

Observation Research



STERLING
HEALTH IT CONSULTING



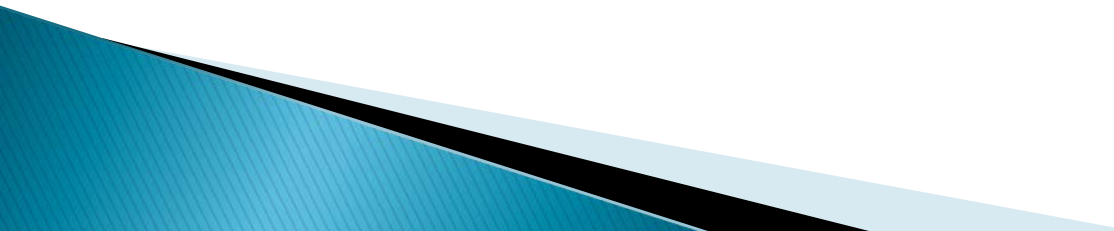
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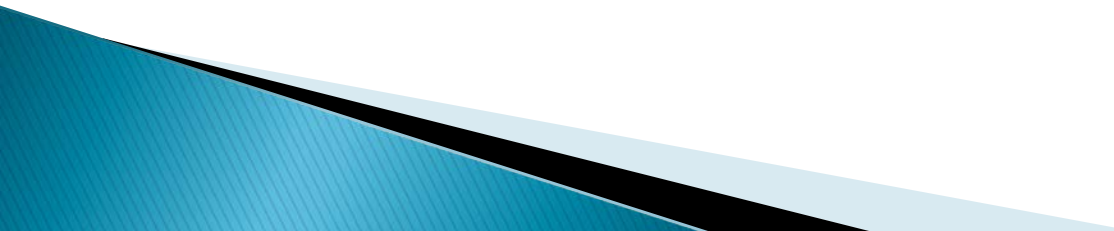
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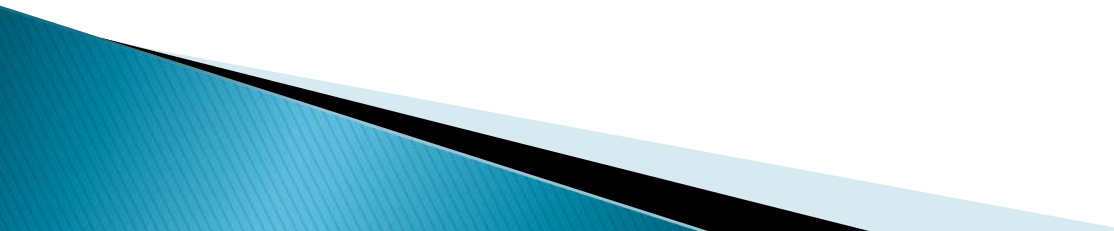
Acknowledgements

- ▶ AMIA Usability Task Force
 - ▶ HIMSS Usability Task Force
 - ▶ Janey Barnes, Jiajie Zhang – original learning module creators
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Purpose

- ▶ Observation research is used to learn about users, their goals, and their environments in the user's natural setting.
 - ▶ Also known as ethnographic research, naturalistic observation, contextual observation, field observation, field research, observation and interview.
- 

Goals of the Method

- ▶ Learn about users, their goals, and their environments in the user's natural setting.
 - ▶ Identify user's unmet needs i.e., opportunities.
 - ▶ Identify workarounds, and more important, the causes of the workarounds.
 - ▶ Implement solutions to avoid workarounds and/or incorporate good workarounds into workflow/technology processes
- 

Best Timing in the Software Development Lifecycle

- ▶ Takes place early in the process long before any screens are built and likely before features and functions are identified.
- ▶ No. Can't observe interactions that don't exist. Must observe early, middle, constant, always.

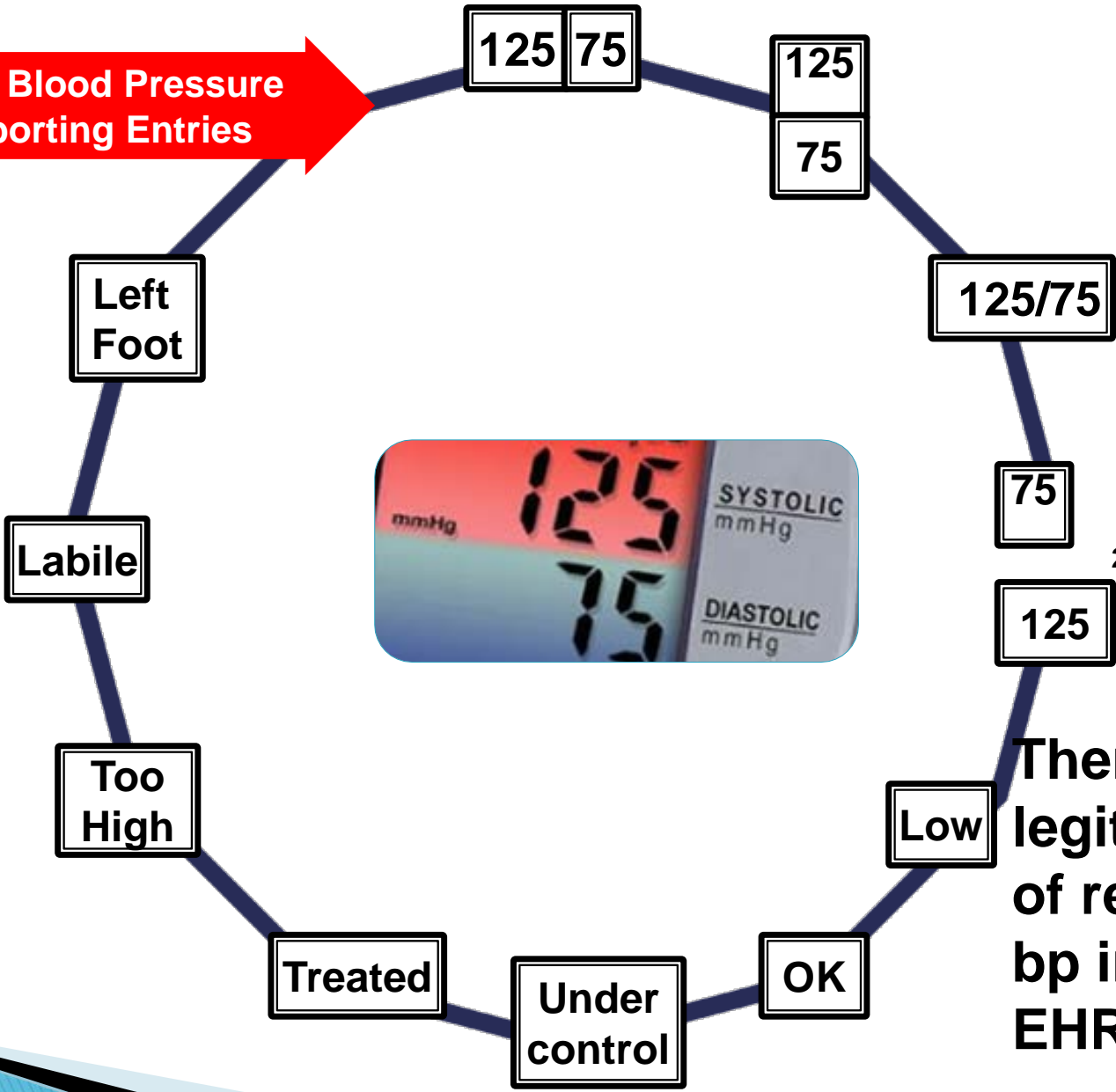
Exercise:

Hands, Heels, Ceiling

Example 1: A seemingly straightforward measure in an EHR

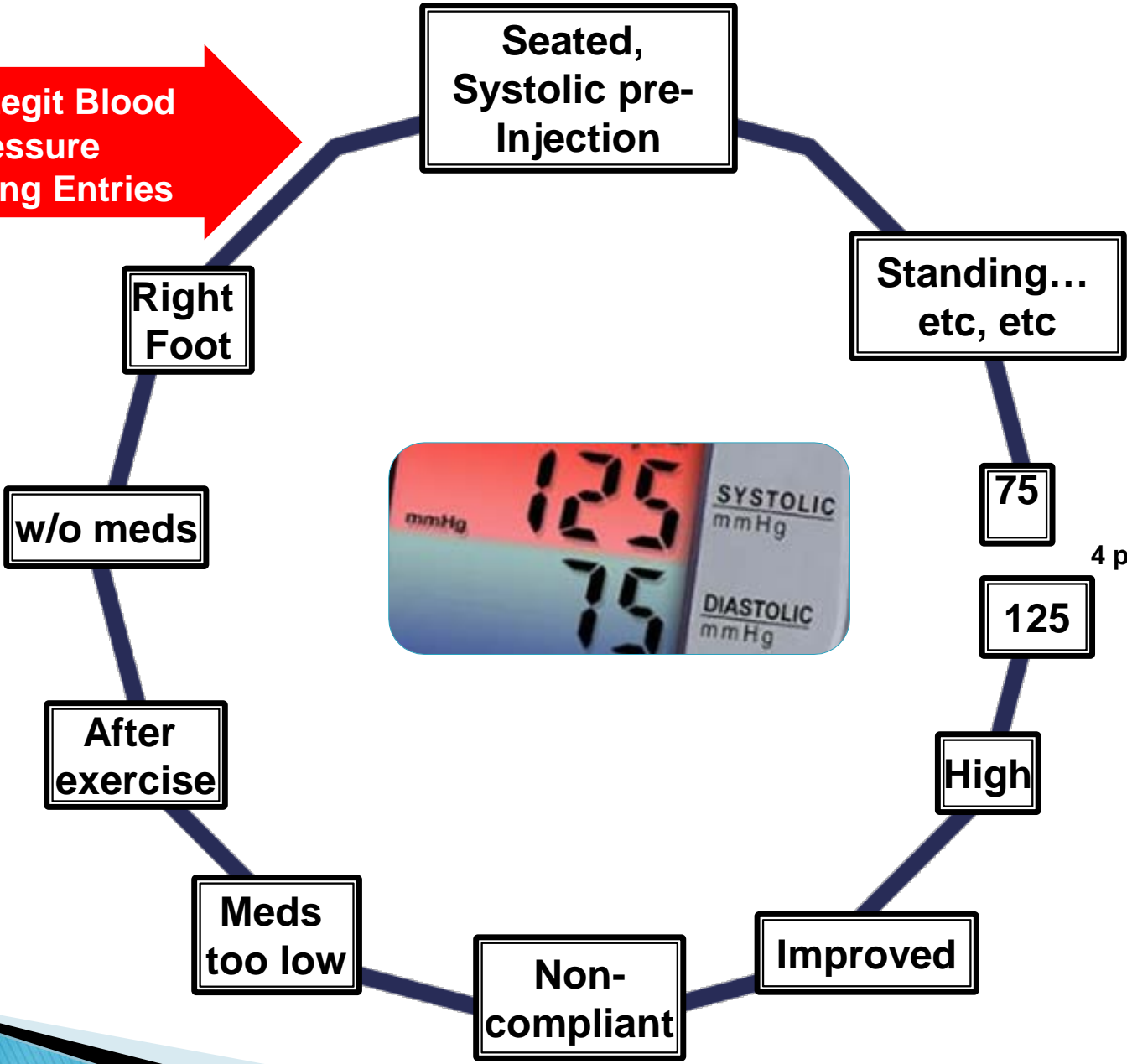


Legit Blood Pressure Reporting Entries



There are 40 legitimate ways of recording bp in standard EHRs

More Legit Blood Pressure Reporting Entries



4 pages later

**18
more**

WORKAROUNDS TO BARCODE MEDICATION ADMINISTRATION SYSTEMS: THEIR OCCURRENCES, CAUSES, AND THREATS TO PATIENT SAFETY

Koppel, Wetterneck, Telles, Karsh (JAMIA)



31 Causes of workarounds e.g.,

Unreadable medication–barcodes (crinkled, smudged, torn, missing, covered by another label)

malfunctioning scanners



Don't forget to scan label!

Causes:

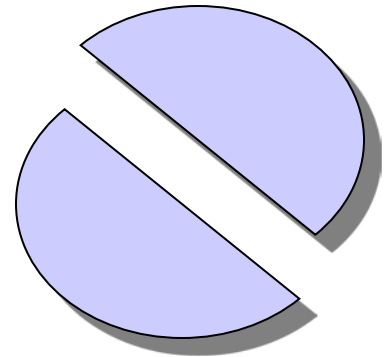
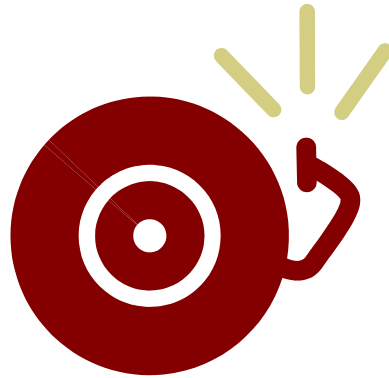
- ▶ unreadable or missing patient-ID-wristbands (chewed, soaked, wrong, missing)
 - Elderly
 - Children
 - Moving (unit or floor or nursing home)
- ▶ And: *Covered and *Contact isolation
- ▶ New: *Intentional (not in paper)

Causes

- ▶ Uncertain wireless connectivity
- ▶ Dumb programming
($2 \times 10 = 20?$)



Many other causes...



Now, The fun stuff:

15 identified Workarounds

Barcodes affixed to:

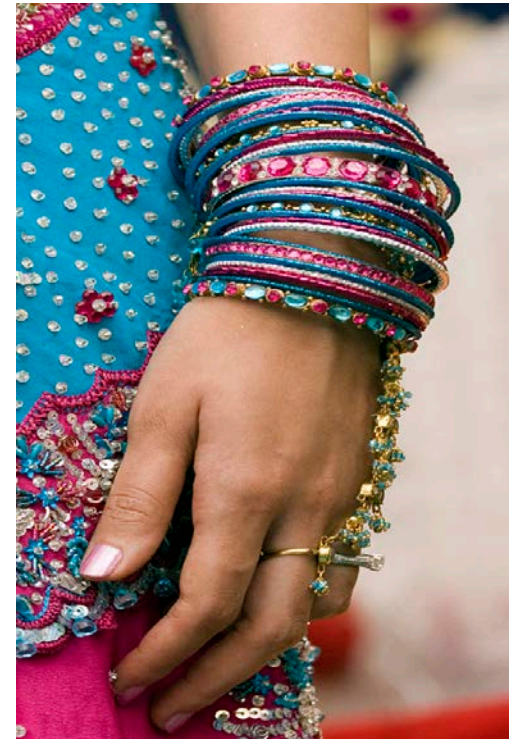
RN clipboard

Scanner itself

In nurses' pockets,

Belt-rings,

Worn as bangles



More places we found extra copies of pt. barcodes (1st workaround, continued)

- ▶ Nurses' desk
- ▶ Medication cart
- ▶ Supply room
- ▶ Med dispensing machine
- ▶ Doorjamb
- ▶ Baby crib
- ▶ Other places...





The ED e-Whiteboard

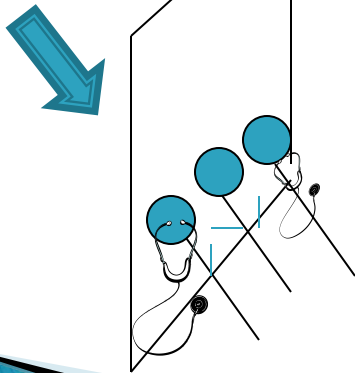
Robert Wears' example of new electronic ED whiteboard: Displayed all: pt name, team, stage of movement through ED, pending data, additional information, etc.

But, new e-whiteboard's computer console inconveniently located. Staff could not all look at e-whiteboard and make immediate changes or notes. Loss of flexibility: Staff can't physically interacted with board, i.e., *Move names, add notes, participate.*

ED e-Whiteboard (2)

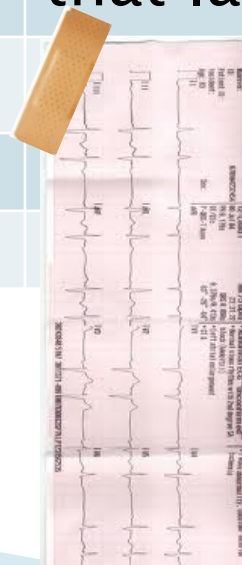
- ▶ Wears' photo: The ED staff all leaning against the new e-whiteboard looking at the old whiteboard
- ▶ New whiteboard (a head board?)

old whiteboard



ED Whiteboard: Allows freedom on the right: Smart Workaround? Approved Workaround?

Name	Bay	Team	DX	Tests	Admit?	Notes
						Waiting for CT Scan
						Mom looking for parking space
						Where's Harry with that lab report?
						Call his dad xxxxxxxx

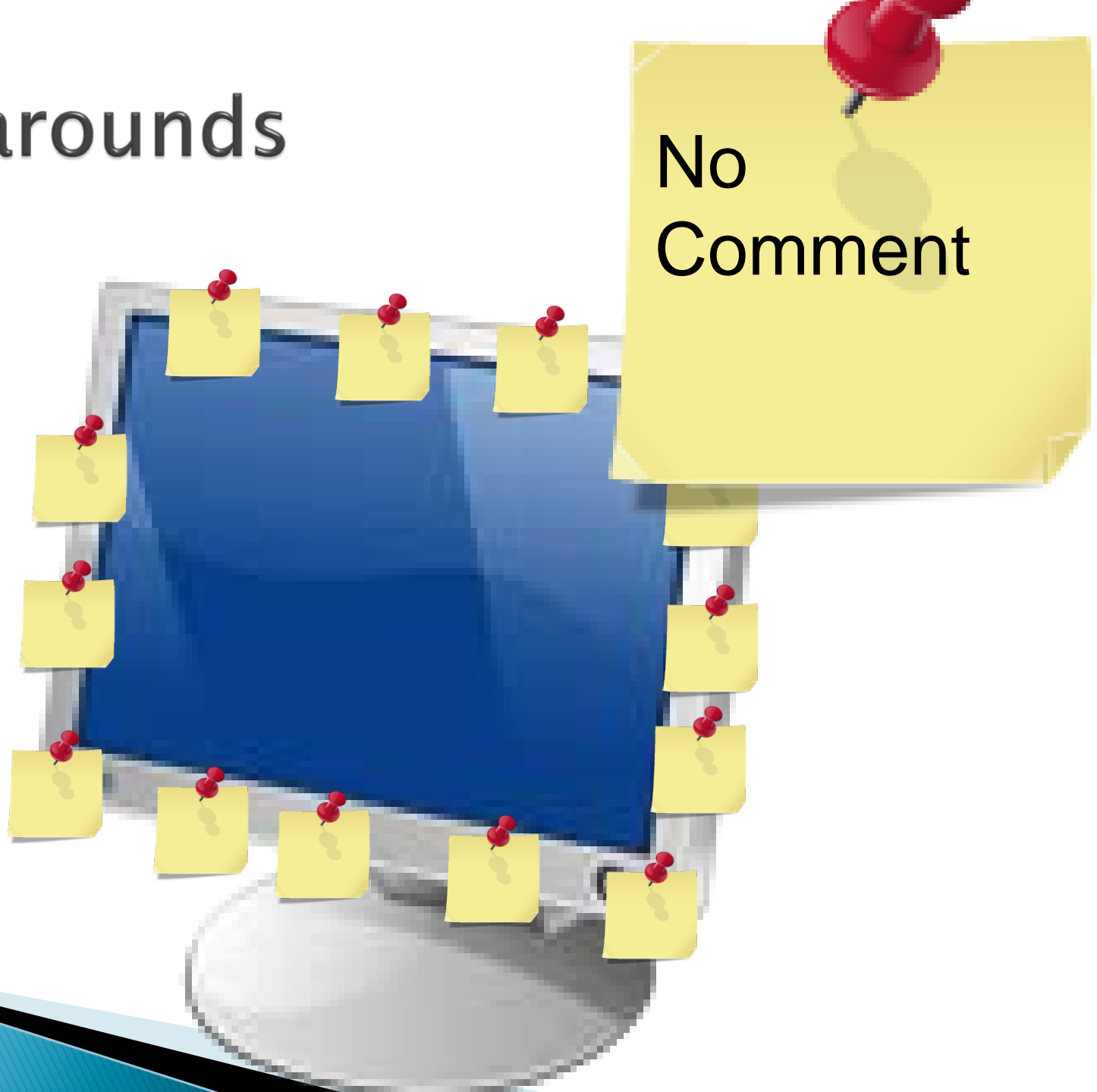


ED e-Whiteboard (3)

- ▶ Also, the e-whiteboard couldn't put up a little magnetic teddy bear to denote infant patients



Workarounds



No
Comment

More work-arounds



Workarounds in tightly coupled systems: *Outsmarting smart pumps and physicians*

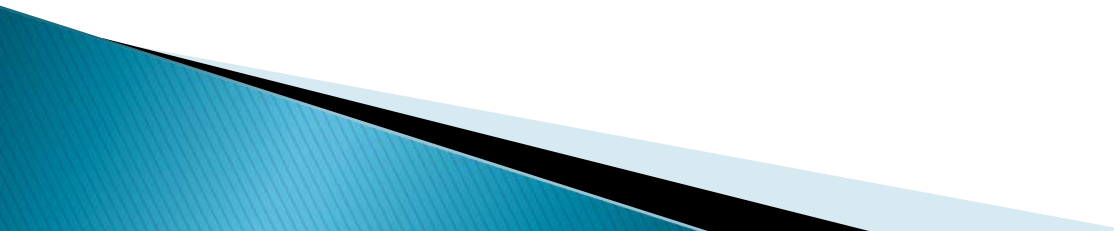


The 85% solution

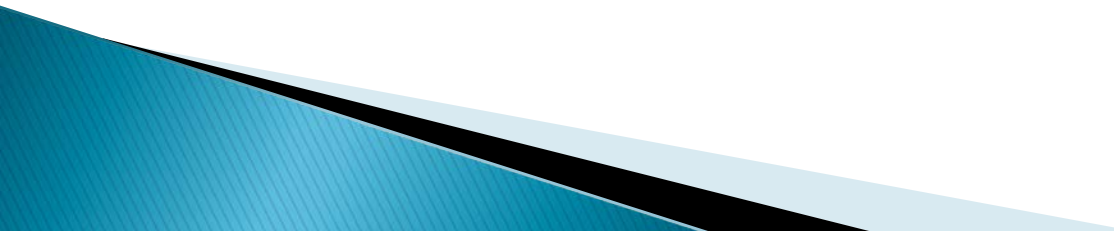
Application Analysis (NISTIR 7804)

- ▶ Application Analysis:
 - description of the application's basic functions
 - analysis of the user characteristics
 - task analysis describing the interactions between users and the application
 - analysis of the anticipated environment of use related to interactions with the application
 - identification of critical user tasks related to aspects of patient safety

Details for Planning & Executing the Method

- ▶ Determine research questions/issues that need to be addressed
 - ▶ Identify who and where to observe
 - ▶ Create Observation Guide
 - ▶ Conduct observations
 - ▶ Compile data
 - ▶ Draw Conclusions and Report to team
- 

Exercise

- ▶ Identify issue to address.
 - ▶ Make observations in public space regarding identified issue.
 - ▶ Take notes on observations.
- 

Impact of the Observation Research Methods

- ▶ Share learning from observations.
- ▶ Share sample outcomes from previous observation studies e.g., unmet needs, workflow.

So... The secret to identifying usability
(and many interoperability) issues



Look

Finding and Fixing



Ask and Listen



Finding and Fixing

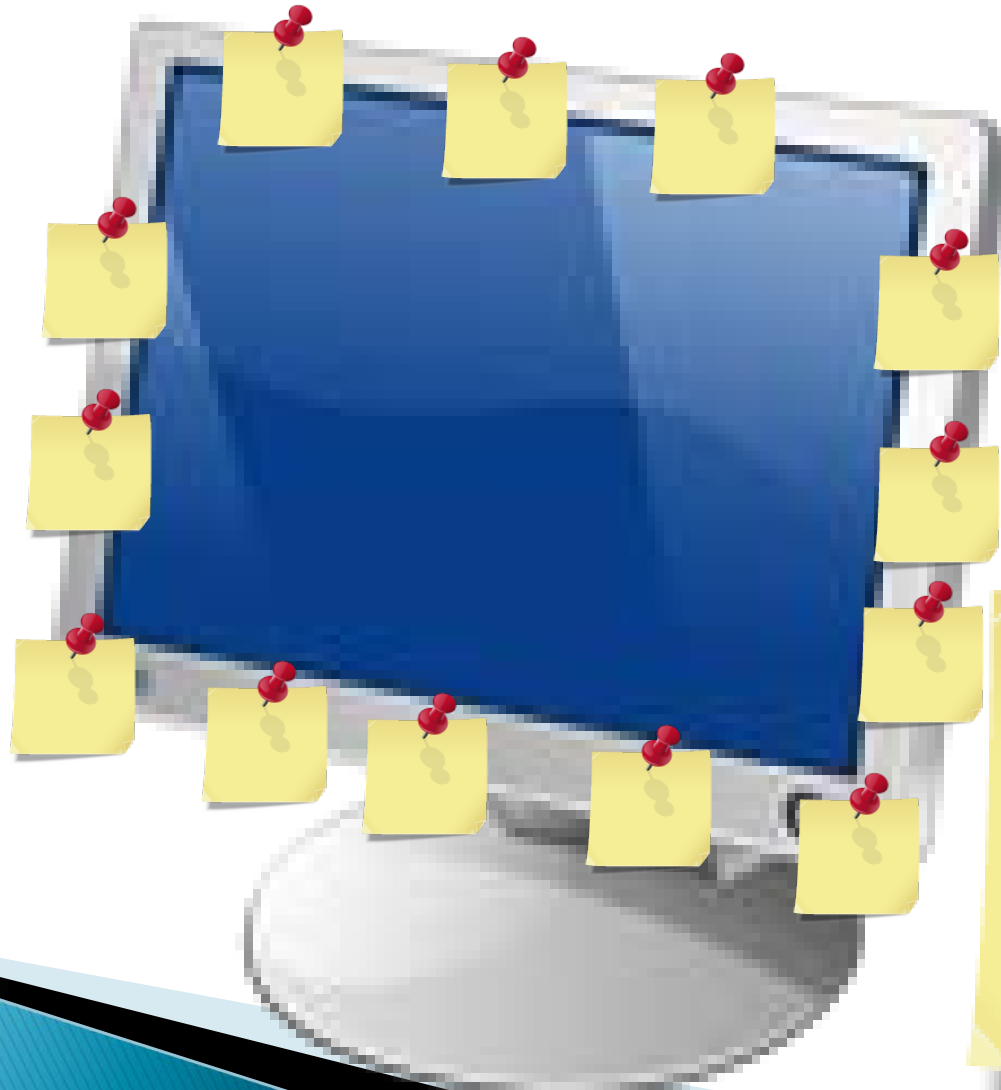


Question self-
reports

Workflow Analysis



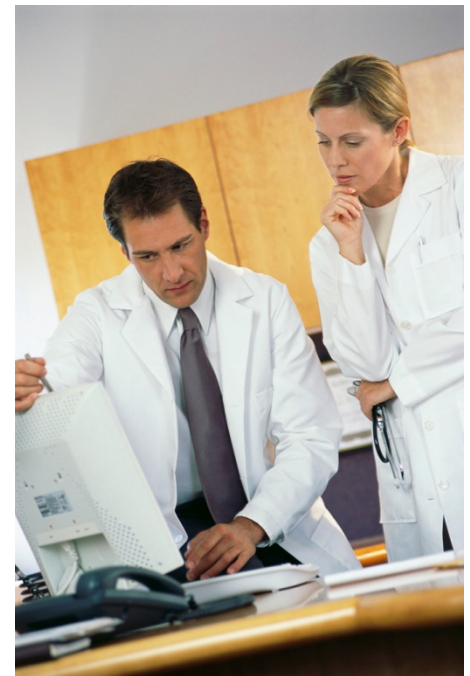
Why Document Workflow?



To Avoid
This

Goals of Workflow Analysis

- ▶ Measure workflow efficiency as part of a process improvement strategy
- ▶ Evaluate productivity, improve utilization, and reduce human effort
- ▶ Measure return on investment of “newly” implemented health IT product
- ▶ Inform the design of “next generation” health IT product

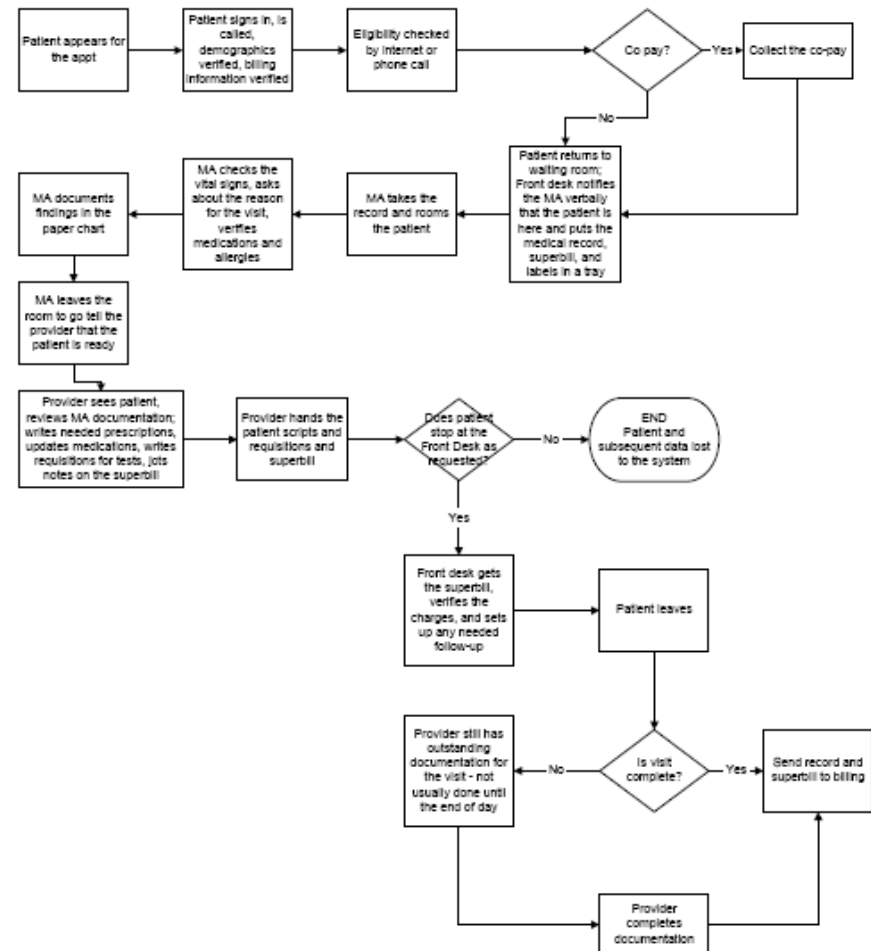


How is Workflow Documented?

Analysis of the Provider Visit

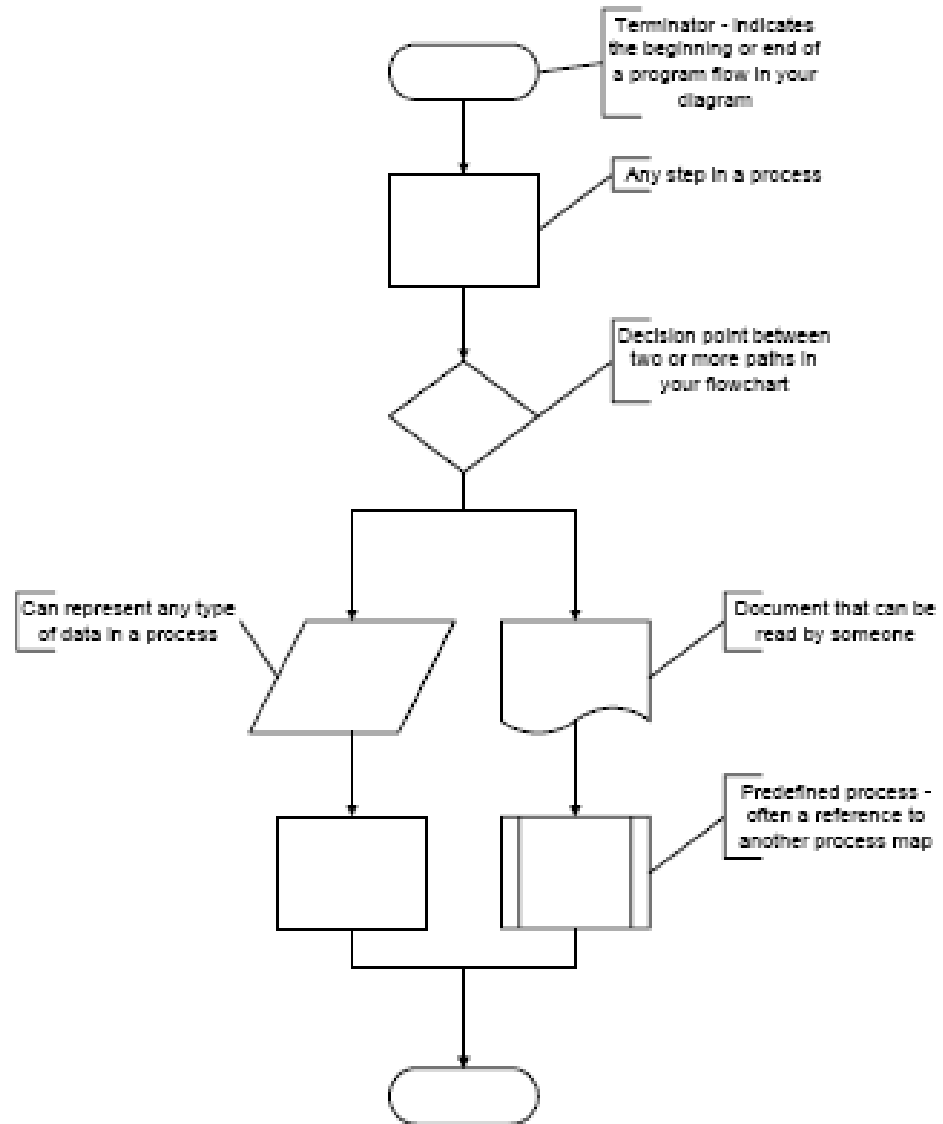
Check-In
What type of information is gathered by the front desk at check-in? <input checked="" type="checkbox"/> Verification of name and address <input checked="" type="checkbox"/> Verification of insurance <input type="checkbox"/> Copy of insurance card <input checked="" type="checkbox"/> HIPAA forms <input type="checkbox"/> Other:
If you are using a PMS, what information must be entered or checked at each visit? <i>Address, insurance information</i>
List any information that goes forward with the chart after check-in. <input checked="" type="checkbox"/> Superbill <input checked="" type="checkbox"/> Extra labels <input checked="" type="checkbox"/> Patient Hx/ROS Forms <i>if new patient</i> <input type="checkbox"/> Other:
Do you collect co-pays at check-in? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
How does the clinical staff know that the patient has arrived? <i>Chart is in the rack</i> <i>if patients back up in waiting room, front desk staff go find the MA</i>
Rooming the Patient
Who takes the patient to the exam room? <input checked="" type="checkbox"/> MA <input type="checkbox"/> MD <input type="checkbox"/> Nurse Other:
Is the chart reviewed for outstanding tasks by the rooming staff? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No How is this information communicated to the provider for action? <i>MA creates list on sticky-posted on outside of chart</i>
What information is gathered before the provider sees the patient? <input type="checkbox"/> Reason for visit <input checked="" type="checkbox"/> Vital signs <input checked="" type="checkbox"/> Medications reviewed <input type="checkbox"/> Allergies reviewed Other:
Are any tests done before the provider sees the patient? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No If yes, please list: <i>Glucose, A1c for diabetics</i>
Is the information gathered written on a specific type of form? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
If yes, is the form specific to a type of visit? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
How does the provider know that the patient is ready to be seen? Describe: <i>Chart on the outside of the door</i>

Current State Process Flowsheet: Provider Visit



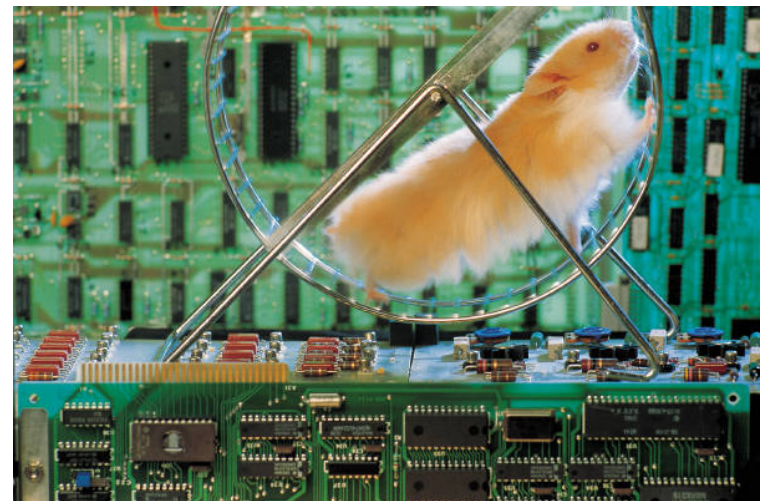
What is that Funny Notation?

- ▶ Basic Flowchart
- ▶ Standards:
BPMN
(Object
Management
Group)




When should I Document Workflow?

- ▶ When you are evaluating the impact of health information technology on your organization
- ▶ When you are looking at overall process improvement in your organization
- ▶ When you are looking for the cause of workflow “bottlenecks”

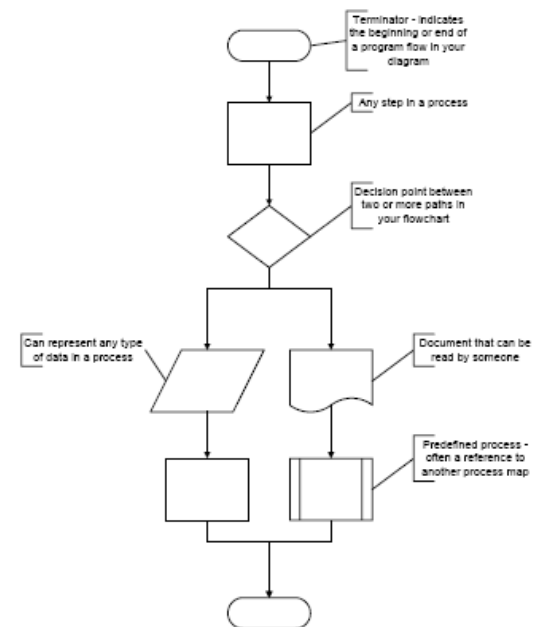


Planning & Executing Workflow Analysis

- ✓ Identify areas of interest that are related to or contribute to variation in the process to be observed
 - e.g., different roles, physical location, environmental, cognitive, social, organization characteristics
 - ✓ Identify key tasks performed in the current workflow
 - ✓ Identify tasks and task categories to observe and time during data collection
- 

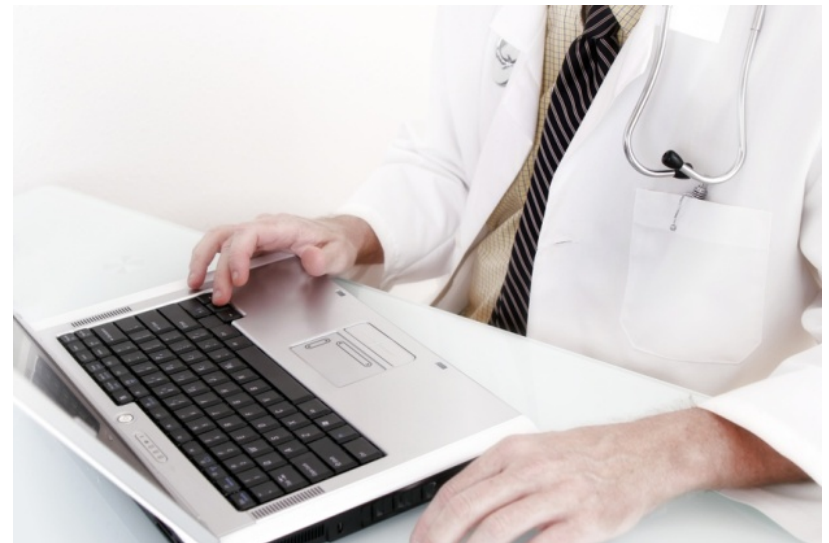
Planning & Executing Workflow Analysis

- ✓ Determine the number of observations that are needed to account for variation in the process
- ✓ Identify who and where observations will take place
- ✓ Select data entry tool



Planning & Executing Workflow Analysis

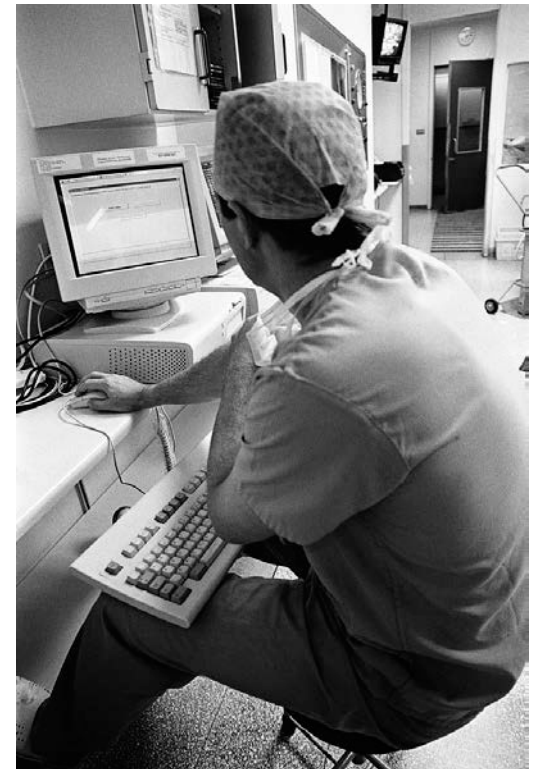
- ✓ Conduct Observer Training/Pilot Testing
- ✓ Perform Observation and Timing activities
- ✓ Complete Data Analysis



Planning & Executing Workflow Analysis

For Software Pre-implementation/Post-implementation Study:

- ✓ Implement new/changed system
- ✓ Allow time for familiarization
- ✓ Repeat Observation and Timing
- ✓ Complete Data Analysis



Acknowledgements:

HRSA Health IT Adoption Toolbox

Guide to Remediating the Unintended
Consequences of EHRs' Implementation
and Use. Now on the ONC website:

<http://www.healthit.gov/ucguide>

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