The Future is Here
Innovative Work at MGH

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AMIA: The Future State of Clinical Data Capture and Documentation
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**Leveraging Technology to Reduce Documentation Burden**

• “Clinical” data capture is an encompassing term
  - Patient-specific data, e.g. patient positioning, vital signs

  **BUT ALSO**
  - Support billing and regulatory processes
  - Patient tracking data
  - Equipment usage

• **MORE is not necessarily BETTER**
  - Can be distracting and introduce inefficiencies to actual clinical care
  - Achieving a quality data set becomes more difficult
  - What’s the use of capturing data if you don’t use it?
How can we do MORE in a BETTER way?

• Introduction of technologies to supplant and improve data capture
  – Hits on the Guiding Principles (“use machines whenever possible”)
• MGH has a history of partnering with companies to develop products and perform “proof of concept”
  – OR of the Future project (launch in 2002) start of many interesting ventures
  – “Stops and starts” - early to buy into ideas, but high demands placed on full scale use
  – In-house development teams allow for good integration with technologies and creative ways to build around vendor-supplied applications
Addressing Different Documentation Needs

• Radianse
  - Active RFID-based real time location system (staff, patients, and equipment)
  - Create and display associations between people, things, and locations – replace and augment manual tracking

• Mobile Aspects
  - Passive RFID supply cabinets with robust product database
  - Track supply dispensing for expensive, critical inventory items

• LiveData
  - OR Dashboard collating and displaying pertinent data
  - No longer just a display: interactive safety timeouts

• SafeLabel
  - Address issue of accurate, legible, and informative drug labeling
  - High level of integration with Anesthesia Information Management System (AIMS)
Technology Evolution Allows MGH to Replace Bar Code Tracking

- Business challenge: congested pre-admission testing clinic trying to get a handle on patient flow and resource utilization
- Recently implemented bar code solution to track patient steps
  - Downfall – highly dependent on people remembering to scan
- True room-level resolution via receivers (4) and exciters (12+) will “do the math” to display similar tracking data
OR Dynamic – Driven off Time Stamps

- Future use when technology is vetted: Use time-stamp data in an automated fashion in the Perioperative Nursing Record
Using RFID to Address Supply Documentation Needs

• Origins into interventional vascular, radiology, and cardiology realms. Moving in Ortho implants and Bone Bank.

• Much of critical data capture (lot #, serial #, expiration) can be achieved by non-clinical staff

• Product/tag database + patient schedule data stream + passive RFID cabinets and readers = automated knowledge of supplies at case/patient-specific level

• Integration with Periop Nursing Supply Documentation screens
  – Downstream feeds for patient charging, inventory reordering, and SMDA
Documentation as a Byproduct of Clinical Process

• OR Dashboard installed in all new ORs
  – Relevant demographic, procedure, staff, process, and patient clinical
  – The allure of a large screen in undeniable

• Active Time Out walks clinical staff through the WHO protocol: preop huddle, presurgical timeout, and postsurgical debriefing
  – Currently performed on tri-fold paper document with some duplicate documentation in the online record

• Surgeon (even while scrubbed) can walk the care team through process
  – Use a clicker to confirm that steps have occurred
  – System predominantly has steps you click through, but some steps require the answer to a choice
  – In the background, recording the timing of each step
  – Database can feed back into any required records
Screenshot #1: Pre-procedure Huddle

When the surgical team is ready, perform the

Preoperative Huddle
Surgical Safety Check

6th Annual AMIA Invitational Health Policy Meeting
Screenshot #2: Start of Pre-procedure Time Out

**Time Out**

- **Team is ready to do the time out. All other activity stops.**
  - **Nursing**
    - Scrub: Alan Coff
    - Circ: Michelle Sharp
  - **Anesthesiology**
    - Anes: Jack Schwartz
  - **Surgeons**
    - PA: Steve Grande
    - Prim: Charles Dunn
  - **Circulator:** All team members introduced?

**Surgeon: Ready to do the time out?**

- What is the patient’s name and identifiers?
- What procedure is to be performed?
- Is the patient in the correct position?
- Is the surgery site correctly marked?
- Does the patient have any allergies?
- Has antibiotic prophylaxis been given, if applicable?
- What fluids, irrigation, or medications are needed?
- Is essential imaging correctly displayed?
- Is there anything else to disclose?
Screenshot #3: Moving Through the Time Out

**Patient Identification**

- Circulator: Review accuracy of consent form
- Anesthetist: Confirm patient name
  - **Adams, Aimee**
- Date of birth
  - **1934-04-16**
- Anesthetist: Confirm MRN
  - **A1234567**
- Surgeon: Verbally affirm

**Surgeon:** Ready to do the time out?

- What is the patient's name and identifiers?

- What procedure is to be performed?
- Is the patient in the correct position?
- Is the surgery site correctly marked?
- Does the patient have any allergies?
- Has antibiotic prophylaxis been given, if applicable?
- What fluids, irrigation, or medications are needed?
- Is essential imaging correctly displayed?
- Is there anything else to disclose?
Screenshot #4: Post-procedure Debriefing

**Procedure Name**
- [ ] Procedure name (from OR Dynamics)
  - **Hemorrhoidectomy Stapling With Kenelog Injection**
- [ ] Surgeon: Verbally confirm procedure name
- [ ] Anesthetist & Circulator: Read back procedure name after documenting

**What is the procedure name to be recorded?**
- Has the team reconciled all specimens?
- Does the team agree with the instrument, sponge, and sharp count status?
- Were any equipment concerns noted?
- What are the key concerns for recovery and management of this patient?
- Is there an ID band on the patient?
Screenshot #5: Moving through the Debriefing

Specimens

Pathology Specimens

☐ Surgeon: Confirm number and labels
☐ Circulator: Confirm pathology form completed

What is the procedure name to be recorded?

Has the team reconciled all specimens?

Does the team agree with the instrument, sponge, and sharp count status?

Were any equipment concerns noted?

What are the key concerns for recovery and management of this patient?

Is there an ID band on the patient?
Improving Safety, Workflow, and Documentation in Anesthesia

- Visual and audible confirmation of each drug name and concentration
- Automatic calculation and labeling of expiration
- Warnings for expired drugs and patient allergies
- Scan the “what”, document the “how much”
- Labels include all elements of the TJC requirements, ASA color and content guidelines

Acknowledgements: Wilton Levine, MD and Safelabel.com
Appreciate where technology can take you

• Be judicious
  – Technology should enhance workflow
  – Technology may allow you to know more than you may be comfortable knowing

• System integration points are often trickier than they should be, for very mundane reasons

• It’s a rare vendor that delivers all it promises, but it’s in their interest to evolve product

• Make robust data available “in the moment”

• Create retrospective data available for ideas you haven’t even thought of