seeing it through to completion
- Example
  - Same day appointment guaranteed
  - Assigning a person to handle prescription refills that are called in by patients or pharmacies

# Parallelism, Resequencing

- Anything that can be done in parallel should be done in parallel
  - Rather than waiting for another step to be completed
- Resequence process steps to accomplish tasks as early in the process as possible

# Task Composition

- Some things are better done as smaller steps
- Other things may be easier to accomplish as a group of steps
- Example:
  - Processing incoming documents to be filed

# Task Elimination

- Getting rid of steps that do not add value
- Examples:
  - ePrescribing
  - Getting rid of redundant work
  - Automating steps

# Specialist-Generalist

- Some things are more efficient if a person handles only one type of issue
- Other situations require people who wear many hats
- Choice, specialist or generalist, depends on:
  - Training and skill level required for a task,
  - How easy a task is to do when it is not a main focus of someone's effort, and
  - Practice size / volume

# Triage

- Related to the specialist – generalist concept
- Means there is an initial sorting step
  - Things requiring specialist attention are sent to specialists
  - Others are sent where they are most efficiently handled
- Example:
  - Triage nurse in an emergency department assures that urgent patients get seen first, and less serious ones wait longer



# Types of Changes

- Some process changes are large:
  - “Breakthroughs”
  - Major shifts in the way work is done
  - Great improvements in performance
  - Usually takes more preparation, planning, and innovation
- Other changes are small incremental advances
- Many of the strategies discussed here can be either
- The former usually takes more preparation and planning, and of course innovation

# Process Redesign Summary – Lecture a

- Goals of process redesign
- Common process problems
- Process redesign strategies to address common process problems
- Clinic examples of redesign strategies

# Process Redesign

## References – Lecture a

### References

- Aviña, C (2010). *Community Health Clinic Ole, Case Study. Process Mapping & Documentation, Pre and Post EMR*. [PowerPoint slides]. Retrieved from <http://www.rchc.net/Public/OHIT/ClinicProcessRedesign-PPT.pdf>
- Deming, W. E. (1982). *Out of Crisis*. Cambridge, MA: MIT Press.
- Lee, B. (n.d.). *Manager/Leader Comments*. Retrieved February 27, 2012, from Virginia Commonwealth University website: <http://www.people.vcu.edu/~rsleeth/ManagerLeaderQuotes.htm>
- Mansar, S. L., & Reijers, H. A. (2005). Best practices in business process redesign: validation of a redesign framework. *Computers in Industry*, 56, 457-471. Retrieved from [http://is.tm.tue.nl/staff/hreijers/H.A.%20Reijers%20Bestanden/Mansar\\_2005\\_Computers-in-Industry.pdf](http://is.tm.tue.nl/staff/hreijers/H.A.%20Reijers%20Bestanden/Mansar_2005_Computers-in-Industry.pdf)

### Images

Slide 4: FDA. (n.d.). *W. Edwards Deming*. Retrieved February 27, 2012, from <http://commons.wikimedia.org/>

Slide 6: Aviña, C (2010). *Community Health Clinic Ole, Case Study. Process Mapping & Documentation, Pre and Post EMR*. [PowerPoint slides]. Retrieved from <http://www.rchc.net/Public/OHIT/ClinicProcessRedesign-PPT.pdf>