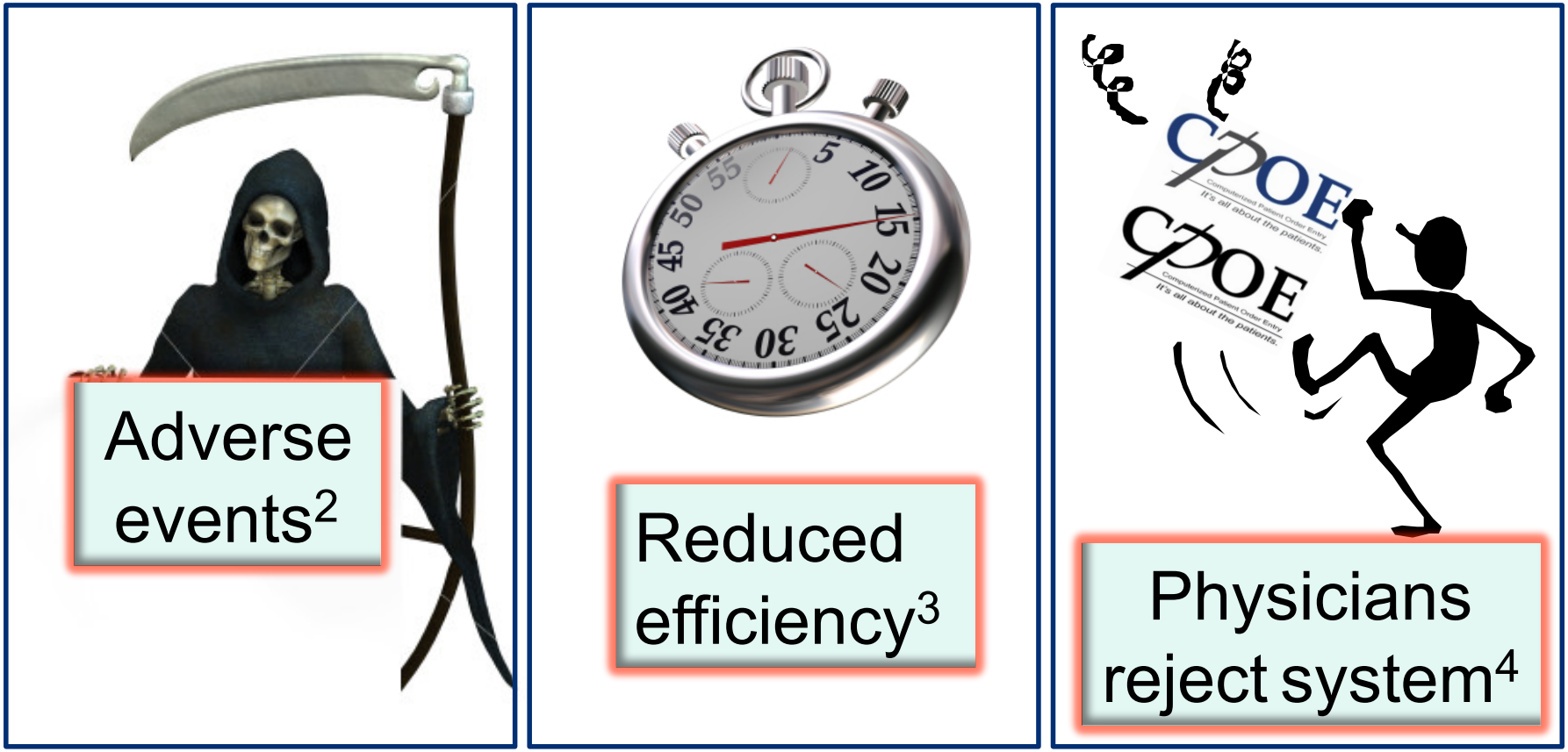
e-Iatrogenesis[1] → Do no harm?



[1] Weiner et al "e-Iatrogenesis": The Most Critical Unintended Consequence of CPOE and other HIT *J Am Med Inform Assoc.* 2007;14:387–388

[2] Han et al. Unexpected increased mortality after implementation of a commercially sold CPOE system. *Pediatrics*. 2005;116(6):1506-1512

[3] Poissant et al "The Impact of EHRs on Time Efficiency of Physicians and Nurses: A Systematic Review" *J Am Med Inform Assoc*. 2005;12:505–516

[4] Ornstein C. Hospital heeds doctors, suspends use of software: Cedars-Sinai …called it unsafe. Los Angeles Times, January 22, 2003: B1

Hit milestones, but not the mark

- Lack of system integration
- Fragmented experience
- Hybrid paper/electronic use
- Lack intuitiveness due to limited clinical input
  - Too much time sifting thru raw data
- Partial adoption of poorly optimized tool
  - Paper paradigm remain embedded in automation
- Working to deadlines vs optimal outcome

Progressive vs Disruptive change

Evolution	Revolution
Focus on improving care, not on the technology	Design systems with disruptive change in mind, i.e. genomics
Seek incremental gain for incremental effort, rather than huge IT projects that take forever	Archive data in ways that future interpretation and analysis can yield new knowledge
Capture all the data you can	Design technologies to eliminate ineffective work processes
Design systems around human factors principles	Design systems that can put data into context
Support the cognitive function of caregivers	

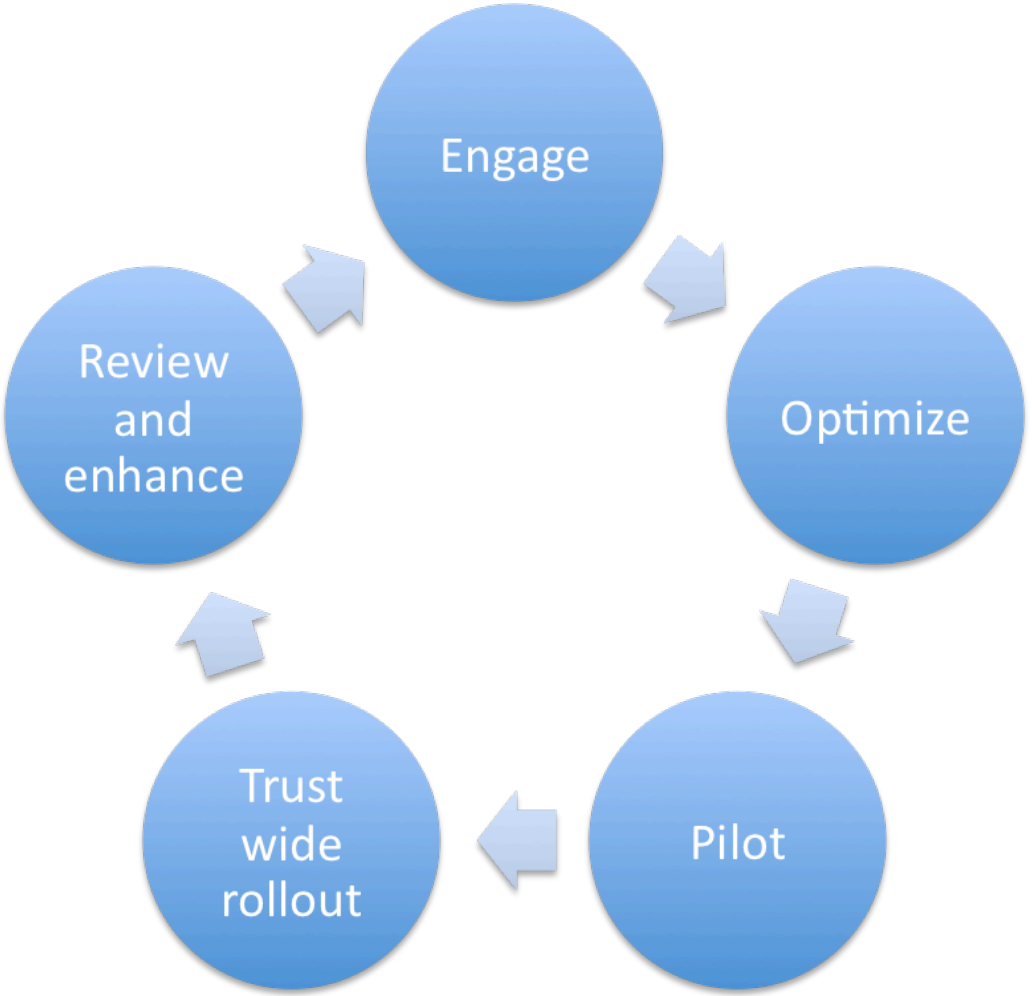
Stead W, Lin H, Computational Technology for Effective Health Care - Immediate Steps and Strategic Directions
National Resource Council

Barriers to Engagement

- The nature of the contractual arrangements
- Lack of responsive support on CRS issues
- Inadequate infrastructure
- Multiple systems log-in. Inability to integrate/interface with 3rd party systems
- CRS had no clinical data/clinical benefits
- Slow System speed
- Inability to extract data from CRS-reporting
- Lack of localization, lack of training

You may not match the enthusiasm shown by clinicians when engaged!!!!

Clinical Engagement Cycle



Clinical Engagement Approach 1

Current State Assessment and Initial Engagement

- PAS stabilization: clinics/printers/access/passwords!!!!! Get your basics right
- Clinical systems strategy owned and developed by clinicians - CRS central to long-term road-map
- Getting clinician buy-in/existing issues resolution process - the more you respond, the more they involve
- Communication – clinical context, real issues based, Trust targets oriented- multiple media

Governance and Clinical Ownership

- Design Authority/ Clinical Advisory group - Design principles- Strategy
- CRS user group- Consensus/ Design/Optimize
- CRS Clinical Champions Program- Contextual training

Clinical Engagement Approach 2

Design and Optimization

- Accelerated Enhancement Programs and pilots for proof of concept
- End to end optimization-frontend/backend/reporting/service transformation-Lean/ QIPP initiative and CRS

Service Transformation and Change Management

- Process and CRS integration
- Objective benefits measures initiated
- Training- CRS Champions program, one on one training, demos, audit meetings- multiple touch points
- On site support- getting the key players going
- Revised work aids, training website, e-Learning, Video tutorials
- Run pilots

Sustaining the Change

- BT/Cerner service catalogue upgrade to include relevant items- Ongoing content management process
- Integration with reporting and Information management team is key
- Handover to operational teams. Building in-house competency and champions

Clinician Workflows in CRS- Quick wins

- Patient lists
- Inbox
- Scheduler/Appointment book
- Requesting
- Results viewing
- Clinical Notes
- Procedure recording
- Record Problems
- Record Diagnosis
- Other clinician functionality
- Update lead clinician
- Reprint specimen label
- Print patient labels
- Outpatient scheduling reports
- Check out patient from clinic
- Request surgical procedure
- Print Theatre list
- View infection control alerts

Clinical Utilisation Initiatives

Roll-Out in Progress

- Smoking Cessation
- VTE Risk Assessment
- Clinician’s Inbox
- Procedure Recording
- Learning Disabilities
- Co-Morbidity Recording
- Order Sets
- Patient List Customisation
- Progress Documentation
- Medical Outpatients Vital Signs Recording
- Favourites Folders
- Mobile Devices - pilot
- Positive Patient Identification

Clinical Utilisation Initiatives

De-scoped

- Theatre List
- A&E Adult Assessment
- Order Entry Forms

Planning

- Allergy Recording
- Child at Risk Alert Recording

Delivered Benefits

Order Sets:

- Average time savings (min) for **each order set used** was **10.67 min** (Annualised **savings of 1690 hours** for clinicians)
- Standardisation of Care

Smoking Cessation Pilot:

- The number of referrals per month from the Trust to the Smoking Cessation Clinic rose from **0.5 to 9.** *(Estimated that for a Trust wide rollout the number of referrals per month would rise from **11 to 250**.)*

Mobile devices Pilot (Tablet PCs in Knutsford Ward):

- Average Time saved **per patient** was **10 min** (Monthly time savings of **55 hours**)
- Reduction of Data Latency for
  - Vital Signs from **30 min to zero min**
  - Clinical Notes/Discharge Summaries from **2 hrs to 10 min**

Vital Signs recording in Medical Outpatient

- ***73%*** reduction in time required to record Vital Signs
- Better clinical decision making due to assured availability of vital signs information

Inbox

Optimization

- Clear clogged inbox
- Set up inbox for sending and receiving, proxies- group proxy???
- Global Filters- Histo, cyto and path results
- Performance enhancement
- Results returning to requester
- Inbox and results management policy

Benefits

- Ownership of clinical results (audit of endorsed results)
- Reduction in SUI (Metrics and baseline)
- Compliance to the radiology unexpected findings policy
- Clinical messages and telephonic consults in patient record

Challenges

- Performance and speed
- Proxy management and training
- Trustwide rollout

Procedure Recording

Optimization

- Individual favorites
- Remove CPT4 as the default vocabulary
- Used for all types of clinical activity
- Procedures report on Explorer menu and DWH extract
- Output to match consultant e-logbook (WIP)

Benefits

- Better coding and revenue for the Trust (e,g. insulin pumps, IG infusions)
- Accurate clinician driven procedure recording

Challenges

- 2005 codebase does not allow to default the vocabulary to OPCS4 or SNOMED CT
- 2005 code does not allow subfolders in favorites- unable to publish favorites
- Terminology issues

Problem Recording

Optimization

- Global trust wide Co-morbidities favorites
- Used for all types of trust wide reporting initiatives (VTE, LCP, Smoking cessation, clinical trails etc)
- Passive alerts- learning disabilities, living alone etc
- Customized Cerner explorer reports and DWH extracts for analysis

Benefits

- Better coding and revenue for the trust- co-morbidities influence HRG to a great extent(baseline and metric driven)
- Trust wide alerting to existing problems- better care, patient safety- e.g. hemophiliacs in A&E, COPD in PAC clinic etc

Challenges

- Terminology issues (VTE)
- Trustwide rollout

Patient Lists

Optimization

- Customize columns
- New results column
- Sticky notes
- Use of custom lists for workflows, handovers, audits, reminders etc

Benefits

- Better coding and revenue for the trust- co-morbidities influence HRG to a great extent (baseline and metric driven)
- Trust wide alerting to existing problems- better care, patient safety- e.g. hemophiliacs in A&E, COPD in PAC clinic etc

Challenges

- Unable to extract list into an excel spreadsheet
- Proxy management
- Data quality issues- patient lists don’t reflect bed-board accurately

Order Comms

Optimization

- Global and team favorites
- Order sets (85 order sets across 15 specialties)
- Edit on the line mode
- Other diagnostics on to CRS- endoscopy, neurophysiology, cardiology
- Ability to identify radiology tests done for trials
- BMJ Stroke Pathway under development
- Endorsing results in flow sheets

Benefits

- Quicker requesting. Time saving being measured objectively
- Standardized care, easy training for new joiners

Challenges

- Maintenance of order sets and addition of new ones
- Not under Trust or BT control
- Only lab and radiology tests - not a full care set

Other initiatives

- Quality measures reporting
- Use of Clinical notes, New ICU discharge summary
- Use of POC devices- handovers, ward rounds
- Optimization of theatre-lists
- Allergy recording in CRS
- Use of CRS for clinical trials activities
- Vital signs recording