Role of Usability and Adoption in the EHR
Overview and UI Productivity

Scott Finley, MD, MPH
Clinical Productivity Systems
sfinley@post.harvard.edu

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Why Focus on Adoption?

- System adoption is routinely cited as a major obstacle in successful system implementation.
- The influences on adoption can be difficult to pin down.
- Poor adoption can destroy a system or damage morale.
What Influences Adoption?

- System Functions?
- Workflow?
- Ease of Learning?
- Clarity of Screens/Ease of Use?
- Productivity
Why is this so hard?

- Information & workflow complexity
- Implicit understandings
- Shared resources & roles
- High stakes
- Time-critical tasks
- Demanding, pressured audience
- Discretionary users
- “Clerical task” perception (and reality)
- New/shifted burdens
Time-pressured users - MDs

- Physicians are piece workers, mostly paid for productivity
- Making a piece worker less productive is like cutting their salary
- People really, really hate having their salary cut
- Physicians are not resistant to technology or change
- Physicians are resistant to technology or change that does them harm
Time-pressured users – nurses

- Can’t get all their work done
- Face numerous deadlines
- Interrupt-driven workflow
- High stress situations
- Nurses are *not* resistant to technology or change
- Nurses are *are* resistant to technology or change that does them harm
Would you rather have...

- 1) A functionally complete system that the users hate, or
- 2) A system that does much less than you had hoped for, that the users love?
What’s it for?

- If you don’t know why you’re putting in a system you can’t succeed except by accident.
- If you must do everything you can’t succeed even by accident.
Consider the Purpose

- Constituencies served
- Problems solved/mitigated
- Costs reduced
- Productivity increased
- Liability/risks decreased
- Regulatory compliance improved
- Patient safety benefits
Caveat Emptor

- The optimal strategy for a vendor may include telling you things that are unlikely to turn out as represented
  - Winning customers is very important
  - It’s very difficult for a customer to change direction
  - Managing disappointment may be cheaper than satisfying expectations
  - “We can do that”
Perspectives:
What’s a Clinical System?

- Is billing included?
- E & M coding...
- SNOMED coding?
- Is patient scheduling included?
- Chemotherapy rescheduling...
- Are patient mailings included?
- Pap smear reminders...
- “New” patient safety focus (IOM)
MAKE EVERY MINUTE COUNT for PERSHING

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What’s a Clinical System?
Physician Perspective

- Clinical notes, E & M coding
- Medication Management
- Image management
- Lab results
- Decision Support
- Health Maintenance reminders
- Calendar, PIM, & Task lists
- CPOE
- Problem list, allergy list, vital signs, …
What’s a Clinical System?
Nurse Perspective

- Clinical notes & documentation, vital signs
- Electronic MAR
- Order Management – queuing and sign-off
- Change of shift
- Decision Support
- Health Maintenance reminders
- Task lists
- CPOE – verbal orders
What’s a Clinical System? Pharmacist Perspective

- Order verification
- Standardized dosing & Dose calculators
- Labeling systems, Inventory systems
- Formulary management
- Billing systems
- Dispensing robots (in/out of pharmacy)
- Drug-drug, -allergy, -food, -disease, -lab
- Dose range checking
- TPN compounding
What’s a Clinical System?
Administration Perspective

- Charge capture
- Revenue enhancement
- Prompt billing
- Audit protection
- Coding maximization
- Compliance (notes & signatures)
What’s a Clinical System?
Other Perspectives

- Laboratory
- Medical Records
- Respiratory Therapist
- IT Department
- Clinical research team
- Home care provider
- Nursing home
- Public Health Officer
What’s a Clinical System?

Working definition

- A clinical system is any system which influences the provision of health care. A clinical system may influence the cognitive, process, or documentation aspects of health care.

- This definition does *not* help us focus on specific features.
Specialties differ!

- Workflows
- Data monitored
- Treatment modalities used
- Diagnostic approach
- Decision support needs
- Billing approaches
- Documentation captured
- Degree of confidentiality (e.g. psychiatry)
- Consultation vs. ongoing care
- A system designed for all specialties probably won’t serve them all equally well
What’s a medical-specialty-specific Clinical System?

- Ophthalmologists follow IOPs & acuities
- OB: consolidate prenatal labs & findings
- Oncology: manage protocols and chemo admin
- Cardiologists interpret EKGs, stress tests
- Pediatricians monitor growth charts
- Physiatry tracks strength and ROM
- Endocrinologists track glucose and insulin
- Radiologists interpret films, communicate results
Watch for subtle differences
Rx & Med management

- Primary care: Hypertension flowsheets, formulary compliance
- Endocrine: Insulin flowsheets
- Ophthalmology: Eyeglass & CL Rx
- Rehab: Physical therapy prescriptions
- Oncology: Chemotherapy schedule, antiemetics
Productivity details

- Do the math (repetitive activities, repeated delays)
- Small details matter (10 month list)
- Start in the right place
- Be forgiving (tabs/hyphens in SSN)
- Do it for them (Search buttons)
- Save steps
- Overload Controls
- Do > 1 thing at a time (two list boxes)
- Model the real thought process
- Model the real workflow – frequent interruptions and shared workstations
- Productive is more important than pretty
- Productive is more important than consistent
- Facilitate the most common entries
- Fast is much more important than thin
- The feature may be used infrequently
- Support ambiguity and approximation
- Almost doesn’t count
Persona of the system

- Servant, butler, golf caddy
- *Not* a partner, teacher, critic, uncle, friend, or advisor
- *Not* a marriage of equals
  - Doesn't force the user to do anything they're not inclined to do
  - Doesn't prevent the user from doing anything they want to do
  - Acknowledges its limitations and offers as much help as possible
  - Assumes that the user may have a very good reason for a questionable act (e.g. lethal dose of a medication...prior to BMT)
  - Never forces the user to waste time to do vendor CYA
  - Doesn't tell the user anything they don't want to hear

- Decision support implications – nuisance alerts
- Design teams resist this...ego?
Workflow

- UI is dynamic, not static
- UI includes how the system will be used
  - Common cases
  - Exceptional cases
  - This is a domain-data-rich space!
- UI integration into Workflow
- Embed the workflow and domain knowledge into the UI
Horseshoes & hand grenades

- Many functions are *critical* for success
- If your pen doesn’t work, you toss it
- If you want paperless, it has to *all* be in the system in some fashion
- Consider what’s being replaced (it often works very well for someone)
Bits vs. Atoms
(after Nicholas Negroponte, *Being Digital*)

How does paper support...

- Workflow?
- Shared access?
- Shared authorship?
- Power of ambiguity?
- Power of flexibility?
New Technology Value Curve

Perceived Value

Hype

Disillusionment

Reevaluation

Net value

Time [typically months to few years]
Thank you!

For more information, please contact HIMSS Staff Liaison JoAnn W. Klinedinst, CPHIMS, PMP, FHIMSS at jklinedinst@himss.org