CLINICAL DECISION SUPPORT

Co-Pilots:

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Did you know?

- Education 3.0 -
  - **Information Revolution!**

Decision Support: the 30,000 ft view.

- The clinical care of a patient requires many decisions as to the direction for the appropriate history, physical exam, testing, and treatment.
- Chief Complaint – "I am having chest pain"

True decision support should:

- “facilitate the physician’s ability to make the right decisions at each micro-step, in each of the processes mentioned above, at the time the decisions need to be made.”

- Decision support in its purest form must:
  - mitigate error and,
  - at best, lead the physician down the path of correct decisions without any utilization waste.

Five Rights of CDS:

To improve care outcomes with CDS you must provide:

- the Right Information…
  - Evidence-based, useful for guiding action and answering questions
- …to the Right Stakeholder…
  - Both clinicians and patients
- …in the Right Format…
  - Alerts, Order Sets, answers, etc.
- …through the Right Channel…
  - Internet, mobile devices, clinical information systems
- …at the Right Point in the Workflow
- to influence key decisions/actions

Welcome to AirM.I. Airlines

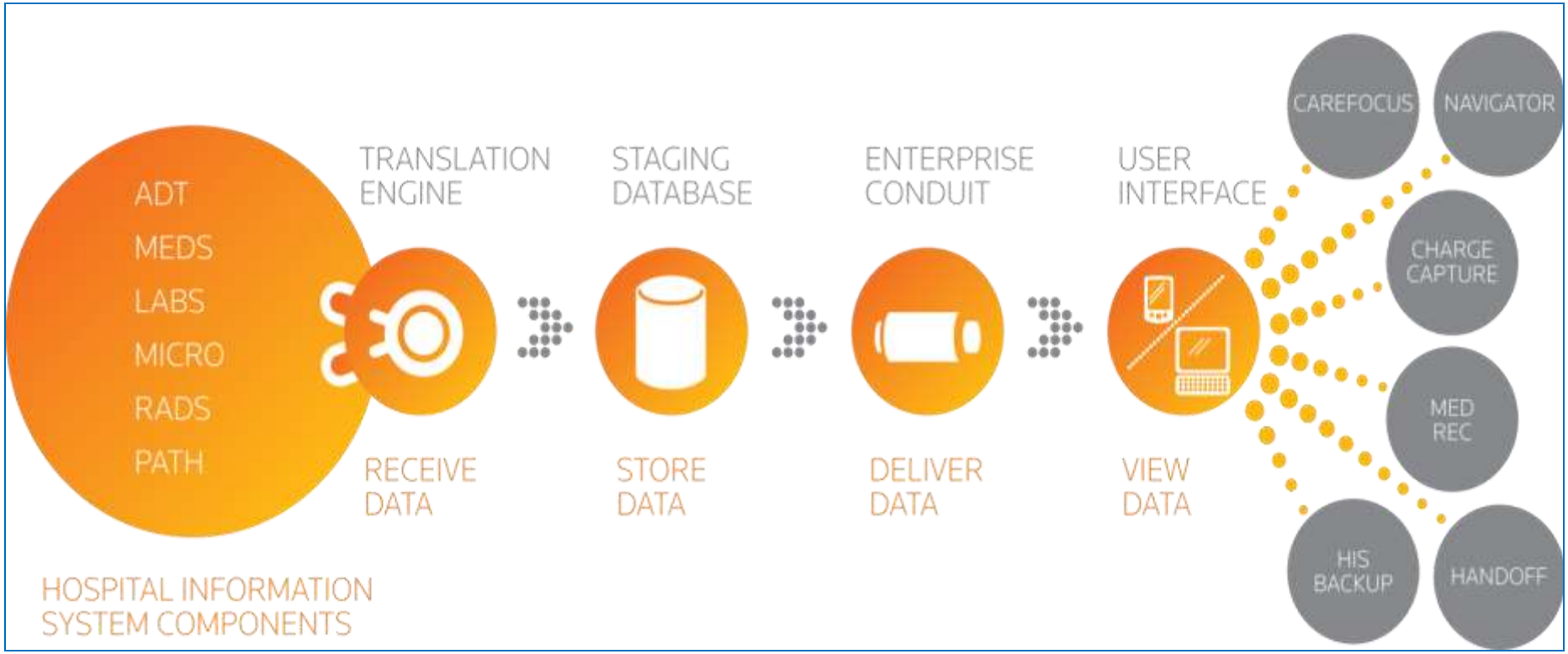
- AirMI Airlines has planes leaving ontime today.
  - Regular intervals – no variance
  - Delays and Irregular - variance
- The most advanced decision support system, after years of evolution, exists today in modern aviation.
- While crew resource management is a key component in reduction of error, this talk will focus on decision support as a metaphor for the NEAR future of healthcare.

Pectusdolor 3000

- All of our jets are the
- Pectusdolor 3000
  - with full informatics

  - Crash avoidance systems are standard
  - Dark panel rules apply
    - Panel lights only if important at the moment.

The System Overview:



Security

Involving patient characteristics or presentation context
Concerned about hijacking because of ethnicity of customer

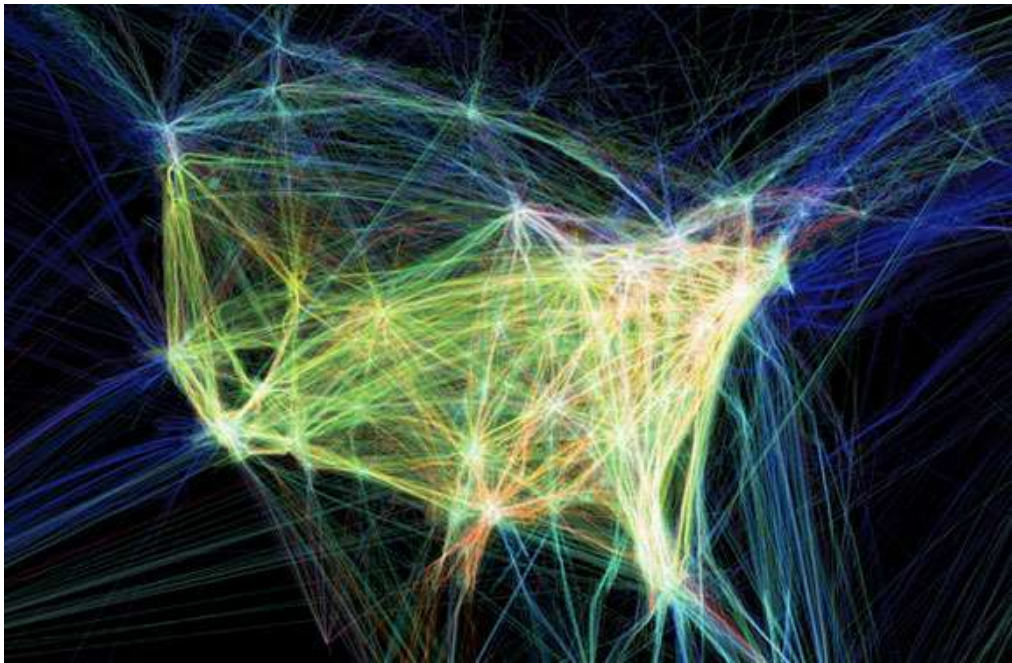
Airline

ED

Prep for takeoff

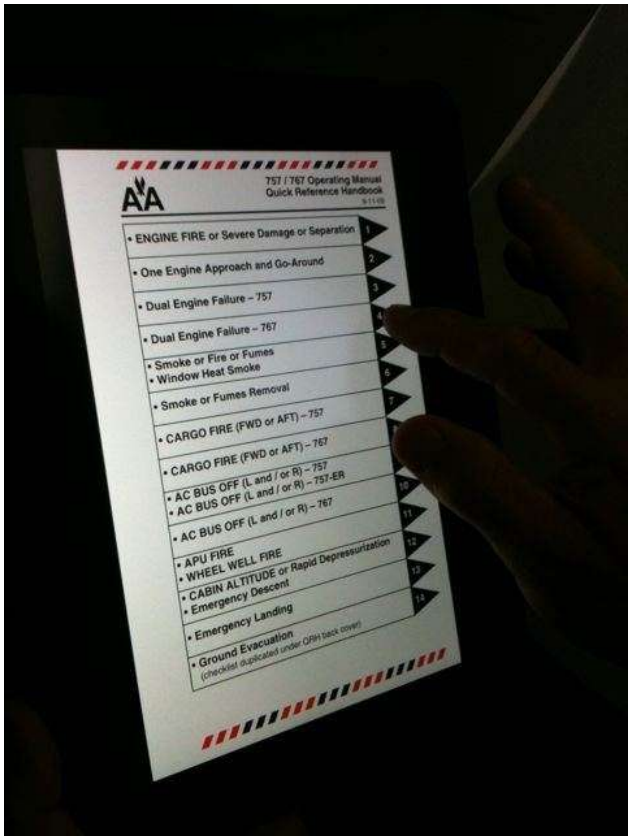
- Education and training
- Protocols = Flight pattern – Transparent/Verified
- Library/Wed services

- Error correction



Taxi

Runway : checklist (listen…!!)



ED : checklist

- Dashboard Visual Management
- Working within the system – charge nurse is air control
- Error correction

Take off

Flight

ED care

- Templates = checklists
- Order sets

- Just in time information – resources
- Diagnostic aids – DDx generator

- Severity stratification (TIMI scoring … even Goldman criteria)

- Error correction

Wheels up and high altitude cruising

Autopilot

ED

- Critical Value reporting
- Error correction

- Types or Error:
  - Juxtaposition
  - Judgment
  - Zebra

Juxtaposition Error

- Over attachment to a particular diagnosis
  - Pilot wants to go to somewhere not right due to inheriting someone else's thinking
- Pilot informed with bad information and goes wrong direction



CDRs association:

Pilot Judgment

Physician Judgment

- Physician affect or personality
- U.F.O. seen
  - (relative to physician)
- Give up - Zebra retreat

Turbulence

Fear of the Unexpected

ED Unexpected changes

- Change course/altitude – new information communication
- Error correction

Change pilots and/or air control

Pilot coordination

- Handoff communication = templates to get right
- Error correction

Descent

Altitude changes

Clinical demise / Admission

- Communication with team
- Communication with landing airport = admission

- Error correction

Landing

Computer Guided : Flight Path

CDS Progress

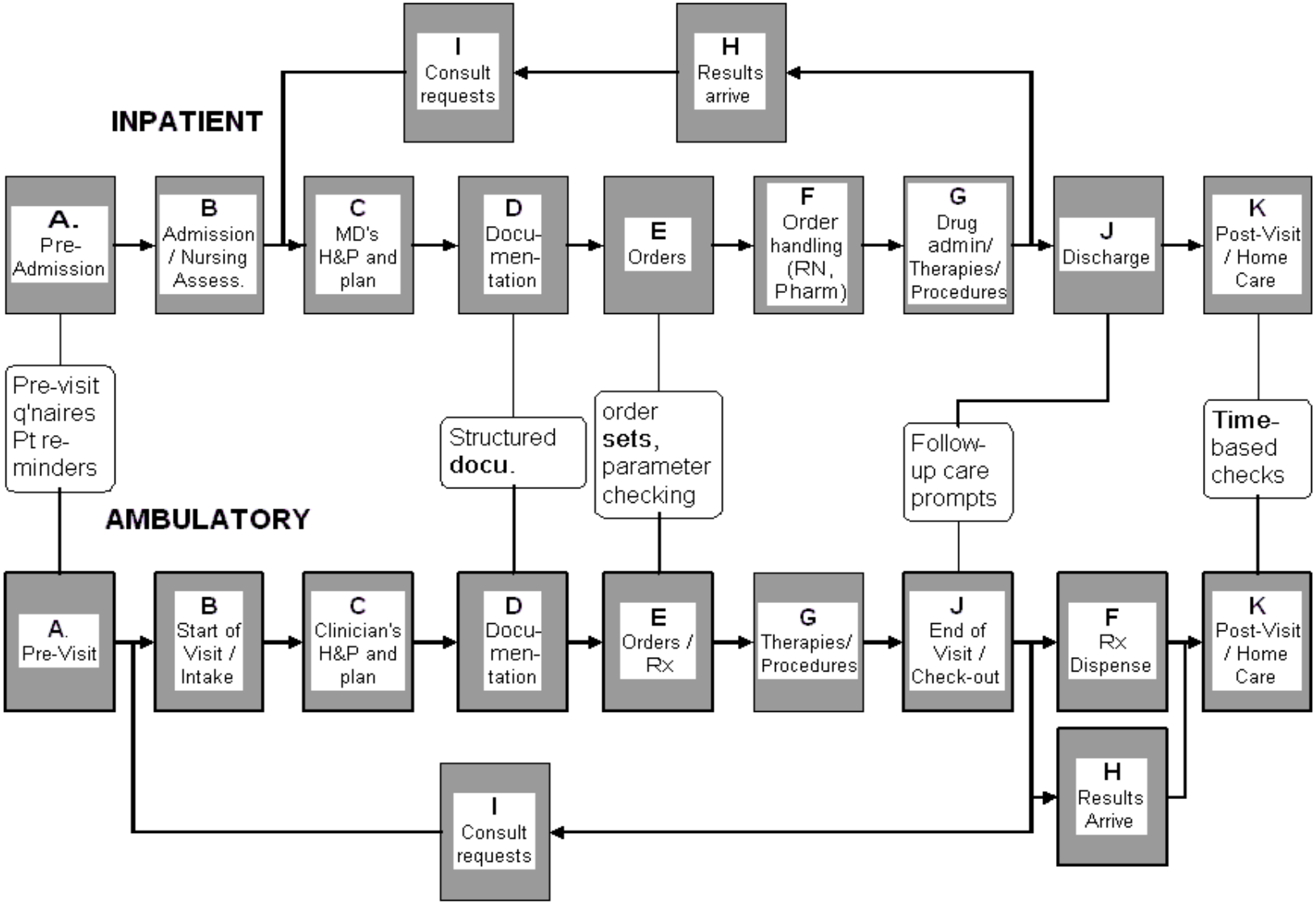
- Discharge instructions
- Documentation of admission conversation and handoff
- Admission order sets

- Error correction

CDS INTERVENTION - TYPES/EXAMPLES

- Relevant data presentation: *flowsheets, surveillance*
- Order creation facilitators: *order sentences, sets*
- Reference information: *infobuttons, Web*
- Unsolicited alerts: *proactive warnings*
- Documentation templates: *patient history, visit note*
- Protocol support: *pathways*

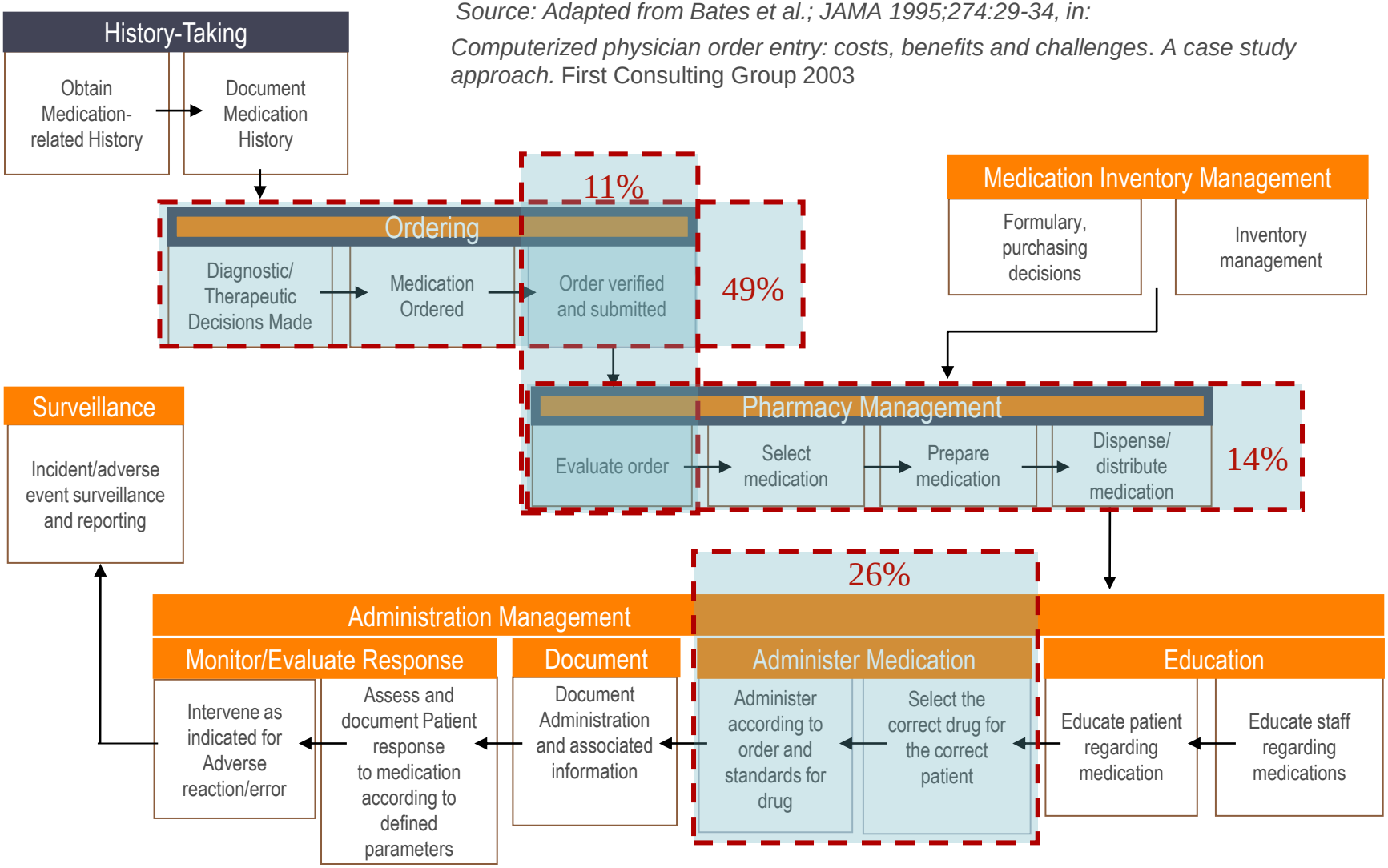
Workflow Opportunities for CDS



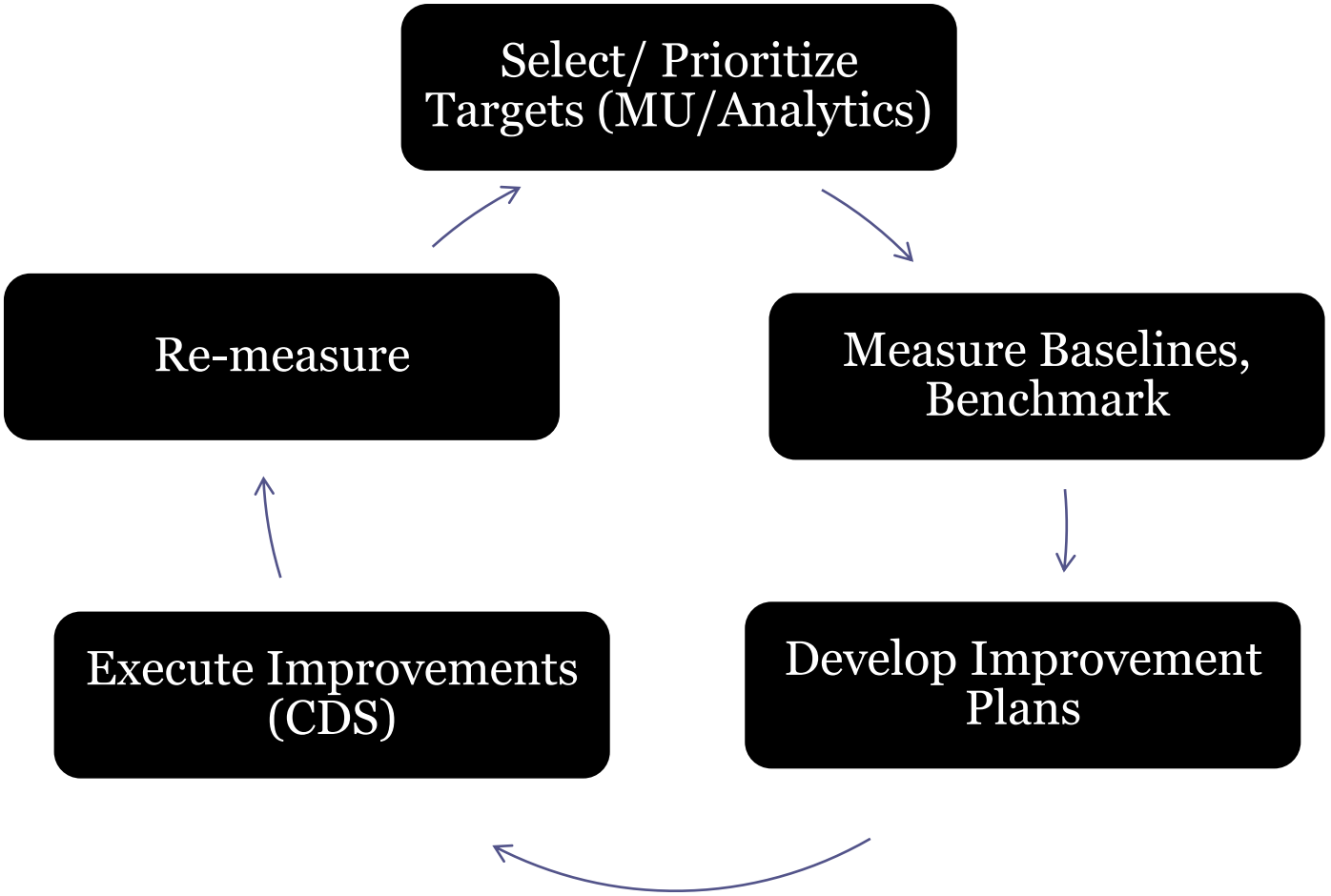
MEDICATION MANAGEMENT PROCESS – WHERE ADVERSE DRUG EVENTS ORIGINATE

Source: Adapted from Bates et al.; JAMA 1995;274:29-34, in:

Computerized physician order entry: costs, benefits and challenges. A case study approach. First Consulting Group 2003



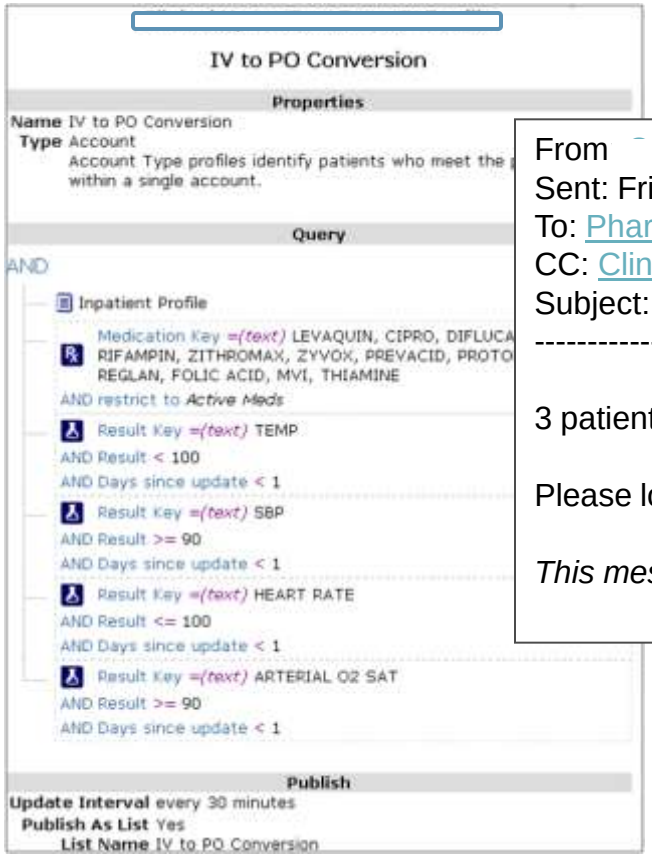
PERFORMANCE IMPROVEMENT: A SYSTEMATIC APPROACH



VISIBLE LIVE DATA – DECISION SUPPORT USER INTERFACE

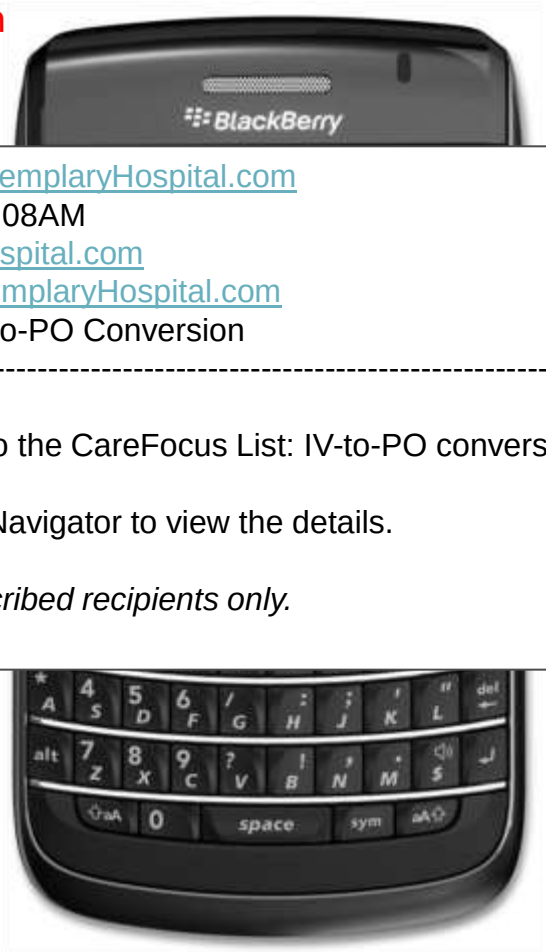
CDS INTERVENTION EXAMPLE: PATIENT PROFILING AND ALERTING – Live Surveillance

Rule: Find patients who can be switched from intravenous to oral medications (improving safety/cost)



Display: results to rounding clinicians

Email to clinician



From Alerts@ExemplaryHospital.com
Sent: Friday, July 2, 2010 10:08AM
To: Pharmacy@ExemplaryHospital.com
CC: ClinicalXpertAdmin@ExemplaryHospital.com
Subject: Alert: IV-to-PO Conversion

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3 patients have been added to the CareFocus List: IV-to-PO conversion.

Please login to Navigator to view the details.

This message is for the subscribed recipients only.

CHECKLIST FOR SUCCESSFUL CDS PROGRAMS

- Shared understanding of CDS as performance improvement tool
  - CDS Five Rights approach to addressing improvement objectives, e.g. broad consideration of CDS recipients, channels, formats
  - Commitment to measurement; e.g. performance baselines, effects of interventions
- Explicit mechanisms for CDS governance in place
  - CDS Program charter in place
  - CDS governance appropriately integrated with quality and HIT governance
  - All pertinent stakeholders are engaged in CDS program governance
  - Explicit mechanisms for prioritizing CDS-mediated improvement objectives, based on internal/external driver
- Knowledge management policies and mechanisms in place
  - Explicit responsibilities/approach for managing CDS content currency, consistency
  - Knowledge management approach is systematic and proactive

Discussion

Airline Industry

- Security – recorded / accessible
- Check Lists – industry standard
- Flight Paths - transparent
- Pre-planned response to unexpected flight issues
- Computer Assisted
  - Take Off and Landing
- 360 Dashboard for In-Flight Information – Live Data

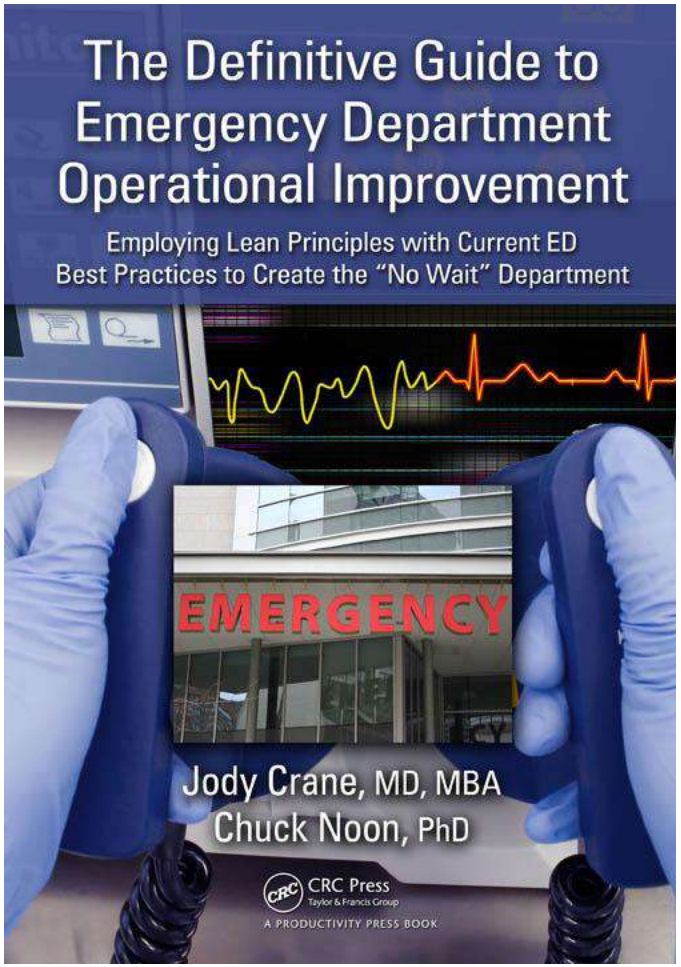
Healthcare Industry

- Patient Safety
- Patient Flow Lanes
- **LEAN** Processing
- Pre-planned response to unexpected clinical outcomes
- Computer Assisted Clinical Decision Support
- 360 Dashboard for Clinical Information – Live Surveillance

Winner of the 2009 HIMSS Book of the Year Award:

Improving Medication Use and Outcomes with Clinical Decision Support: A Step-by-Step Guide

edited by Jerome Osheroff, MD, is co-published by HIMSS, the Scottsdale Institute, AMIA, ISMP, ASHP, and AMDIS.



QUESTIONS

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