

Assessing and Improving the Transfer of Patient Care Responsibilities: *Implementing the 2006 JCAHO Patient Safety Goals*

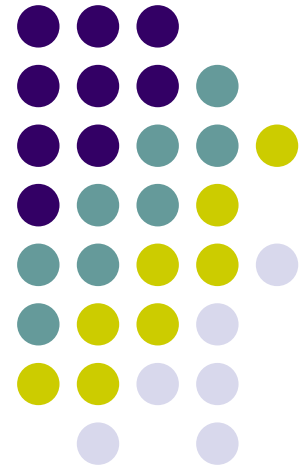
Vineet Arora, MD, MA
University of Chicago

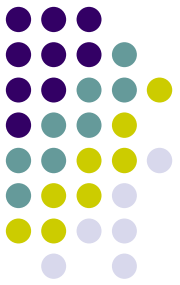
Paul Barach, MD, MPH
University of Miami

Julie Johnson, MSPH, PhD
*University of Chicago and
American Board of Medical Specialties*

August 22, 2006

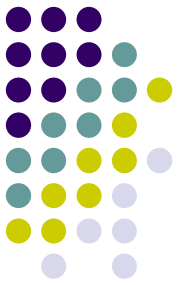
2:45 – 3:45





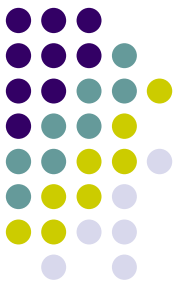
Objectives

- Understand safety of hand-off process and new JCAHO requirements for hand-offs
- Learn strategies for safe and effective hand-offs from other industries
- Review what we've learned about hand-offs in clinical settings



Who's in the audience?

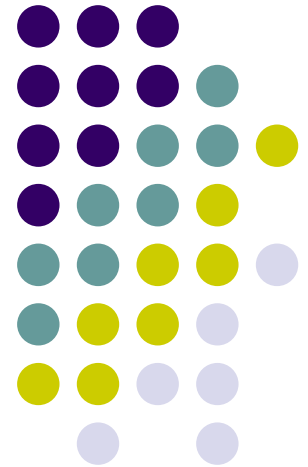
- Physicians
- Nurses
- Pharmacists
- Administrators
- Social workers/Case managers
- Other



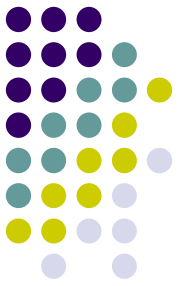
Overview of Session

- Case presentation
 - “A Hand-off During the JCAHO Site Visit”
- Audience Poll
- Hand-offs in clinical settings
 - University of Miami experience
 - University of Chicago experience
- Lessons learned from other industries
- Final thoughts and recommendations

“A Hand-off During the JCAHO Site Visit”

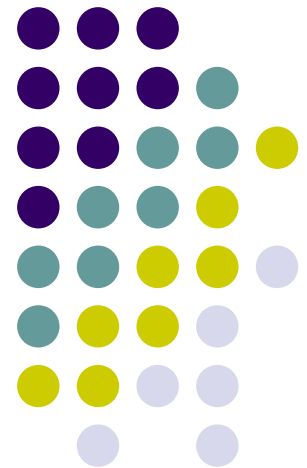


Debriefing from the Role Play

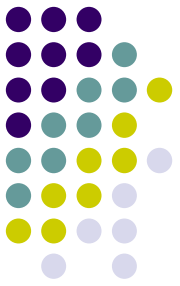


- What types of barriers to an effective hand-off did you observe?
 - Environment
 - Cultural
 - Communication
 - Any others?

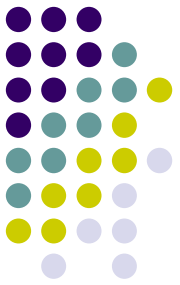
What are the types of handoffs that come to mind when you think about handoffs?



How do you transfer care at your institution?



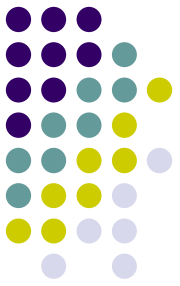
- Do you have formal training on how to perform hand-offs?
 - Yes
 - No
- Is verbal communication required for hand-offs?
 - Yes
 - No



Role of Hand-offs

- Exchange of vital information
- Shared mental models and cognition of patient status
- Exchange and uptake of responsibility
- Part of the microsystem life-cycle
- Vital to Unit, patients, and workers survival

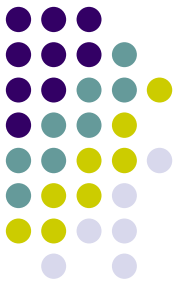
How can you learn about hand-offs in your setting?

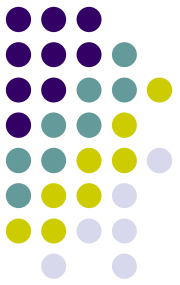


- Observational studies
- Interviews
- Surveys
- Process analysis

Institutional Studies

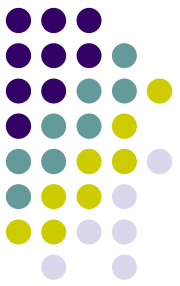
- University of Miami
- University of Chicago





The shift change study

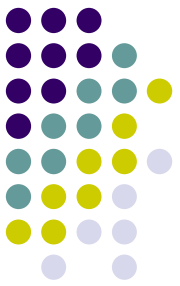
- Behaviors, Attitudes, and Perceived Risks: Communication of Patient Care Information Across Shifts in Critical Care Settings
 - Shift changes (handoffs, sign-outs) represent transitions that can impact the quality of patient care and patient safety
 - The literature dominated by the nursing profession
 - Little known about the factors related to shift changes in health care that can undermine patient care



The shift change study

- Shift changes were investigated:
- At three different sites:
 - The PICU, PACU, and an adult patient ward
- From three different perspectives:
 - Ethnographic observations on nurses' and residents' behaviors and methods of communication
 - Structured interviews with nurse managers, attending physicians, nurses, residents, fellows, and hospital administrators on detailed attitudes and perceptions of risk with regard to handoffs
 - A hospital-wide on-line questionnaire about general attitudes and perceptions of risk related to handoffs

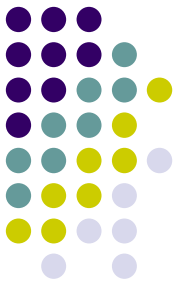
Sharit J, Thevenin, D, Barach P, Human Factors 2005.



Observational data

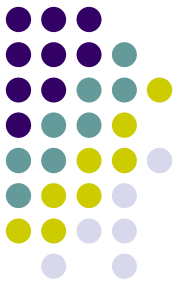
- Shifts 7am-7 pm
- Expressed 30 min allotted for SO
- 24 observations, total of 85 hours, at different days of the week and weekend
- 8 outgoing nurses, with at least 2 observations per nurse:
 - 2 occurred over 30-60 mins
 - 3 occurred over 20-30 mins
 - 6 occurred over 15-20 mins
 - 6 occurred over 7-15 mins
 - 7 occurred over 2-5 mins (28%)
- Acuity of patients correlated to length of hand-off to some degree but large overlap of duration of time
- Full IRB obtained

Methods used to conduct sign-outs



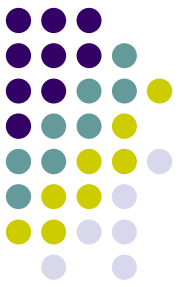
- Out of 24 observations
 - Face-to-face communication was used in all cases (24/24)
 - Charts/handwritten materials were used in 23 cases (23/24)
 - Monitors/equipment were referred to in 13 cases (13/24)
 - Electronic records, computers, or other providers were never used (0/24)
 - Pointing to the patient occurred in 21 cases (21/24)
 - Touching the patient occurred in 5 cases (5/24)
 - Verbal communication with the patient or family never occurred (0/24) despite open visiting hours

Behaviors of the nurses during shift change reports



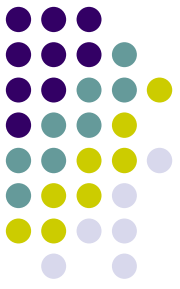
- Overall the outgoing nurses (OGNs) were observed to be friendly and appeared willing to share information with the incoming nurses (ICNs)
- The ICNs were generally not found to be too inquisitive either in am or pm hand-offs (qualitative scale of none-little-lot)

Interviews: Sign-out training and evaluation



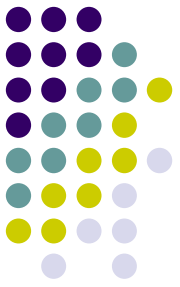
- No formal mechanisms are in place either for instruction on how to perform sign-outs, or for evaluating the sign-outs of nurses
- Senior nurses, >15 years on job, 25-45 min structured interviews
 - Nurse Manager (NM)#1: “Nurses are so individualized and patients are so individualized—it would be difficult (but not impossible) to standardize the process”
 - NM#2: “You buddy up with a senior nurse for a finite period and learn from that nurse what should be communicated to the next shift”

Example 1: How ineffective sign-outs can compromise care



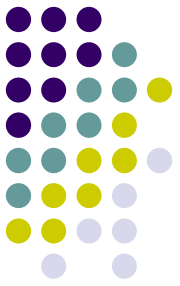
- Omission in communication (NM#1)
 - OGN fails to communicate to ICN that patient is going to have a MRI that morning
 - ICN does not follow through to ensure MRI is obtained
 - Patient's treatment delayed due to poor scheduling with no back up system beyond the hand-off request

Example 2: How sign-outs can compromise patient care



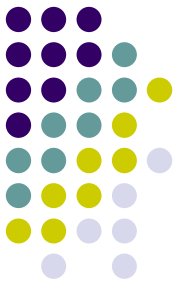
- False assumption due to ambiguity in communication leading to missed urgency (NM#2)
 - OGN indicates “I had some trouble with this port”
 - ICN assumes, based on the nature of the communication, that the port was still flushing
 - “After hooking everything up it didn’t work and I needed to get meds in”
 - “I should have asked more questions”

Example #3: Perceptions on role of technology



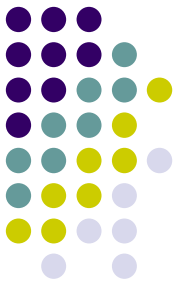
- NM#1
 - “Written (electronic) notes are subject to interpretation”
 - “You can’t just read and interpret—you need to integrate verbal report with visual cues”
 - Computerized charting would be helpful, make checking of orders and calculations easier, aid documentation and leave more time for touch and feel
- NM#2
 - “Face-to-face communication is essential”
 - Computerized charting would increase legibility, expedite the process and keep nurses at the bedside

Example 4: The relative roles of cultural background, personality, and experience level in sign-outs



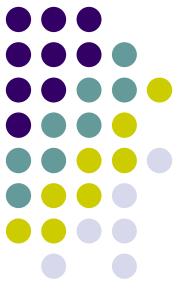
- NM#1: “Most of these critical care nurses are cut from the same mold” (and rise above these factors)
- NM#2: “Personality and experience are influential factors”, and “not cultural”
- NM #2 “Inexperienced nurses need to be guided on how to ask veteran nurses...”

Example 5: Conceptualizations of ideal sign-outs



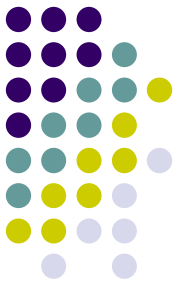
- NM#1: “No distractions, thorough review of the patient's parameters, overview of how patient did [that night], and then focusing on “visualizing the patient” to ensure IVs, fluids, drips are correct, side-rails are up, ID band is on”

Example 6: Conceptualizations of ideal sign-outs (SO)



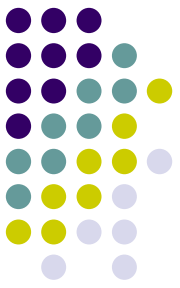
- NM#2: “Stand next to what the issues involve, “touching and poking”
 - “Stop at each point, look at it, then go to face-to-face [with nurse]”
 - “Doctor’s orders should be removed from SO and done after” (saving 15-20 minutes at times)
 - “As an ICN, familiarity with the OGN, experience of the OGN, and familiarity with patient should dictate how you prioritize the SO”

University of Chicago Experience



- Internal Medicine Department Study
- Development and Implementation of Standard Protocols

Critical Incident Study of IM Hand-offs



- To characterize communication failures during hand-offs and solicit suggestions for improvement

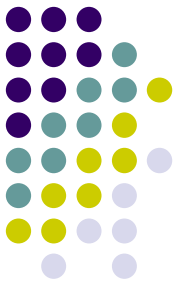
Question designed to elicit information about adverse events and near misses

Was there anything bad that happened or almost happened last night because the (VERBAL/WRITTEN) sign-out wasn't as good as it could have been?

Question designed to elicit information about ideas for improvement

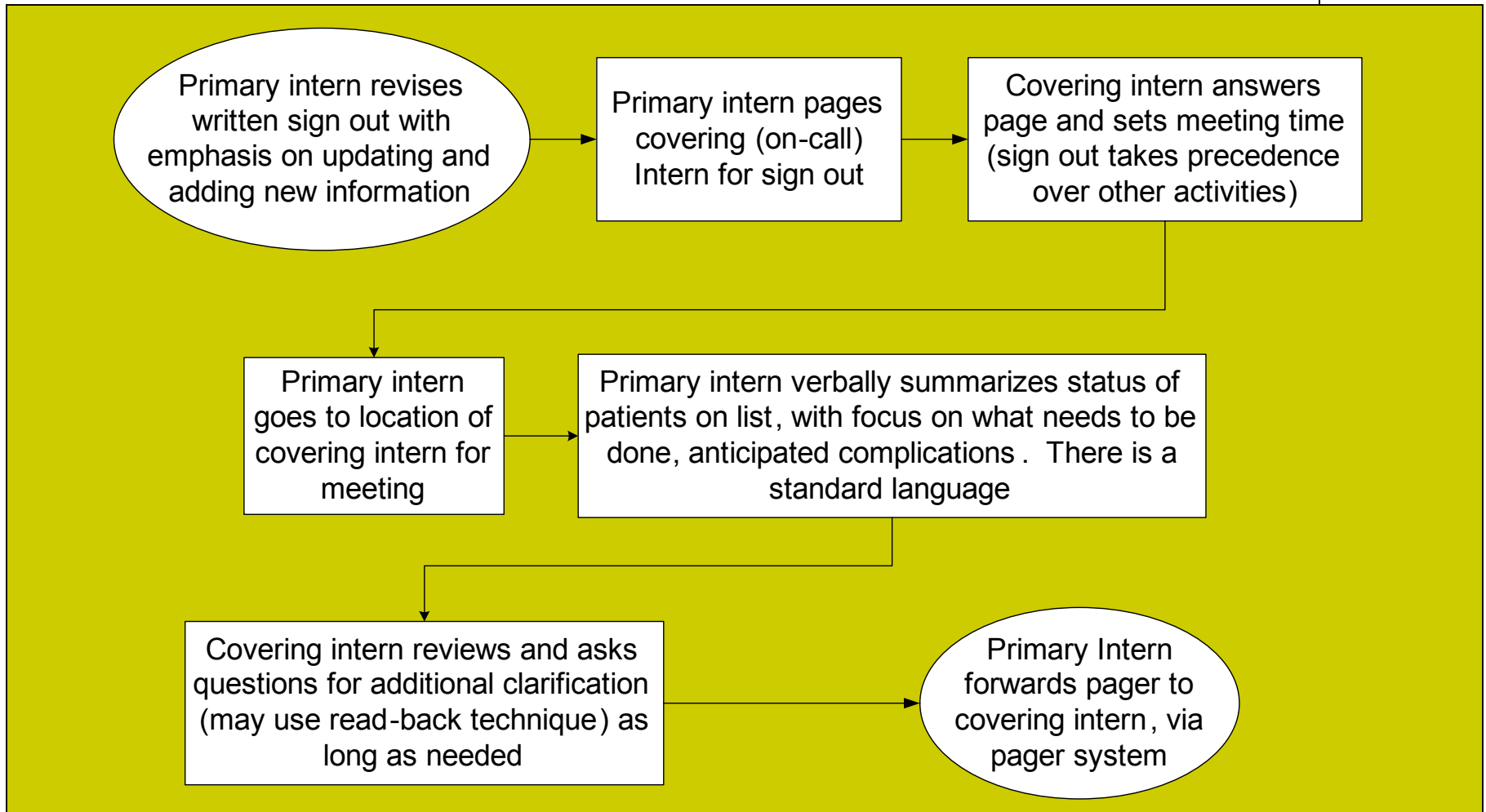
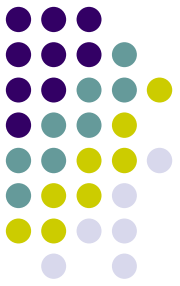
Regardless of whether anything went wrong or almost went wrong, and thinking about what should be included in a sign-out, is there anything about the (VERBAL/WRITTEN) sign-out that you received that you think should have been better?

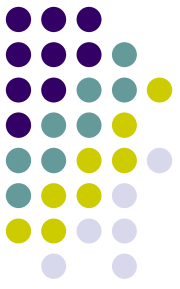
Developing a Model for a Standard Protocol



- Principles underlying the model
 - The hand-off protocol will need to be discipline specific
 - Standardization is key for both process and content
- **PROCESS**
 - Create a process map
- **CONTENT**
 - Create a standard check-list
- **IMPLEMENTATION**
 - Leadership and resident buy-in
- **MONITORING**
 - Ensure the protocol is in place and identify and resolve barriers

A Sample Hand-off Process (Internal Medicine)





Determine the Standard Content: ANTICIPATE

- Develop a checklist
- Have disciplines customize to their needs
- Can be used to evaluate the quality of hand-offs

✓ Administrative Data

- Patient name, age, gender
- Medical record number
- Room number
- Admission date
- Primary inpatient medical team, primary care physician
- Family contact information

✓ New Information (Clinical Update)

- Chief complaint, brief HPI, and diagnosis (or differential diagnosis)
- Updated list of medications with doses, updated allergies
- Updated, brief assessment by system/problem, with dates
- Current “baseline” status (e.g., mental status, cardiopulmonary, vital signs, especially if abnormal but stable)
- Recent procedures and significant events

✓ Tasks (What needs to be done)

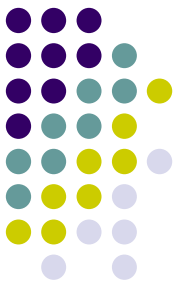
- Specific, using “if-then” statements
- Prepare cross-coverage (e.g., patient consent for blood transfusion)
- Warn of incoming information (e.g., study results, consultant recommendations), and what action, if any, needs to be taken that night

✓ Illness

- Is the patient sick?

✓ Contingency Planning / Code Status

- What may go wrong and what to do about it
- What has or hasn't worked before (e.g., responds to 40mg IV furosemide)
- Difficult family or psychosocial situations
- Code status, especially recent changes or family discussions



Results

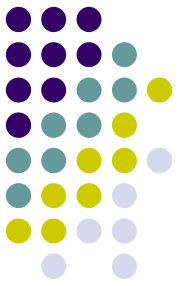
- To date, 8 residency programs have participated.
- Analysis of these protocols demonstrates that the hand-off process is highly variable and discipline-specific.
- Process and content analysis of protocols yields several themes.

1. Understand and attempt to reduce the variation in the process



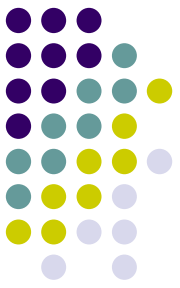
- All disciplines “required” a verbal hand-off
- BUT due to competing demands (OR, clinic, etc.), this verbal communication sometimes did not occur
 - Educate residents on this important priority
- Individual-level variation also present
 - “Some residents are better at making themselves available and touching base with you [during the hand-off] than others...”

2. Hand-off = Transfer of information + professional responsibility



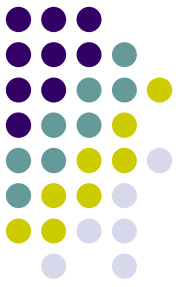
- Transfers were at times separated in time and space
 - In one program, departing residents forward their pager to the on-call resident after they provide a verbal hand-off.
 - In another program, the on-call resident transfers a virtual pager to their own pager at a designated time which often occurs well before they receive a verbal hand-off.

3. Need to ensure “closed-loop” hand-off communication



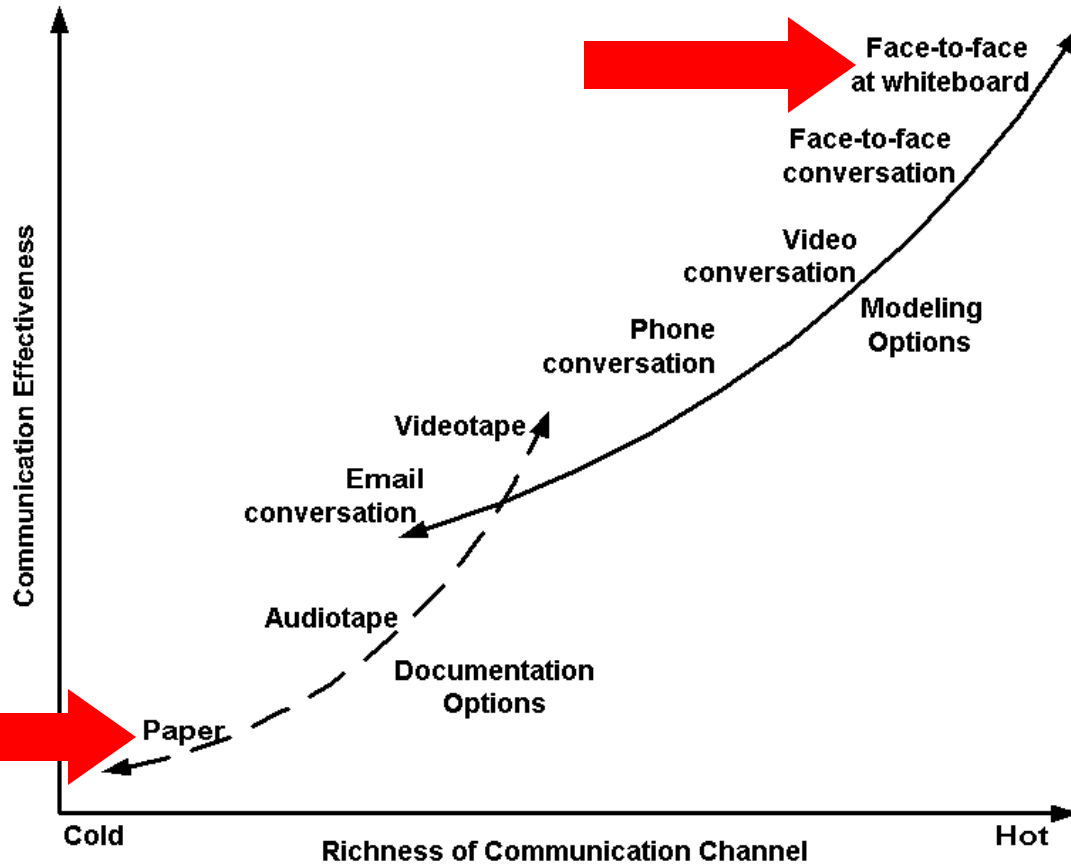
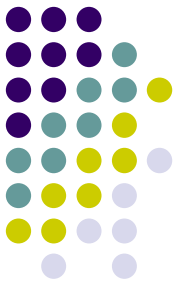
- In two cases, patient tasks were divided and assigned to other team members
 - To facilitate early departure of a post-call resident (to meet resident duty hour restrictions)
 - BUT results of these tasks were not formally communicated to anyone
- Residents ensured “closed-loop” communication by building required follow-up on these tasks into the process

Lessons from Other Industries and Applications to Healthcare



- Lessons learned from other high-risk industries
 - Strategies for effective hand-offs
- Applications to healthcare
- Recent focus in healthcare
 - ACGME duty hours
 - JCAHO National Patient Safety Goal

Hand-off as a Form of Communication

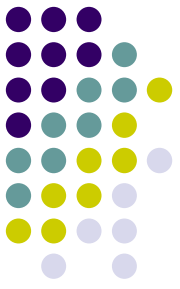


Original Diagram Copyright 2002 Alistair Cockburn, Modified Version Scott Ambler 2002

“When you move from right to left, you lose richness, such as physical proximity and the conscious and subconscious clues. You also lose the ability to communicate through techniques other than words such as gestures and facial expressions. The ability to change vocal inflection and timing to emphasize what you mean is also lost...Finally, the ability to answer questions in real time, are important because questions provide insight into how well the information is being understood by the listener.”

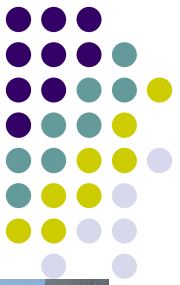
—Alistair Cockburn

Hand-offs in Other High-Risk Industries



- Direct observations of hand-offs at NASA, 2 Canadian nuclear power plants, a railroad dispatch center, and an ambulance dispatch center
- STRATEGIES
 - Standardize - use same order or template
 - Update information
 - Limit interruptions
 - Face to face verbal update
 - with interactive questioning
 - Structure
 - Read-back to ensure accuracy

Applications of Standard Language



- “Read-back”
 - Reduces errors in lab reporting



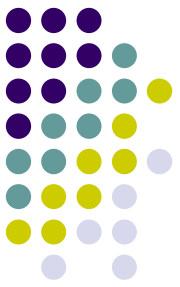
“Read-backs” at your neighborhood Drive-Thru

Table 2
Description of Errors

Description of Error	No. (%) of Occurrences
Incorrect name of patient	10 (34)
Incorrect test result	9 (31)
Incorrect specimen/test repeated	6 (21)
Recipient refused to repeat message	4 (14)
All	29 (100)

29 errors detected during requested read-back of 822 lab results at Northwestern Memorial Hospital. All errors detected and corrected.

A Word of Caution on Technology

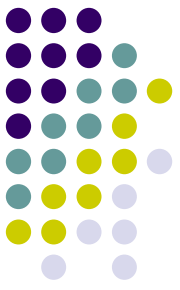


- Computerized sign-out
 - Brigham and Women's Hospital
(Petersen, et al. Jt Comm J Qual Improv, 1998)
 - U Washington
(Van Eaton, et al. J Am Coll Surg, 2005)
- IT solutions alone cannot substitute for a “successful communication act”
 - Human vigilance still required



In an emergency room, replacing a phone call for critical lab values with electronic reporting with no verbal communication resulted in 45% (1443/3228) of urgent labs to go unchecked.

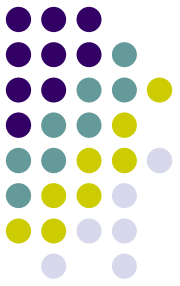
Recent Focus on Hand-offs



- July 2003– ACGME set limits for resident duty hours
 - Reduce sleep deprivation and improve patient safety
- Unintended consequence is increase in number of hand-offs (discontinuity)
- Safety of hand-off?
 - Error-prone and variable
 - A vulnerable “gap” in patient care



The Role of the Hand-off: Communication and Patient Safety

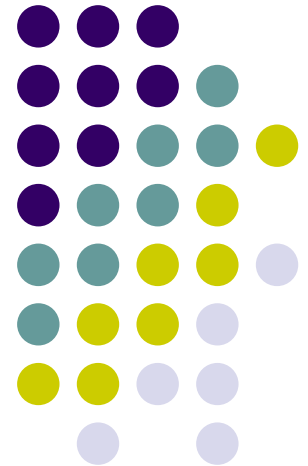


- Transfer of information (content)
- Different modalities (process)
 - Written
 - Verbal
- Variable, error-prone
- Few trainees receive formal education

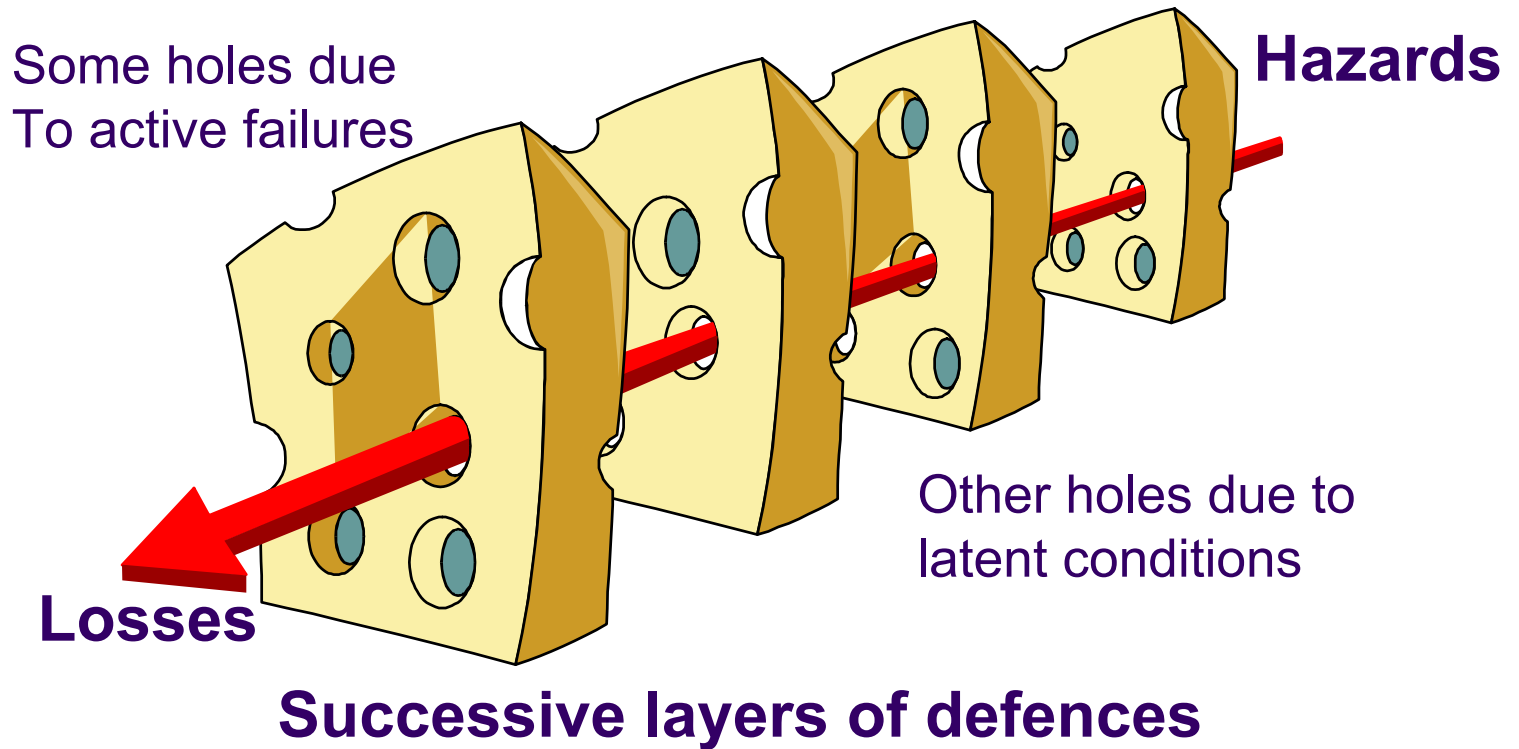
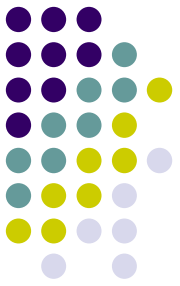


- New JCAHO National Patient Safety Goal (effective Jan 1, 2006)
 - “Requires hospitals to implement a standardized approach to hand-off communications and provide an opportunity for staff to ask and respond to questions about a patient's care”

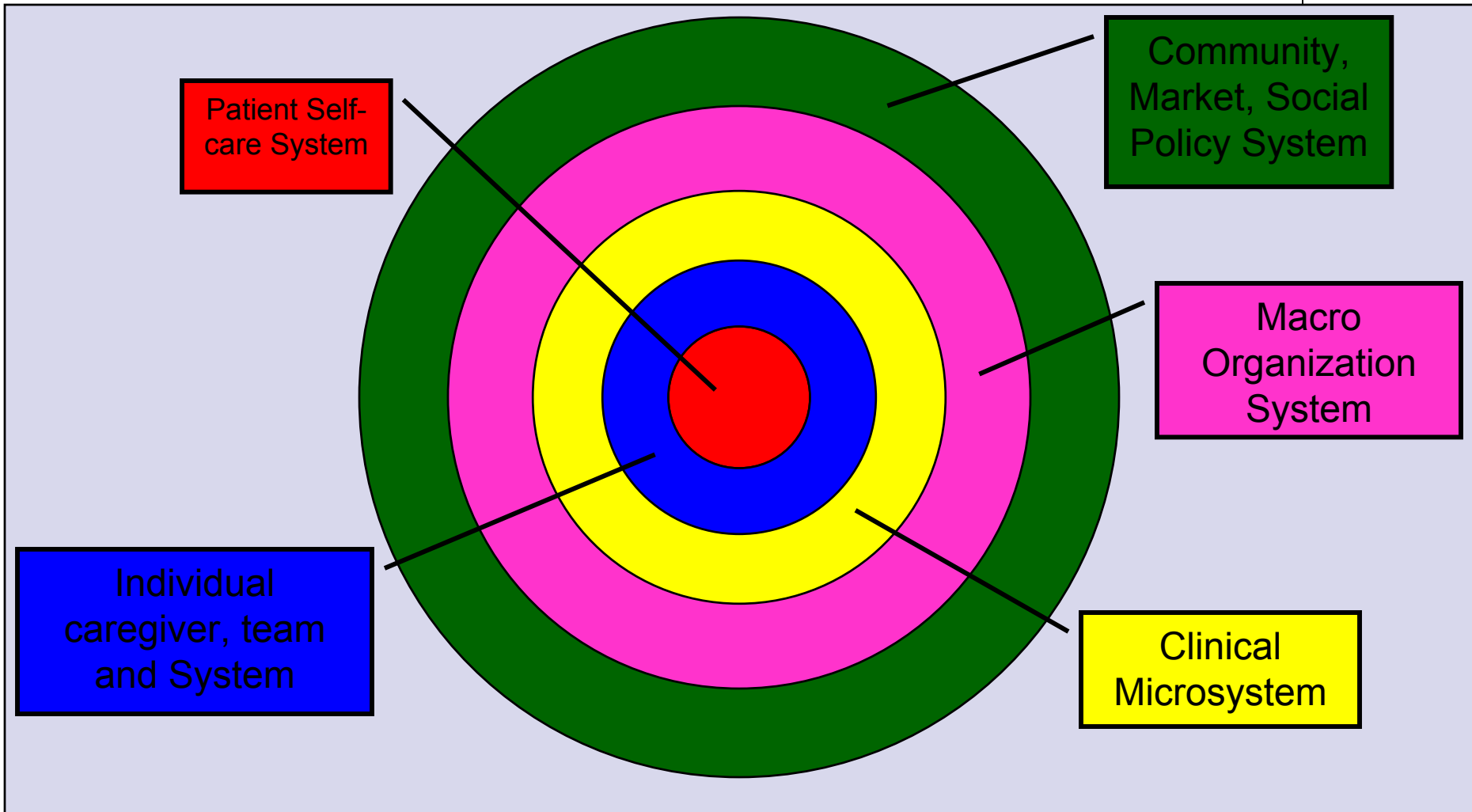
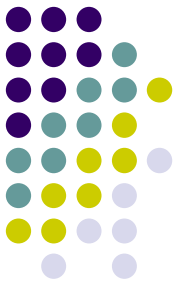
Final Thoughts and Recommendations



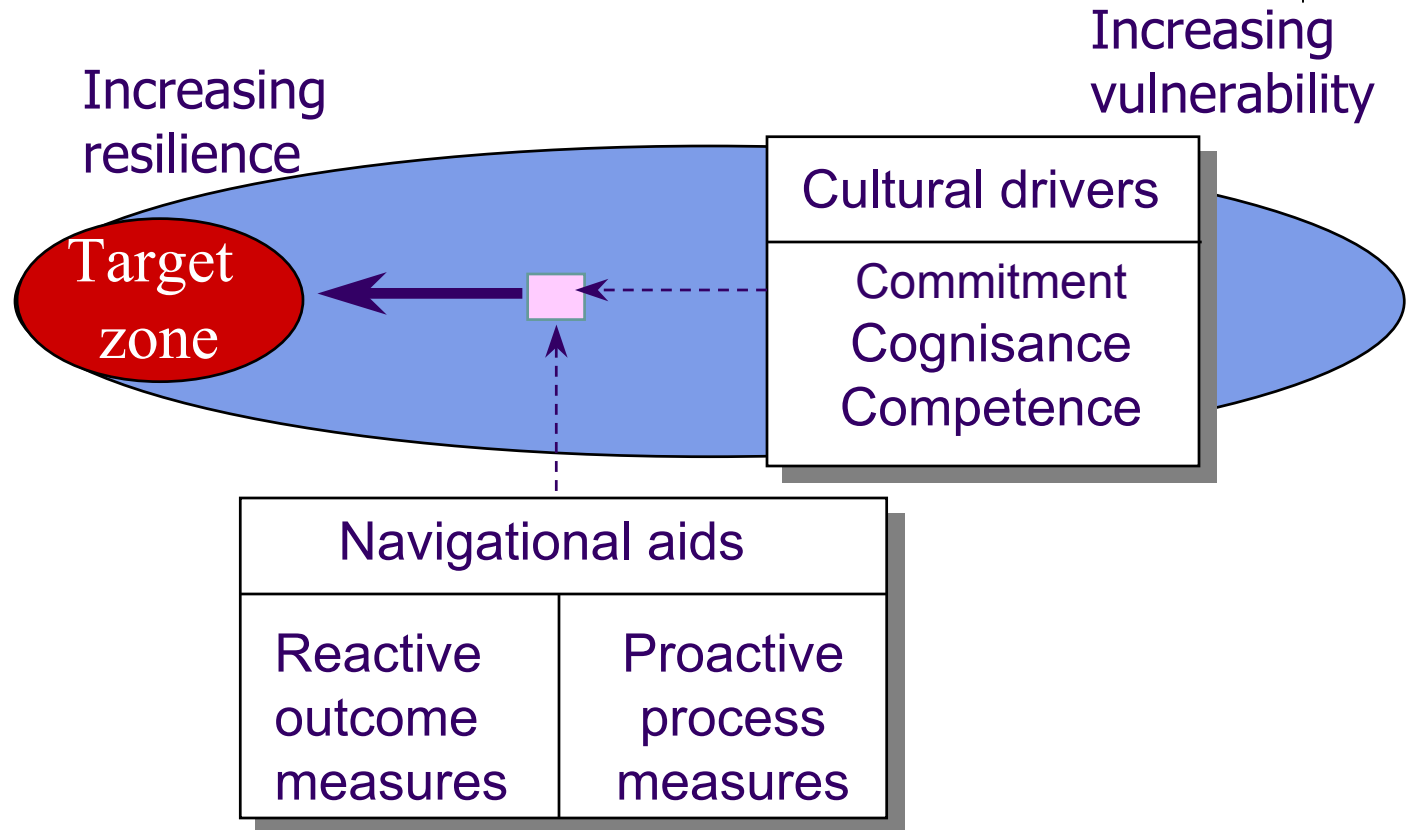
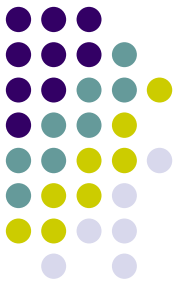
The 'Swiss cheese' model of organisational accidents



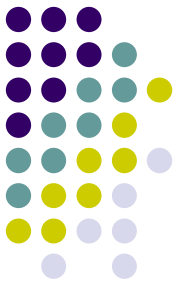
Microsystems Exist Within Other Systems



Navigating the safety space

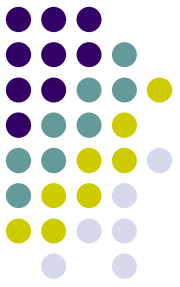


Safety is a 'dynamic non-event'



- 'Dynamic' because safe outcomes are achieved through the timely adjustments of skilled human operators to changes in an uncertain world.
- 'Non-event' because nothing bad happened and 'normalcy' does not claim attention.
- 'Nothing bad happened yesterday so if I do the same things today all will be well.'
- This only holds true if you really know what happened yesterday.
- Do not erode 'discretionary energy' at the sharp end.

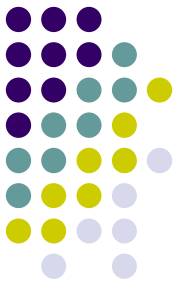
Barriers To Achieving Ultra-safe Healthcare



- Acceptance of limitations on maximum performance
- Abandonment of professional autonomy
- Transition from mindset of craftsman to that of an equivalent actor
- Need for system-level arbitration to optimize safety
- Simplify professional rules and regulations

Amalberti R, Berwick D, Barach P. *Annals of Internal Medicine* 2005;142:756-764.

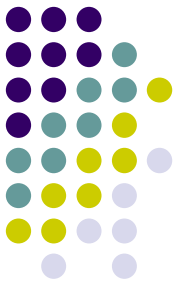
Error Management (EM) Principles



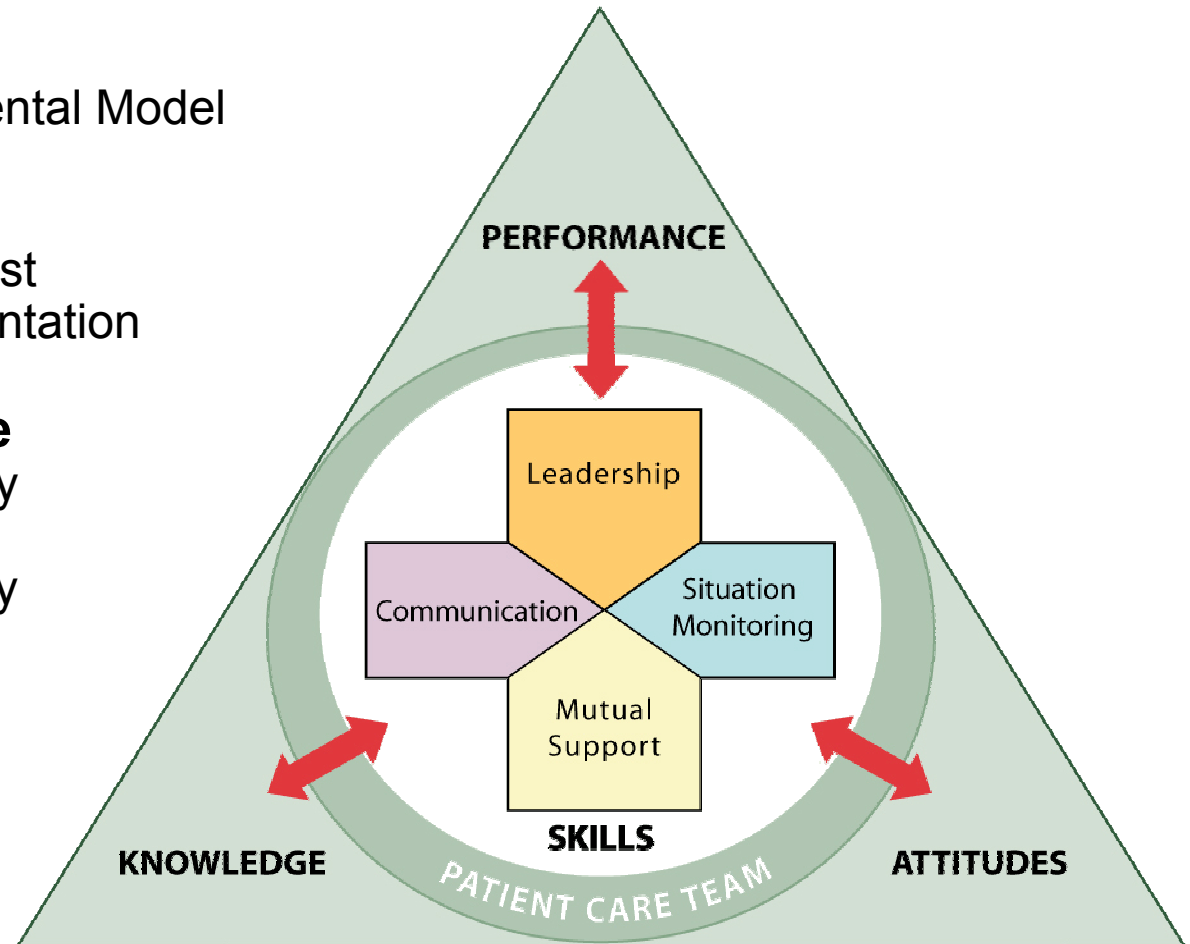
- The best people can make the worst mistakes.
- Errors fall into recurrent patterns: error traps
- You can't change the human condition, but you can change the conditions under which people work
- There is no one best way of doing EM
- It requires different measures at different levels of the system
 - The person
 - The team
 - The microsystem/workplace
 - The organization as a whole.

Mohr J, Barach P. Quality and Safety in Health care 2005.

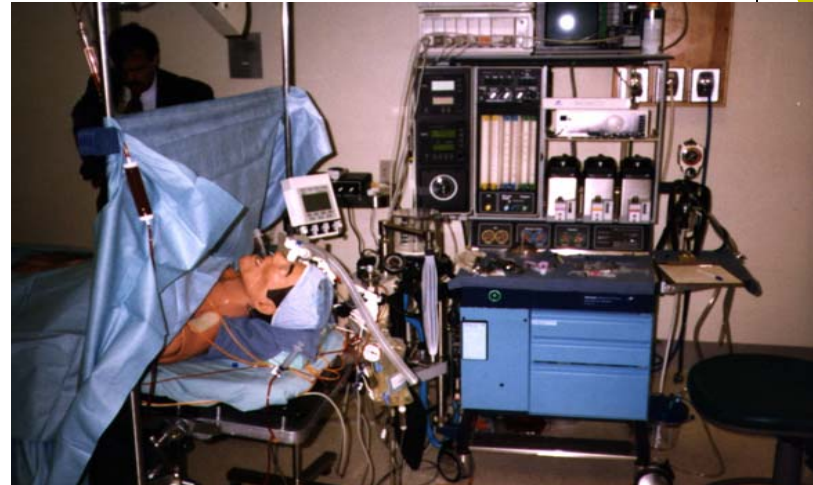
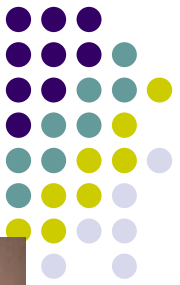
The TeamSTEPPS Framework



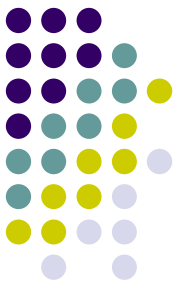
- **Knowledge**
 - Shared Mental Model
- **Attitudes**
 - Mutual Trust
 - Team Orientation
- **Performance**
 - Adaptability
 - Accuracy
 - Productivity
 - Efficiency
 - Safety



Patient Simulators

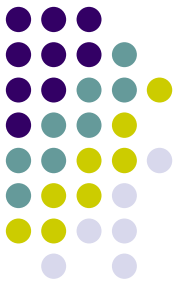


Lessons learned

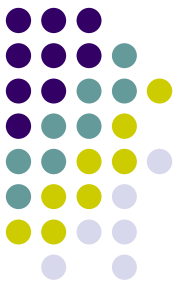


- Correct Ergonomic Barriers
 - Workspace design: access to necessary equipment and lighting
 - Equipment: malfunction, inaccessible or difficult to interpret
- Aim to Reduce Variation through Standardization
 - Lots of expert based tools hard to articulate are used to convey patient complexity and urgency
 - Focus on requiring verbal communication & correcting barriers to achieving this
- Importance of a Safety Culture that supports Hand-offs as a Priority
 - Barriers include scheduling issues and fatigue
 - The hand-off is more than just transfer of content, also the transfer of professional responsibility

Eminent Need for Formal Training



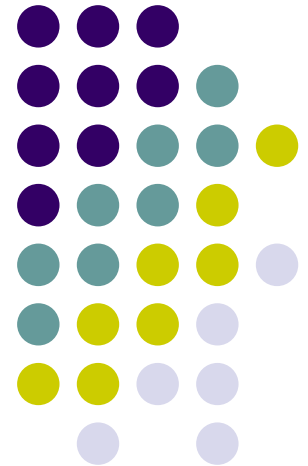
- Ensure adequate skill levels for complexity of patient care
- Train teams for effective hand-off communication:
 - Using techniques from other industries
 - structured language “read-back”
 - “Close the loop” on all hand-off communications, etc.

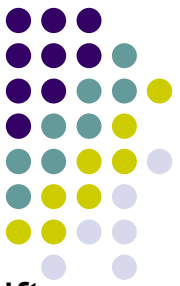


Future work

- We are still in the early stages of our work
- Continue our research
 - Mechanisms of human failures during sign-outs,
 - Human factors and ergonomic issues that impede the sign-out process
 - Perceived risks associated with shift changes by different classes of providers and administrators
 - Understanding shared work better
- Ultimately, the goal is to identify and implement interventions that can reduce the risks associated with transitions in care

Extra Material

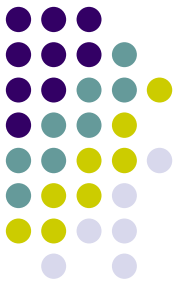




Sample of the 14 questions for nurses and residents

1. What methods do you use to provide information to the incoming shift on the patients for whom you have provided care? Of these methods, which do you prefer, and why?
2. Do you sometimes find it difficult to communicate with the incoming shift? If so, what do you feel is the basis for this difficulty?
3. Can you recall a specific instance or instances where problems arose in patient care that resulted in part from having received inadequate, incorrect, or ambiguous information from the outgoing shift? If so, try to recount the situation.
4. Do you feel that the experience level, personality, or cultural background (including language issues) of the provider can impact the effectiveness of sign-outs? If so, do you have any anecdotal evidence that you can provide as support for these beliefs?
5. Have you ever had a discussion or confrontation with a nurse/resident concerning the way that person conducted a sign-out procedure? If so, what was the basis for your intervention or discussion?
6. In your view, what constitutes an ideal sign-out? Feel free to discuss any attributes of the sign-out process.

Taxonomy of Sign-out Quality



POOR SIGN-OUT

Omissions in Content

- Medications or Therapies
- Tests or Consults
- Medical Problems
 - Active
 - Anticipated
- Baseline status
- Code status
- Rationale of primary team

Failure-Prone Processes

- Lack of Face-to-Face Communication
- Double Sign-out (“Night Float”)
- Illegible or Unclear Handwriting

EFFECTIVE SIGN-OUT

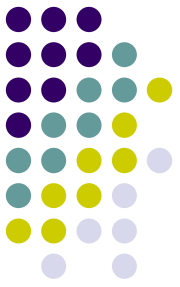
Written Sign-out

- Patient Content
 - Code status
 - Anticipated problems
 - Active Problems
 - Baseline Exam
 - Pending Test or Consults
- Overall Features
 - Legible
 - Relevant
 - Accurate
 - Up-to-date

Verbal Sign-out

- Face to Face
- Anticipate
- Pertinent
- Thorough

UC Standard Hand-off Protocol: Progress to Date

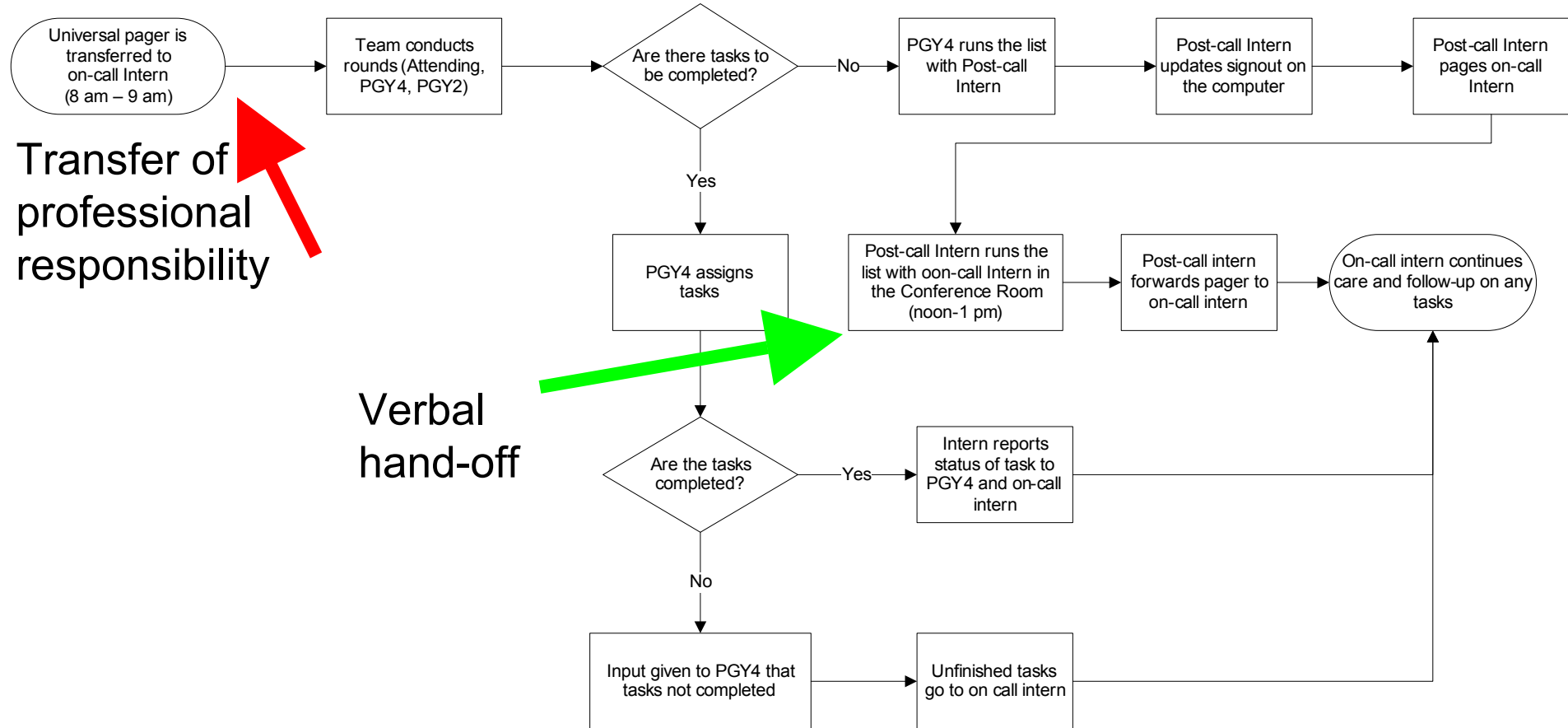


- In-service for all program directors conducted Nov 2005
- Worked with the following programs to develop discipline-specific protocols for resident education:
 - Obstetrics and gynecology
 - Psychiatry
 - Pediatrics
 - Otolaryngology
 - Orthopedic Surgery
 - Neurology
 - Internal Medicine
 - Anesthesia
- Presented to UCH Board of Trustees
- Protocols distributed at new intern orientation July 2006
- Working on continued education and monitoring plan

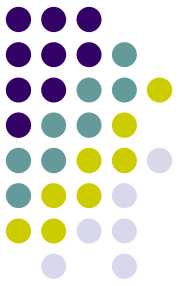
Understand technical, cultural, and environmental differences



- Environment
 - 5 programs had a designated hand-off location
 - 3 conducted hand-offs wherever convenient
- Culture
 - One resident is a “slave to ‘The List’ [sign-out sheet]” with “information overload”
 - In a different program, only acutely ill patients are on sign-out
- Technical
 - All hand-offs use “administrative data” (name, room, etc.)
 - Major differences in field-specific content
 - Surgical fields: Pre-op consent, post-op checks, etc.
 - Pediatrics: Custodial issues (DCFS, parents, etc.)
 - Common use of some language: “If/Then” for contingency planning



Keep the focus on patient care: Clear roles and back-up behavior



- Anesthesia resident to PACU RN
 - Interdisciplinary hand-off with challenging complex fast-paced environment
- Clear delineation of responsibility to ensure patient care
 - Anesthesia resident to call out for a bed
 - Unit clerk to respond with bed #
 - PACU RN to hook up monitors
- Equally important back-up behaviors
 - Can empower participants to focus on the patient care
 - “If nursing delay >30 sec, then resident to hook up monitors and call for RN”

Post Call Sign-out Process for Pediatrics

February 13, 2006

