

***Two Sides of the Coin:
A Patient/Provider Dyad
Explore Diagnostic Error
and the Benefits of CRP***

Today's speakers



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Disclosures

- ▣ Today's speakers report no financial conflicts of interest relevant to this presentation

Learning objectives

1

Understand the individual and system factors that can cause diagnostic errors

2

Explore the benefits of a CRP response following a diagnostic error

3

Examine the consequences of a poor response to a diagnostic error

4

Understand the importance of engaging, listening, and learning from patients and families following diagnostic errors

Sharing My Story

Case study

- ▣ DX w/ with Polyarticular Juvenile Idiopathic Arthritis (JIA) in 1990, w/ extension into adulthood
- ▣ History of unexplained excessive post-surgical bleeding
 - Bilateral TKA, 2002
 - 8-day inpatient stay
 - Surgical drains remained in place in both legs for multiple days
 - Required 4 transfusions
 - Right wrist arthrodesis, 2009
 - 3-day inpatient stay
 - Surgical drain remained in place for multiple days
 - Required 2 transfusions

Surgical consult

- ▣ Presented for left wrist arthrodesis in 2015
- ▣ Explained prior history of excessive post-surgical bleeding
- ▣ Asked that the surgery be done inpatient so that a surgical drain could remain in place, and appropriate blood units could be on hand
- ▣ Surgeon did not feel any of this was necessary
 - Despite the lack of explanation for the prior bleeding episodes, he felt he could minimize bleeding using cauterization
 - He described that surgical approaches would have changed since '02 and '09 respectively
- ▣ I agreed to move forward

The Surgery and Post-op

Day of surgery

- ▣ Report at 6:30 AM (with immense apprehension)
- ▣ Nerve block from neck down
- ▣ Surgery went largely as planned, though there was more damage than he expected and what was estimated to be a 2-hour procedure took 4 hours
- ▣ Discharge instructions: keep it bandaged, keep it elevated, bleeding and some swelling and discoloration is normal

12 Hours post-op

- ❑ Nerve block is wearing off and something feels “off”
- ❑ I’m taking prescribed Oxycontin and elevating/icing as prescribed



24 Hours post-op



- ❑ Gnawing pain like nothing I'd experienced previously
- ❑ "Soft" casting had become hard from bleeding
- ❑ Starting to lose sensation
- ❑ Texted photos and shared concerns, and was instructed to go in for office visit
- ❑ Surgeon had to forcefully cut the cast off
- ❑ Recasted in soft casting, and sent home— "normal post-surgical swelling, pain, and discoloration"

36 Hours post-op

- ❑ Cold to the touch
- ❑ Little to no sensation
- ❑ Gnawing, unusual pain untouched by the Oxycontin
- ❑ Calls to surgeon, texting photos—
“normal post-surgical swelling, pain, discoloration”



48 Hours post-op



- ❑ Can't take it anymore, remove the casting in case that's part of the problem
- ❑ Reveals my first objective clinical findings—massive blisters around the hand and wrist
- ❑ Ordered to go straight to ER to be admitted

Five-day inpatient stay



Five-day inpatient stay



(for comparison)

Five-day inpatient stay



Five-day inpatient stay



(for comparison)



Assessment/treatment

- ❑ Excessive bleeding, built up and caused a compartment syndrome-like event
- ❑ Was NPO for 4 of 5 days as they contemplated fasciotomy or some other surgical intervention but the consensus was it may make things worse
- ❑ Treated with strict elevation (hoisted from IV pole) and high doses of steroids, swelling gradually began to subside,
- ❑ D/C on day 5, had begun to regain some slight sensation in fingertips
- ❑ Continued strict elevation and steroid protocol at home for 3 weeks



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Definition of Diagnostic Error

The failure to:

(a) establish an **accurate** and **timely** explanation of the **patient's** health problem(s)

or

(b) **communicate** that explanation to the **patient**

The single biggest problem in communication is the illusion that it has taken place. *George Bernard Shaw*

The Toll of Dx Error

US

Each Hospital

**40,000 – 80,000
deaths/yr**

10 deaths every year

**1 in 20 primary care
visits involves a
preventable dx error;
half are potentially
harmful**

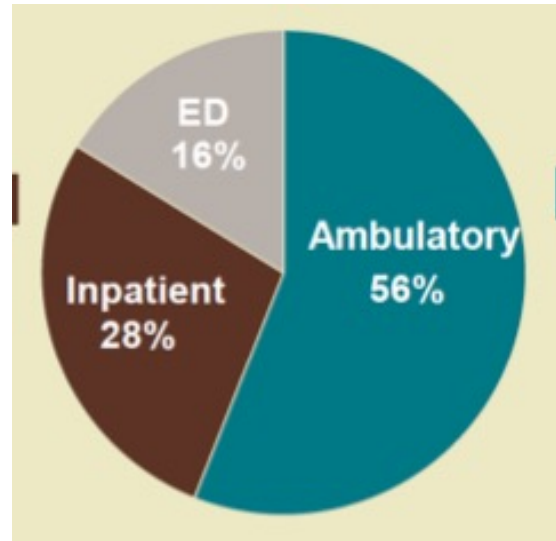
**10 patients
harmed every day
in your clinics or
ER**

**Error-related
Harm**

Diagnostic Error

Leape et al. JAMA 288:2405, 2002
Singh et al. BMJ Qual Safety 21: 93-100, 2012

Where do they happen?



CRICO - Analysis of 4519 claims related to diagnostic error

- **ER** The petri dish for diagnostic errors
- **Inpatients** One in ten diagnoses is probably wrong. 36,000 deaths in the ICU alone
- **Ambulatory care clinics** Its NOT just rare conditions. Dx errors are COMMON in patients with anemia, asthma, COPD

“The committee recognized that ... the available research estimates were not adequate to extrapolate a specific estimate or range of the incidence of diagnostic errors in clinical practice today.”

“It is likely that most of us will experience at least one diagnostic error in our lifetime, sometimes with devastating consequences.”

1 in 20 chance per year X 80 years = approximately 100%

Where Failures in the Diagnostic Process Occur

Failure of Engagement

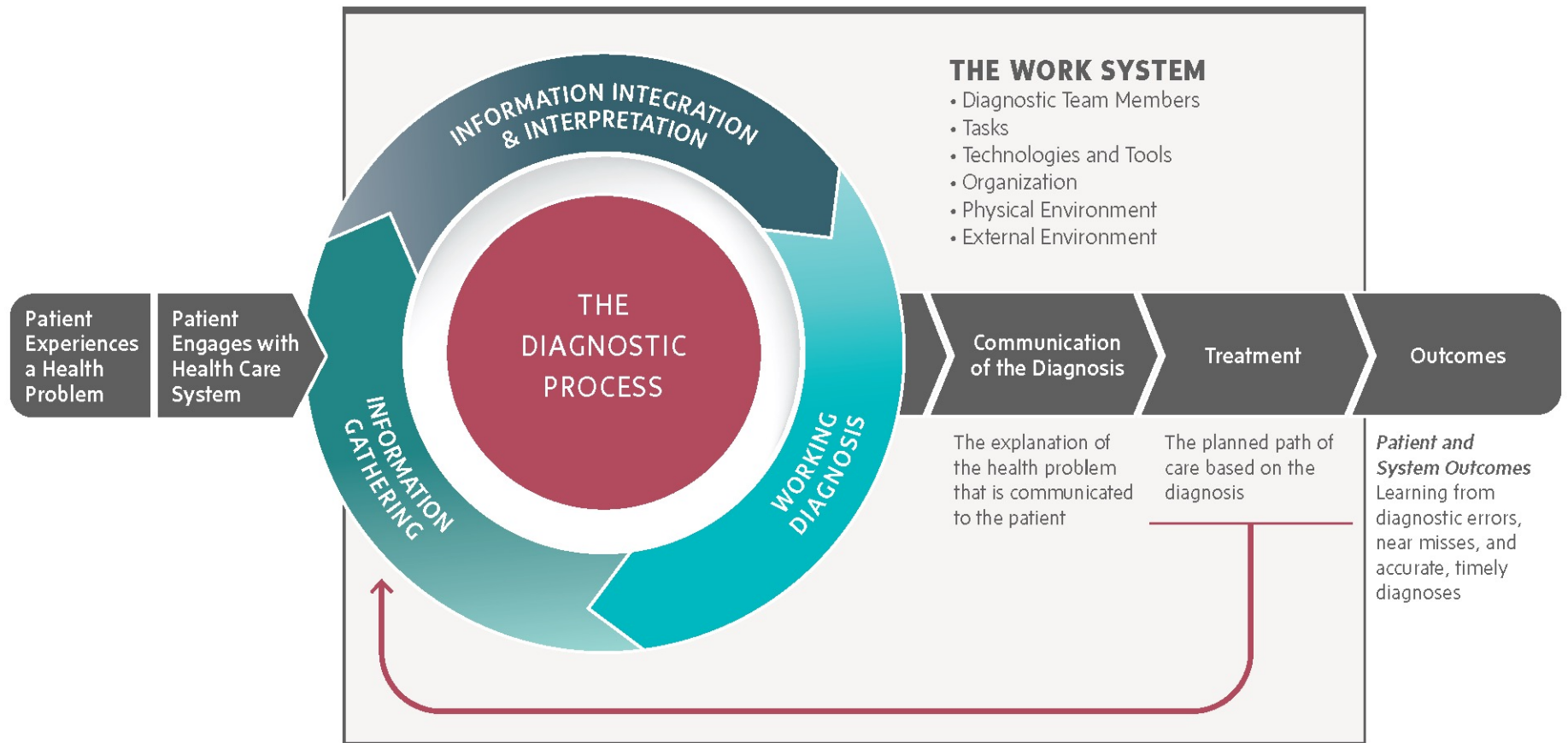
Failure in Information Gathering

Failure in Information Integration

Failure in Information Interpretation

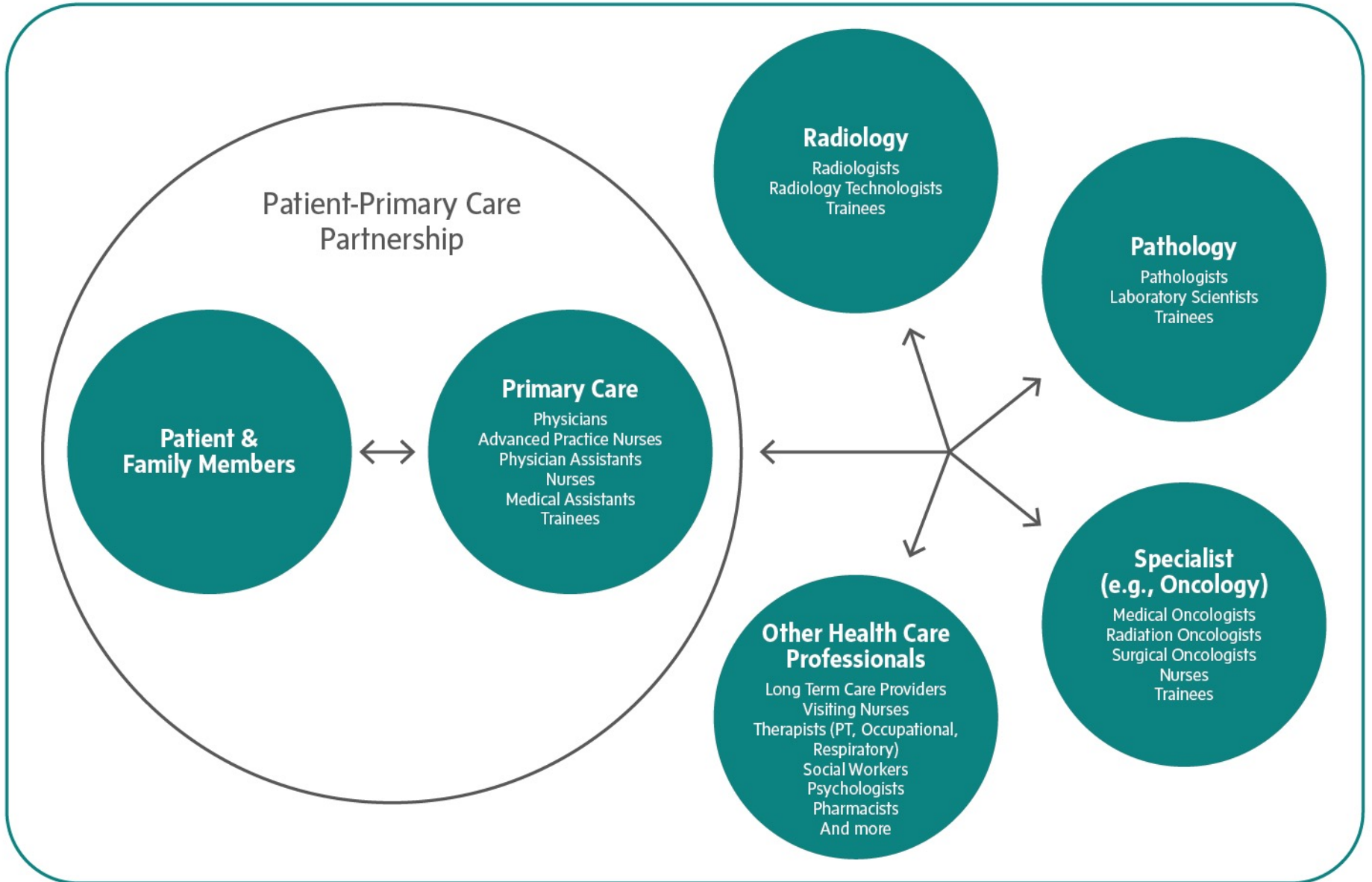
Failure to Establish an Explanation for the Health Problem

Failure to Communicate the Explanation



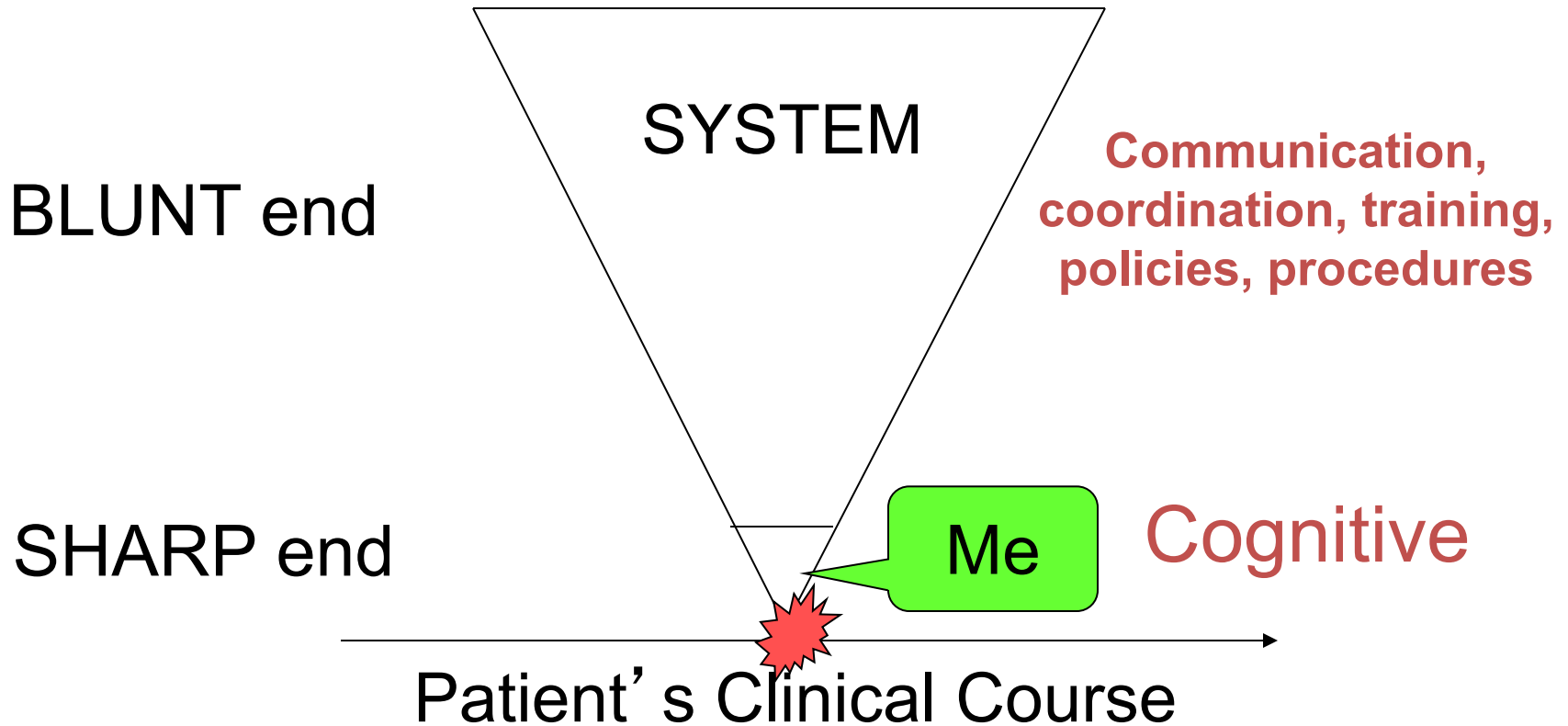
TIME →

Diagnostic Team Members



Why do they happen?

100 cases – 535 root causes
Graber et al. Arch Int Med 165:1493-9, 2005



Systems Errors: Complicated

BMI: 2

Info Summary Documents Clinical Summary MedView

Orders: All Status: All 97 orders

| Pharmacy | Date | Status | Disc/Stop |
|---|-------------------|----------------------|--|
| lisinopril - tablet 10 mg oral Daily | 04-May-2010 | Active | 02-Aug-2010 |
| heparin injection -- 5000 Unit(s) subcutaneous Every 8 Hours | 04-May-2010 | Active | 02-Aug-2010 |
| calcium carbonate-vitamin D -- 500 mg- 200 Units tablet (Known as OYST-CAL-D 500 MG -) 1 tablet(s) oral Daily with breakfast & dinner | 04-May-2010 | Active | 02-Aug-2010 |
| PRN <i>Isomaxam - capsule (Known as RESTORIL -) HIGH ALERT MEDICATION 7.5 mg oral Once PRN insomnia. Stop After: 1 Times</i> | 04-May-2010 06:13 | Completed/Expired | 04-May-2010 06:13 |
| lisinopril - tablet 5 mg oral Daily | 03-May-2010 | Discontinued | 04-May-2010 06:13 |
| docusate sodium - capsule (Known as COLACE -) 100 mg oral 2 times per day | 01-May-2010 | Active | 30-Jul-2010 |
| PRN senna concentrate - - 8.6 mg per tablet tablet (Known as SENOKOT -) 2 tablet(s) oral Every 12 Hours PRN constipation | 01-May-2010 | Active | 30-Jul-2010 |
| acetaminophen - tablet (Known as TYLENOL -) 650 mg oral Every 6 Hours | 01-May-2010 | Active | 30-Jul-2010 |
| lidocaine patch 5% - film (Known as LIDODERM PATCH -) 1 patch(es) topical Daily Apply once for up to 12 hours within a 24 hour period. Maximum of 3 patches. 12 hours on, 12 hours off. Apply to L flank | 01-May-2010 | Active | 30-Jul-2010 |
| calcium carbonate-vitamin D -- 500 mg- 200 Units tablet (Known as OYST-CAL-D 500 MG -) 1 tablet(s) oral Daily with breakfast | 30-Apr-2010 | Routine | Discontinued 04-May-2010 06:13 |
| bacitracin topical - ointment 1 application(s) topical 2 times per day to RLE | 30-Apr-2010 | Routine | Active 29-Jul-2010 |
| acetaminophen - tablet (Known as TYLENOL -) 650 mg oral Once. Stop After: 1 Times | 30-Apr-2010 | STAT (15 minutes) | Completed/Expired 30-Apr-2010 06:13 |
| PRN acetaminophen - tablet (Known as TYLENOL -) | 30-Apr-2010 | Routine | Discontinued 01-May-2010 10:00 |

Show New Orders... Un/Suspend... Reorder... Sign... Approve/Verify... Add Specimen... Release... DC/Cancel



The Most Common System Errors: (n = 215)

| TYPE | EXAMPLE |
|---|---|
| Communication | Critical lab abnormality lost |
| Coordination of care | Medical records aren't available |
| Expertise available | No Radiologist on nights |
| Culture of safety | No system to find dx errors |
| Supervising trainees | Trainee errors on weekends |
| Workload, stress, distractions | Short exam: missed a key finding |
| Reliability of lab, X-rays | Small lung nodule missed on X-ray |
| Staff – training, dedication, competency, compatibility | Residents mis-read chest X-ray on PACS system |

Normalization of deviance

System Interventions

Report and fix system problems:

- Communication and coordination of care
- Availability of expertise
- Supervision of trainees
- Work factors that detract from quality diagnosis

Take advantage of EMR's & decision support

Encourage second opinions

Provide pathways for feedback

Two types of Clinical Reasoning...

| | System I (Intuitive) | System II (Analytical) |
|------------------------|-------------------------|---------------------------|
| Cognitive Style | Heuristic | Systematic |
| Cognitive Awareness | Low | High |
| Automaticity | High | Low |
| Rate | Fast | Slow |
| Effort | Low | High |
| Emotional Component | High | Low |
| Scientific Rigor | Low | High |
| Errors | More | Less |

Heuristics and Biases

Useful “cognitive shortcuts” that help us deal with complexity by focusing on familiar

Associated with the Intuitive (System I) diagnostic process

Can be good:

- Help us to be efficient

- They are right the majority of the time

Can be bad:

- They tend to be thinking traps – so beware!

- Can adversely influence our diagnostic decisions

| Cognitive Bias | Definition | Example |
|---|--|--|
| Availability heuristic | Diagnosis of current patient biased by experience with past cases | A patient with crushing chest pain was incorrectly treated for a myocardial infarction, despite indications that an aortic dissection was present. |
| Anchoring heuristic (premature closure) | Relying on initial diagnostic impression, despite subsequent information to the contrary | Repeated positive blood cultures with <i>Corynebacterium</i> were dismissed as contaminants; the patient was eventually diagnosed with <i>Corynebacterium</i> endocarditis. |
| Framing effects | Diagnostic decision-making unduly biased by subtle cues and collateral information | A heroin-addicted patient with abdominal pain was treated for opiate withdrawal , but proved to have a bowel perforation. |
| Blind obedience | Placing undue reliance on test results or "expert" opinion | A false-negative rapid test for <i>Streptococcus</i> pharyngitis resulted in a delay in diagnosis. |

What do patients want?

- The truth
 - What is it?
- The facts
 - What are they?
 - What is still unknown?
 - What will happen next?
- Emotional first aid
 - Empathy and compassion
 - Recognition and validation of emotions
 - Non-abandonment
- Accountability, including apology
- Prevention of recurrences
- Remediation
- It's not happening!

The Outcomes

My outcomes

- ❑ Nerve damage in first, second, third, and lateral portion of the fourth digit—essentially the carpal tunnel nerve distribution, some nerve disruption in the palm as well
- ❑ Six weeks of rehabilitative therapy to regain motion and sensation
- ❑ Could not begin my wrist arthroplasty rehabilitation until after the nerve rehabilitation, impossible to know definitively if I would have had better arthroplasty outcomes but it stands to reason
- ❑ Exacerbated RA symptoms in left shoulder from strict elevation protocol

System outcomes

- ❑ Surgeon apologized on first day of hospital stay “You told me this was going to happen, I didn’t listen to you, and I’m sorry.”
- ❑ No other reporting or communication with the hospital
- ❑ We/health insurance paid for the entire hospital stay and the additional rehabilitation
- ❑ Have reached out to surgeon to partner on educational activity, has not yet materialized

Points to ponder

- ❑ Original instruction was not to return for two weeks. What would have happened to a differently situated patient?
- ❑ What could have helped me listen to my significant apprehension and seek a different surgeon or push back more?
- ❑ What could have facilitated the surgeon to more openly listen to/consider my concerns and history?
- ❑ What role might more robust medical records have played?
- ❑ What language could I have used to get more immediate attention after surgery?
- ❑ Why were the blisters the first symptom to be acted upon, versus myriad complaints of pain, numbness, discoloration, and swelling?

The benefits of the CRP response

| | Traditional Response | CRP Response |
|---|--|---|
| Incident reporting by clinicians | Delayed, often absent | Immediate |
| Communication with patient, family | Deny/defend | Transparent, ongoing |
| Event analysis | Physician, nurse are root cause | Focus on Just Culture, system, human factors |
| Quality improvement | Provider training | Drive value through system solutions, disseminated learning |
| Financial resolution | Only if family prevails on a malpractice claim | Proactively address patient/family needs |
| Care for the caregivers | None | Offered immediately |
| Patient, family involvement | Little to none | Extensive and ongoing |

CRP proven success

- U. Michigan
 - Average monthly rate of new claims decreased
 - Median time from claim reporting to resolution decreased
 - Average patient compensation costs decreased
 - Legal expenses decreased

- University of Illinois Chicago
 - Event reporting increased from 1,500 to 7,500 per year
 - New claims dropped 50%
 - Median time to resolution dropped from 55 to 12 months

- Stanford University Medical Indemnity and Trust
 - Frequency of lawsuits nearly 50% lower
 - Indemnity costs in paid cases 40% lower
 - Defense costs 20% lower for cases handled through the CRP

Thank you
