

Transitions in Care:
Best of Times, Worst of Times

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Best of Times, Worst of Times

Objectives

1. Illustrate the complexity of transitions / handovers
2. Outline contenting views of transitions
2. Articulate strategies to improve transitions / handovers

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Transitions in Care are Inevitable

Division of labor

24 x 7 work requires transitions

Shift changes are one method of transition

Sign-overs / handoffs bridge gaps between

Different skill groups

Different temporal groups

Explicit, implicit and **latent** processes

Dave Musson, U of Texas / McMaster

Why Are Study Shift Changes an Issue?

“Bad things” happen there

Deeply held lore in most specialties

Managed by admonition to be careful

JCAHO Sentinel Event Alert June 2002

Delay-in-care events associated w/ ‘poor transitions’

2007 National Pt Safety Goal 2E:

Implement a standardized approach to “handoff” communications,
including the opportunity to ask and respond to questions

Case 1: Transition as Failure

Busy PM shift

Overcrowded

Many critical patients

Male patient, somnolent, PHx drug abuse

Overdose, apparent suicide attempt

Toxic APAP level reported ~1500

Antidote (NAC) available

Must start within 8 hrs, repeat doses q 4 h X 17

Complex calculation, 2 different doses

Case 1, continued

ED MD orders loading dose

Defers remaining orders to admitting team, in compliance w/ local practice

ICU team delayed in seeing patient

ED MD and RN shift changes at 1900

“He *is getting* NAC”

Case 1, continued

ICU MD sees pt

“Not sick enough” for ICU, refers to ward team

Ward team delayed, orders written ~2300

ED nursing shift change ~ 2400

Ward bed becomes available ~ 0100

Transferred to ward before orders taken off

Case 1, continued

Floor RN

Order written as mg / kg, but no weight, no scale

Reluctant to awaken pt for weight, med

2nd dose of NAC given 0600 – 0800, ~ 11 hrs after due

Liver failure, death

Isn't This Failure Obvious ?

Shift change is just an information transfer

Just write down all the important information
On a standardized form

That was easy!

Case 2: Transition

Elderly F, late at night, unable to walk, back pain

PE - sl weakness L leg

CT - normal

Admitted to neurology 0630, Dx stroke

No thrombolysis

Case 2, continued

Shift change 0700
 Still in ED (no beds)
 Oncoming MD doubts stroke
 Suggests aortic dissection on handover rounds
 CT chest & abd – extensive aortic dissection, requiring surgical repair
 Successful operation
 Renal failure, died in ICU

Isn't This Obvious?

~~Shift change is just an information transfer~~
~~Just write down all the important information~~
~~On a standardized form~~
~~That was easy!~~

Lead Editorial

Re-framing continuity of care for this century

Philibert, D C Leach

Improvements are needed in teaching "hand-offs" to prevent communication failure between healthcare professionals

It is widely accepted that "continuity of care" is vital to its quality and safety. The traditional approach to achieving this in the inpatient setting has been to minimize transfers among providers to reduce interruptions in the care process. In recent years the effort to limit duty hours for resident physicians (junior doctors) in the US, UK, and EU has highlighted the fact that continuity of care in teaching hospitals cannot depend on trainees working beyond limits that are advisable from a performance and safety perspective. Changing practice in teaching settings and a general movement toward skill- and team-based approaches to patient care have thus also prominence the patient "hand-off" (also referred to as "hand-over," "sign-out," or "sign-over") as the process that enables multiple physicians collectively to ensure continuity and currency of information and care.

Hand-offs occur at many places in the care process. In teaching hospitals their frequency has increased since the imposition of limits on resident (junior doctor) hours, in large part due to the use of duty shifts and "short-call" and "cross-coverage" models in which responsibility for patients is transferred several times during the traditional 24-hour call period, their hour limits also appear to affect the hand-off in other ways, such as reducing the time available for this critical aspect of care.

The hand-off often become "fact" for the next person or team using the information. An example is the wrong side surgery that amputated the healthy leg of a patient because the hand-off between two surgical nurses did not correct an error by a unit clerk who had recorded the wrong leg for amputation. Conceptually, the hand-off is an additive task in which the performance of the incoming and outgoing physicians contributes cumulatively to the accuracy and completeness of the information exchange. Its fluid and loosely structured character, and the dynamic nature of a patient's condition, can result in information becoming lost or distorted or in its misinterpretation by the incoming physician. Consequences can include failure to identify patients whose condition is becoming critical, inefficient allocation of care resources to non-critical patients, duplication of services, and deviation from a previously established plan of care. The US accrediting body for hospitals has implemented communication failures in 60% of sentinel events reported to the organization and has added the hand-off to its patient safety goals for 2006, emphasizing the need for "a standardized approach to hand-off communications, including an opportunity to ask and respond to questions."

STUDY AND TEACHING OF THE HAND-OFF: THREE CONCEPTUAL SCHOOLS

thought to the transfer of information and responsibility among professionals or teams. Paterson et al identified 21 strategies used in end of shift transfers in a number of industries that require accurate information transfer, including space shuttle mission control, power plants, and railroad and ambulance dispatch services. They proposed that many of these strategies are applicable to the patient hand-off, including providing the incoming physician with a summary of care plan changes, contingency plans and a list of tasks to be completed during the next duty period, and the transfer of responsibility for patients to the incoming physician in a clear and non-ambiguous fashion.

As the medical profession conducts research on the patient hand-off, three conceptual schools have emerged. All seek to remedy the perceived vulnerabilities of the hand-off, but different interpretations about causation lead to different approaches to enhance the integrity of the information transfer. The first school declares that its verbal format makes the hand-off vulnerable and suggests that information presented in a clear and consistent fashion using a paper-based or computerized data form can counteract this. An example is the SBAR (Situation-Background-Assessment-Recommendation) approach which is used in a growing number of US hospitals through a cooperative arrangement that provides the SBAR tool at "no charge". At present, a few institutions use an electronic sign-out form that is linked to the electronic medical record or patient order entry system which feeds in relevant data. Research related to this conceptual school of the hand-off frequently applies a standardized data set for the hand-off, finding that this reduces adverse outcomes and participant perceptions of "inadequate sign-out."

The second school believes that the loosely structured interactive nature of the hand-off has inherent strengths by allowing "real time modeling and synthesis" (Brandeijk et al observed that

Philibert, QSHC 2005

Differing concepts of handoffs

Positivist view

There is an identifiable, standard, objective set of facts to be communicated

The verbal format is too sloppy and informal

Therefore, structuration is needed

Process

SBAR and its congeners

Contents

Standardized data sets

Handover forms

Electronic handover aids

**Goal: Comprehensiveness –
good communication depends on completeness**

Differing concepts of handoffs (continued)

'Postmodern' view

Primacy of contextually situated narrative

Loose structure, interactive giving flexibility, supporting:

Efficiency (no more information than is necessary)

Extensive use of context and shared ground

Rapid reconfiguration due to circumstances

Shared recoding and re-synthesis of understanding

Therefore, pre-specified, enforced structuration may increase, not decrease;

Undermines:

Face to face interactions

Conversations, not transactions

**Goal: Salience – good communication depends on leaving
(irrelevant) things out**

Case 3: Transition as Recovery

Young AA women, asthma exacerbation, 0400
Incidentally pregnant, near term
Asthma cleared 0630, ready for discharge
Shift change 0700
Oncoming MD queries pregnancy status
 Notes mild HTN (~140 / 98)
 2+ edema
Calls OB

Case 3, continued

OB notes:

 Previous BPs ~100 / 70
 Wt gain from last visit
 Admits for pre-eclampsia, MgSO₄, etc

Course

 Seizure, eclampsia, blindness, HELLP syndrome
 Delivered of healthy infant, stormy ICU course
 Complete recovery

Emerging Concept : Transitions as Recovery

“Fresh eyes”

Lower work load at AM shift change

?Night shift effect

Attending to anomalies

Back pain unusual in stroke

Evaluating the pregnancy



What Can We Do Now? JCAHO's coming!

Control the environment?

Electronic turnover sheets?

Erase your initials and initial your erasure!

SBAR?

STIC?

Situation – Tactics – Interpretation – Calibration

The Problem is No One Knows

Search of EM literature:

No papers on shift change

Saluzzo, *Emergency Dept Management*

972 pages

½ page on shift change

“Shift change is well known as a high risk period ... take great care”

Assertion

What actually happens at shift change turnovers is
“hard-to-see”

What Are HTS Things?

Hard to see because they are “hidden in plain sight”

“If men were fish, the last thing
they would discover is water.”

Benedict de Spinoza

Danger in studying your own field

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PATIENT INFORMATION LEAFLET DRUG NAME: SUNIX 5MG TABLET

ACE INHIBITORS - ORAL

ESES: ACE inhibitors prevent certain enzymes in the body from constricting blood vessels. This helps to lower blood pressure and makes the heart beat stronger. This medication is used to treat hypertension (high blood pressure) and heart failure.

HOW TO TAKE THIS MEDICATION: This medication may be taken without regard to meals. Take it exactly as prescribed and try to take it at the same time each day. Do not stop taking this medication without consulting your doctor. Some conditions may become worse when the drug is abruptly stopped. Your dose may need to be gradually decreased.

It is important to continue taking this medication even if you feel well. Most people with high blood pressure do not feel sick.

SIDE EFFECTS: Dizziness, headache, diarrhea, constipation, nausea, fatigue, or dry cough may occur the first several days as your body adjusts to the medication. To avoid dizziness and lightheadedness when rising from a seated or lying position, get up slowly.

Inform your doctor immediately if you develop chest pain, difficult breathing, skin rash, tingling of the hands or feet, swelling of the face, lips or tongue or yellowing of the skin or eyes while taking this medication.

PRECAUTIONS: Avoid "stimulant" drugs that may increase your heart rate such as decongestants or caffeine. Decongestants are commonly found in over-the-counter cough and cold medicine. Consult your doctor before using salt substitutes.

Limit your intake of alcohol and use caution when exercising or during hot weather as these can aggravate dizziness and lightheadedness.

Be sure your doctor or dentist knows your complete medical history especially if you are planning to undergo any medical or dental procedures.

This medication has been known to cause fetal injury and possibly death when used during the second and third trimesters. If pregnancy is suspected, stop taking the drug immediately and notify your doctor. Since this drug appears in breast milk breast-feeding is not recommended.

NOTES: It is important to have your blood pressure checked regularly while taking this medication. Learn how to monitor your blood pressure. Discuss this with your doctor.

MISSER DOSE: If you miss a dose, take as soon as remembered; do not take it if it is almost time for the next dose, instead, skip the missed dose and resume your usual dosing schedule. Do not "double-up" the dose to catch up.

STORAGE: Store at room temperature away from sunlight and moisture. Do not store in the bathroom.

SUNIX 5 mg Caplets Patient's Name

Instructions: Take x pills x times a day.

Uses: An Ace Inhibitor Drug, (ACE)
Lowers blood pressure and strengthens heartbeat.
Used to treat high blood pressure and heart failure.

How to Take: Can be taken with or without food.
Take at the same time each day.
Keep taking until the prescription is used up, even if you feel well. Most people with high blood pressure do not feel sick. You may get sicker if you abruptly stop taking the drug.

Missed Dose: Take as soon as you remember.
If it's almost time for your next dose skip the missed dose.
DO NOT take two doses to catch up.

Storage: Room temperature away from moisture and sunlight.
DO NOT store in the bathroom.

Possible Side Effects:

Serious- contact your doctor for:

- Chest Pain
- Difficulty Breathing
- Swollen face, lips, or tongue
- Skin rash
- Tingling hands or feet
- Yellowing of the skin or eyes

Minor- contact your doctor if these do not go away:

- Upset Stomach
- Headache
- Fatigue
- Dizziness
- Dry Cough
- Constipation
- Diarrhea

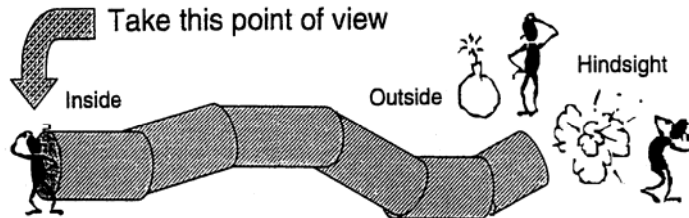
Warnings: Avoid Stimulants such as CAFFEINE or DECONGESTANTS (found in many cough and cold medicines). Do not use SALT SUBSTITUTES without doctor's permission. ALCOHOL may make you dizzy. Limit drinking.

Be careful exercising and in hot weather- you may get dizzy. DO NOT take while PREGNANT. May harm fetus. Do not BREAST FEED. This drug will appear in breast milk.

Check your blood pressure regularly while taking this drug. Be sure your doctor and dentist know your complete medical history and ALL medications you are taking.

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"The Field Guide to Human Error Investigation"
Sydney Dekker

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Our study of ED shift changes

5 N American hospitals

MDs' & RNs' handoffs at shift change

Extensive use of ethnographers

Psychology, sociology, communications, organizational behavior

Key element, resulting from earlier experience

Data volume

134 person-hours observation

4 hours audio tapes

250 pages interviews / field notes

Analysis

Affinity diagram method

Statement in domain, restatement at higher level of abstraction

The Findings – 1

Transitions in care are highly heterogeneous

ED shift change transitions are only one subset of a more complex family of processes

Common Handovers*

| No. pts | Sender/Receiver | Prob(interact) | Example |
|-------------------|-----------------|----------------|---|
| Many | Similar | High | ED, ICU |
| Many | Similar | Low | Ward |
| Few (typically 1) | Dissimilar | High | Admission, Rescue, Discharge, Transfer |

*Hospital-At-Night might add new row: Many – Dissimilar – Low

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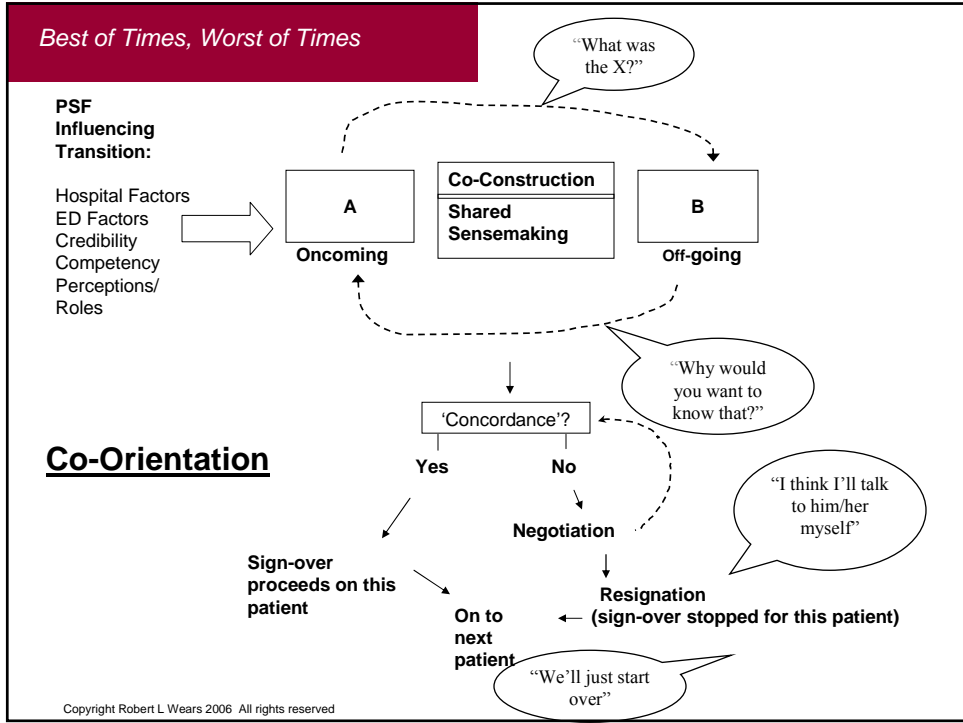
Implications

Wide variation in the genre of sign-overs

Common underlying structure
Different configurations
“One size not fit all”

Sign-overs are interactions, not just transactions;
conversations, not data dumps

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The Findings – 2

A few similarities:

- 4 phase process confirmed
Grusenmeyer 1995, Patterson 2001
- RN, MD always separate
 - RN turnovers more global, work-related problems
 - Less speech before pausing (more elicitation of ‘presence’)
- Informal vs formal tools
- Customary order among patients
 - Geography, acuity
- Common environmental stressors
 - Noise, interruptions, etc

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The Findings – 2

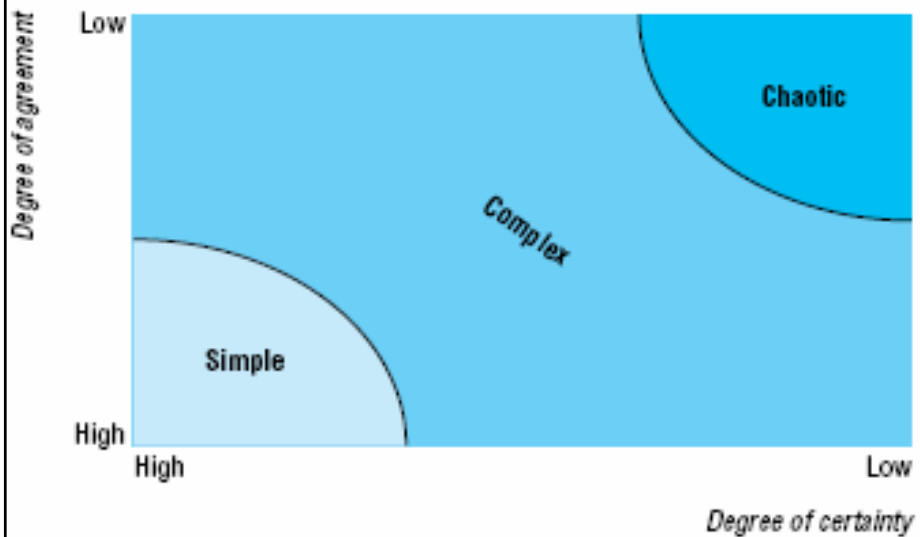
“Extreme locality”

Shift change conducted differently in each of the institutions

- Dyads vs groups
- Bedside vs whiteboard vs ‘regional’
- Pt involvement vs none

Internal heterogeneity

- Differing conversations for differing settings
- Time ~ uncertainty, complexity
- Apparent but unarticulated by participants

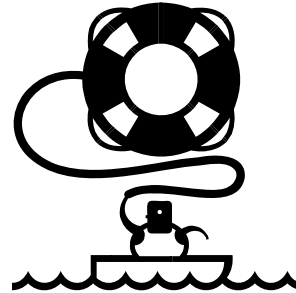


The Findings – 3

Transitions are not only
sources of failure

But

Also sources of recovery



*Why then are shift changes thought
to be high hazard times?*

The Findings – 4

4 of the 5 hospitals studied had tried to 'standardize'
turnover

Typically, 'turnover sheet'

All had failed

None had been published

"Undersampling of failure"

Denrell, *Organization Science* 2003

Reasons for failure?

Not supported by other work practices

Too many misses

Irrelevant items required, relevant items not present

RN Sign-overs-Findings

Content Analysis of audio tapes

Oncoming more likely to seek and initiate "the thing"

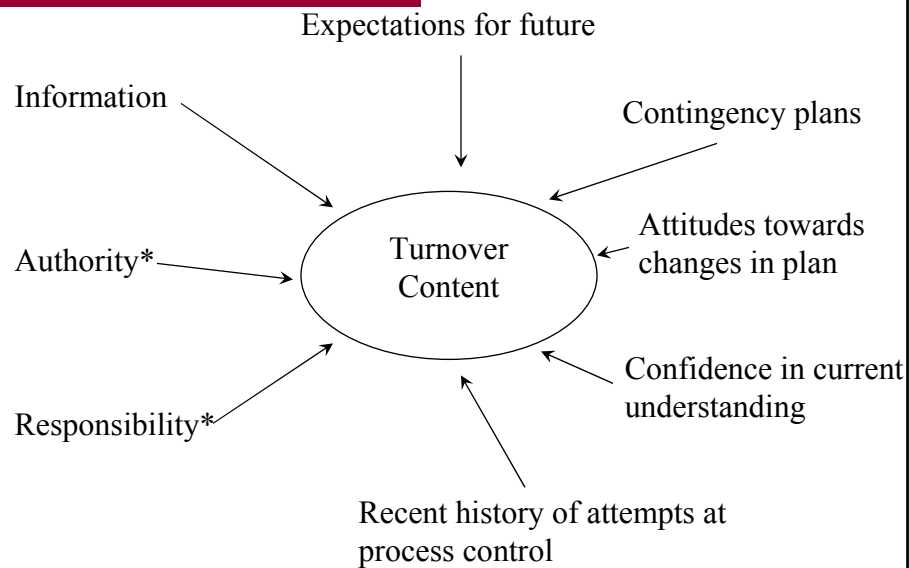
Less speech before pause

Alternate b/w

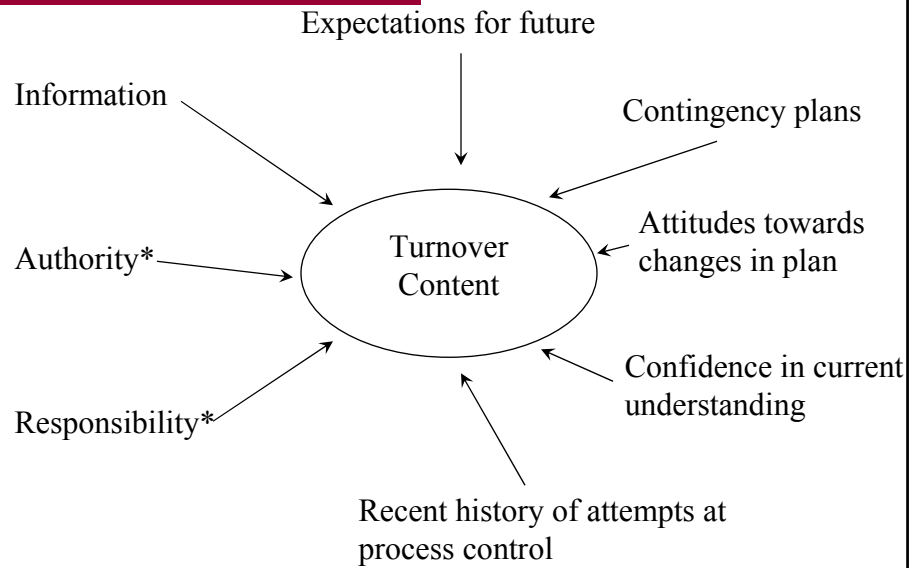
Objective \longleftrightarrow Subjective

Topics:

- Work planning
- Frustration w/ recurring/unresolved issues
- General situational awareness
 - Patient
 - System



*delimited



*delimited

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Other Important Aspects of Signovers

Forcing function

“Shift change is coming, we’re going to have make some decisions
...”

But, not all discussions lead to decisions

Decisions / actions are only one possible output of interpretation

Invest just enough so oncoming can quickly come up to speed when needed

Group cohesion

Observability and shared cognition, situation awareness

Importance of ‘overhearing’

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Insights from other industries

Shift changes strategies in high hazard industries

- NASA mission control
- Nuclear power
- Rail transport
- Ambulance dispatch

21 strategies for effective /efficient handoff

Found in multiple sources in data

Patterson, *Int J Qual Health Care*, 2004

Patterson's 21 Strategies: 8 Used Consistently

- Face-to-face verbal update w/ interactive questioning
- Delayed when concerned re status or stability
- Topics initiated by oncoming as well
- Limit new actions during update
- Incoming assesses current status
- Consistent order of updates
- Off-going knows previous shift activities
- Off-going provides contingency plans, *and attitudes toward change in plan*

Patterson's 21 Strategies:
4 Used Occasionally

- Off-going oversees oncoming's work after update
- Unambiguous transfer of responsibility
- Overhear others' updates
- Additional update from other than the off-going



Patterson's 21 Strategies:
9 Never Used

- Limited interruptions
- Written summary by off-going
- Incoming scans historical data
- Incoming reviews sensor data
- Incoming gets primary access to most UTD information
- Incoming receives paperwork (+/-)
- Read-back to assure understanding
- Monitoring status while 'off'
- Others are clear who is responsible

Conclusions

- Attempts to standardize, formalize turnovers w/o understanding what's really important may be hazardous
- Handovers are also opportunities for recovery
- Implicit vs explicit communication
 - Explicit communication clearer, but requires more work
 - Implicit communication more efficient, but riskier
- Perhaps transition failures are artifact of hindsight bias?
 - Lack of information is common/universal
 - Stiel 2003 – 32% ED pts ≥ 1 info gap
 - Attribute adverse events to 'bad turnover' when real problem is poor information resources?

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Recommendations

- Require some form of handoff
- **Do not** develop a single 'handoff protocol' applicable across all settings of care. Tailor them (not just SBAR)
- Preserve the narrative
 - Do not prespecify order – let importance dictate order
 - Do not require 'read-backs'
- Design handoffs for units, not individual patients
- Encourage variability
 - 'Fine' may be perfect for some patients; others may need much more
 - Order among patients contextually dependent

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Recommendations

- Design for highlighting, not comprehensiveness
 - What should you attend to in picking up these patients?
- Do not make handover documentation onerous
- Do not include it in the medical record
 - Work tool-not clinical document; Increased risk of gaming
- Support clinical work w/ good information resources
- Don't prescribe a procedure – communicate intent & desired end state, then let local expertise figure out how best to do it

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Potential unintended consequences of change?

- Templates might reduce informativeness by drowning out ability to distinguish the routine from the unusual
- Documentation requirements might force handoffs onto the less informed (ie, charge nurse v pt's nurse)
- Replacing conversation with paper (or 'beaming')
- Gaming the documentation
- Two sets of handoffs: an 'official' one and a real one (where sensitive but important information is conveyed)

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Potential unintended consequences of change?

- Opportunity costs (time invested in handoff is taken from something else)
- Using forms to support handoff instead of other paperwork (eg, critical lab values might be on handoff sheet but not in chart)
- More mis-identification issues due to 'copy and paste' functions
- Increased reluctance to 'cover', resulting in no handoff at all

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In the pursuit of knowledge,
every day something is added;

In the pursuit of wisdom, every day something is dropped.

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Why Important To Safety?

Because social structures persist because they benefit somebody

Because much of technical work concerns:

- How to get things done
- What is likely to happen next
- How to bridge gaps in the systems of care

And most / many accidents occur:

Not because of problems w/ medical content but because:

- Things didn't get done right
- Gaps weren't detected or repaired

Should Not Have Been Surprised

Short changes in anesthetists

Better anesthetic care

Cooper, 1982, 1989

Asymmetry in observability

Can see recovery

Failure noted only retrospectively

Why then are shift changes thought to be high hazard times?

Conclusion

Shift change is a problem in *underspecification* and *optimization*

Typical reactions to underspecification

Increase / standardize data elements

Has not worked / has not been published

Undermines optimization

Better (optimized) reaction to underspecification

Identification of saliency, leverage points