Medical Errors Prevention

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Objectives

At the conclusion of this activity, participants will be able to understand and discuss:

1. Discuss the definitions of medical errors and the types of medical errors that occur.
2. Describe the history of medical error and the cost to healthcare delivery, providers, and patients.
3. Identify Joint Commission reportable events and which adverse incidents that must be reported to the Florida Agency for Healthcare Administration (ACHA).
4. Evaluate and discuss the most misdiagnosed conditions recognized by the Florida Board of Medicine and the Florida Board of Osteopathic Medicine.
5. Discuss what factors that Joint Commission requires to be included within a meaningful root cause analysis.
6. Discuss emerging areas of potential error and how the care of the provider can help patient safety.
Medical Errors Types

1. Error of execution: The correct action doesn’t proceed as intended,
   Example: misread prescription dosage, miscommunication
   or
2. Error of planning: The original intended action is not correct
   Example: incorrect medication prescribed
“[E]rrors occurring within complex systems are rarely a result of individual failure, but rather multifactorial system failures [...] flaws within the systems that lead to downstream errors. Understaffing, time pressure, fatigue, and inexperience, while not errors by themselves, create an environment that is prone to error”

-James Reason

*Human Error*, 1990

Medical Errors

• We learn from our most painful mistakes.
• Mistakes can injure patients and cause physicians to become engaged in legal and professional trouble.
• Studying and learning how to prevent, monitor and respond to them helps to change the standard of care. This in turn, helps to eliminate common medical errors.
• By eliminating common medical errors physicians can protect patients, and themselves.
Medical Error Definitions

The Institute of Medicine’s Committee on Quality of Healthcare

“The failure of a planned action to be completed as intended or the use of a wrong plan to achieve an aim.”

The American Medical Association

“An unintended act or omission, or a flawed system or plan, that harms or has the potential to harm a patient.”

<table>
<thead>
<tr>
<th>Examples</th>
</tr>
</thead>
<tbody>
<tr>
<td>Adverse Drug Event</td>
</tr>
<tr>
<td>Surgical injuries &amp; wrong-site surgery</td>
</tr>
<tr>
<td>Restraint-related injuries or death</td>
</tr>
<tr>
<td>Falls</td>
</tr>
<tr>
<td>Pressure Ulcers</td>
</tr>
</tbody>
</table>

Not defined as intentional acts of wrong doing; not all medical errors rise to the level of medical malpractice or negligence.

Flagler Hospital Policy MR-001 details appropriate parameters and follow-up for Medical Errors.
The Big Picture of Medical Error

“To Err is Human” (1999)

- 44,000 – 98,000 deaths from medical errors
- Inspired healthcare change to patient safety

Institute of Medicine Report

“The majority of medical errors do not result from individual recklessness of the actions of a particular group- this is not a “bad apple” problem. More commonly, errors are caused by faulty systems, processes, and conditions that lead people to make mistakes or fail to prevent them.”
Continuation of Medical Errors

In 2014, Florida AHCA reported 155 deaths resulting from hospital error, 29% of 528 errors reported¹

Non-fatal injuries sustained are even more common:

* Preventable Adverse Events in ED²: 37%
* Surgical Sentinel Events³: 12.7%
* Medicare Hospitalizations due to in-hospital drug errors⁴: 10%

A data-quality analysis study from March 2017 confirms that 200,000 is “not unreasonable”, but notes that difficulty in accurately measuring the actual number of deaths remains.

Estimating Hospital-Related Deaths Due to Medical Error: A Perspective From Patient Advocates

Kevin T. Kavanagh, MD, MS, * Daniel M. Saman, DrPH, MPH, †
Rosie Bartel, BS, MS,‡ and Kim Westerman, EdD, MFA§

Abstract: The authors present a viewpoint regarding the quality of data used in estimating the number of preventable hospital deaths in the United States. Data derived from countries with a nationalized healthcare system with well-defined and near uniform implementation of standards may not be applicable to the fragmented noncentralized delivery system found in the United States. Although U.S. studies evaluating preventable mortality have based their projections on a small sample size, it is unlikely that this observation is due to chance, because other studies evaluating adverse events, a precursor to preventable mortality, have a much larger sample size and also report an unacceptably high number of events. In addition, although these estimates involved adult and Medicare-eligible patients who may have a higher incidence of events and create a bias, but they also did not capture all events, taken into account of mortality, which occurs after hospitalization or from misdiagnoses. It is also important not to mitigate adverse events in patients whose death is imminent. Medicine does not have the moral authority to place differing values on days, weeks, or years of life. The contention that there are approximately 200,000 preventable hospital-related deaths each year in the United States is not unreasonable. Not all hospital systems in the United States make the same investment in patient safety. Recently, the Agency for Healthcare Research & Quality has demonstrated a decline in adverse events in hospitals, but until uniform implementation of safety standards takes place, our healthcare system as a whole may well lag behind other industrialized nations.

Key Words: hospital-acquired conditions, preventable mortality, HAC, incident reports, National Transportation Safety Board, patient safety, culture of safety, importance of nursing

(J Patient Saf 2017;13: 1–5)
Cost of Medical Errors

- Monetary
  - Repairs
    - i.e. remove sponge left in abdomen
  - Settlements
    - i.e. malpractice for wrong-site surgery

- Social Cost
  - Perspective
  - Opinions

Both costs affect the Hospital Consumer Assessment of Healthcare Providers and Systems (HCAHPS) scores
Malpractice Claim Trends

• Recent studies of misdiagnosis malpractice claims between 1986-2010 estimated payments amounting to 38.8 billion dollars

• Mean payout for claims between 1992-2014 was $353,473
  • 7.6% of payouts exceeded 1 million dollars

• Diagnosis related claims made up 28.6 % of total claims and accounted for the highest proportion of total payments (35.2%)¹

• In terms of severity, lethal injuries accounted for 32.1% of total payments.¹

². Schaffer, A.C., et al. (2017), Rates and characteristics of paid malpractice claims among us physicians by specialty, 1992-2014. JAMA Internal medicine, 177(5)
Malpractice Claim Trends

Study of 350,706 Malpractice claims from the 1986-2010 National Practitioner Data Bank found that diagnosis related reasons accounted for 68.8% of paid claims in the outpatient setting\(^1\)

- Inpatient diagnostic errors were more likely to be lethal at 48.4%\(^2\)
- Diagnostic reasons were the second most-frequently cited for paid claims in the inpatient setting. \(^2\)

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Office of Inspector General Report Results

FINDINGS

An estimated 13.5 percent of hospitalized Medicare beneficiaries experienced adverse events during their hospital stays. Of the

An additional 13.5 percent of Medicare beneficiaries experienced events during their hospital stays that resulted in temporary harm.

Physician reviewers determined that 44 percent of adverse and temporary harm events were clearly or likely preventable.

Cost of preventable harm in dollars

OIG Report:

Hospital care associated with adverse and temporary harm events cost Medicare an estimated $324 million in October 2008.

Health Affairs Report:

Study Results
We estimate that the total annual cost of measurable medical errors in the United States is $17.1 billion, in 2008 dollars.

Cost of preventable harm to patients’ perception

Demographic factors associated with Americans’ experience of medical errors in their own care.

<table>
<thead>
<tr>
<th>Gender</th>
<th>Percent who report personally experiencing a medical error</th>
</tr>
</thead>
<tbody>
<tr>
<td>Men</td>
<td>17</td>
</tr>
<tr>
<td>Women</td>
<td>25</td>
</tr>
<tr>
<td>Chronic condition</td>
<td></td>
</tr>
<tr>
<td>Being treated for a chronic condition</td>
<td>27</td>
</tr>
<tr>
<td>Not being treated for a chronic condition</td>
<td>17</td>
</tr>
<tr>
<td>Socioeconomic status</td>
<td></td>
</tr>
<tr>
<td>Low socioeconomic status</td>
<td>17</td>
</tr>
<tr>
<td>Higher socioeconomic status</td>
<td>22</td>
</tr>
<tr>
<td>Health literacy</td>
<td></td>
</tr>
<tr>
<td>Limited health literacy</td>
<td>17</td>
</tr>
<tr>
<td>Adequate or proficient health literacy</td>
<td>23</td>
</tr>
</tbody>
</table>

Question: Have you ever personally been involved in a situation where a medical error was made in your own medical care, or has that not happened?

Overall, 2 in 5 Americans say they have either personally experienced a medical error or had a medical error occur in the care of someone close to them.

Twenty-one percent of Americans say they have experienced a medical error in their own care, and 31 percent have been involved in a situation where an error occurred in someone else's care.

Six in 10 adults with medical error experience say a medical problem was misdiagnosed and 4 in 10 say they weren't treated with respect.

<table>
<thead>
<tr>
<th>Medical Error Experience</th>
<th>Percent of Adults</th>
</tr>
</thead>
<tbody>
<tr>
<td>A medical problem was misdiagnosed</td>
<td>59</td>
</tr>
<tr>
<td>Mistake was made during a test, surgery, or treatment</td>
<td>46</td>
</tr>
<tr>
<td>Received a diagnosis that didn't make sense</td>
<td>42</td>
</tr>
<tr>
<td>Were not treated with respect</td>
<td>39</td>
</tr>
<tr>
<td>Were given wrong instructions about follow-up care</td>
<td>29</td>
</tr>
<tr>
<td>Were administered the wrong medication dosage</td>
<td>28</td>
</tr>
<tr>
<td>Received treatment that was not needed</td>
<td>27</td>
</tr>
<tr>
<td>Were given instructions from different providers</td>
<td>24</td>
</tr>
<tr>
<td>Got an infection after a hospitalization or treatment</td>
<td>24</td>
</tr>
<tr>
<td>Received the wrong medication from a doctor</td>
<td>18</td>
</tr>
<tr>
<td>Test results were lost, delayed, or not shared</td>
<td>17</td>
</tr>
<tr>
<td>Received the wrong medication from a pharmacy</td>
<td>9</td>
</tr>
<tr>
<td>Fell down or out of bed</td>
<td>8</td>
</tr>
<tr>
<td>Got a bed sore</td>
<td>8</td>
</tr>
<tr>
<td>Accidentally took too much medication</td>
<td>5</td>
</tr>
</tbody>
</table>

Question: Again, thinking about the most recent time a medical error was made in [your care/the care of someone close to you], for each of the following, please indicate whether or not it is the sort of medical error that occurred.
More than half of adults with medical error experience say the error occurred in an outpatient setting.

Question: In this most recent time when a medical error was made in [your care/the care of someone close to you], where did this error take place?

Medical Error Tweets

1006 tweets analyzed

- 839 (83%) identified the type of error
  - 26% procedural errors
  - 23% medication errors
  - 23% diagnostic errors
  - 14% surgical errors
- 850 (84%) identified a tweet source
  - 90% patient
  - 9% family member
- 519 (52%) identified an emotional response
  - 47% expressed anger or frustration
  - 21% expressed humor or sarcasm
  - 14% expressed sadness or grief
  - 6.3% mentioned intent to pursue malpractice litigation

Certain Serious adverse incidents are mandated to be reported to Florida's Agency for Health Care Administration (ACHA)

- The risk manager must submit incident reports within 3 business days of the incident and depending on the type of incident has to file a full report to ACHA within 15 days.
Florida Statute 395.0197

An event over which healthcare personnel could exercise control and which is associated in whole or in part with medical intervention rather than the condition for which such intervention occurred and results in one of the following:

1. Death
2. Brain or spinal damage
3. Permanent disfigurement
4. Fracture or dislocation of bones or joints
5. A resulting limitation of neurological, physical or sensory function which continues after discharge from the facility
6. Any condition that required specialized medical attention or surgical intervention resulting from nonemergency medical intervention, other than an emergency medical condition, to which the patient has not given his or her informed consent
Florida Statute 395.0197

7. Any condition that required the transfer of the patient, within or outside the facility, to a unit providing a more acute level of care due to the adverse incident rather than the patient condition prior to the adverse incident.

   a. Performance of a surgical procedure on the wrong patient, wrong surgical procedure, wrong site, or a surgical procedure otherwise unrelated to the patient’s diagnosis or medical condition.

   b. Surgical repair of damage resulting to a patient from a planned surgical procedure, where the damage was not a recognized specific risk as disclosed to the patient and documented through informed consent process.

   c. A procedure to remove unplanned foreign objects remaining from a surgical procedure
Medical errors that result in injury are sometimes called *preventable adverse events*, or *sentinel events*-sentinel because they signal the need for immediate investigation and response.

Sentinel events are defined as *events that cause injury to patients* from medical intervention or inaction on the part of the healthcare provider whereby *the injury cannot reasonably be related to the patient’s underlying medical condition(s)*.
Events subject to Joint Commission Report

The event has resulted in an unanticipated death or major permanent loss of function, not related to the natural course of the patient’s illness or underlying condition.

OR

The event is one of the following (even if the outcome was not death or major permanent loss of function unrelated to the natural course of the patient’s illness or underlying condition):
Joint Commission Reportable Events

1. Suicide of any patient receiving care, treatment, and services in a staffed around-the-clock care setting or within 72 hours of discharge
2. Unanticipated death of a full-term infant
3. Abduction of any patient receiving care, treatment, and services
4. Discharge of an infant to the wrong family
5. Rape, assault (leading to death or permanent loss of function), or homicide of any patient receiving care, treatment and services
6. Rape, assault (leading to death or permanent loss of function), or homicide of any staff member, licensed independent practitioner, visitor, or vendor while on site at the healthcare organization
Joint Commission Reportable Events (continued)

7. Hemolytic transfusion reaction involving administration of blood or blood products having major blood group incompatibilities (e.g. ABO, Rh other blood groups)
8. Invasive procedure, including surgery, on the wrong patient or wrong site
9. Unintended retention of foreign object in a patient after surgery or other invasive procedures
10. Severe neonatal hyperbilirubinemia (Bilirubin >30)
11. Prolonged fluoroscopy with cumulative dose >1500 rads to a single field or any delivery of radiotherapy to the wrong body region or >25% above the planned radiotherapy dose
The 5 Most Misdiagnosed Conditions

Florida Board of Medicine

1. Cancer related issues
2. Neurological/spine related issues
3. Cardiac/ Stroke related issues
4. Infectious/Communicable disease
5. Pulmonary related issues

Florida Board of Osteopathic Medicine

1. Inappropriate prescribing of opioids in patients in whom there have been misdiagnosis or failure to diagnose addiction, psychiatric conditions and diversion
2. Failure or delay in diagnosing cancer
3. Retained foreign objects in surgery and wrong site/patient surgery
4. Surgical complications/errors and pre-operative evaluations
5. Prescribing, dispensing, administering, or using non-FDA approved medications and devices


Diagnostic Error-Definition

The National Academies of Sciences, Engineering, and Medicine:

“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.”

-Improving Diagnosis in Health Care, 2015
Diagnostic Errors

- Physicians’ recall of most common missed or delayed diagnosis: pulmonary embolism, various cancers, drug interactions, cardiovascular disease, and stroke.

- Diagnostic Error Evaluation and Research (DEER) project tool:
  - Found that over 43% of errors were related to clinician assessment:
    - Failure/delay in considering the diagnosis, placing too much weight on competing/coexisting diagnosis.
  - Found that 42% of errors were laboratory and radiology testing:
    - Failure to order needed tests, technical errors in processing specimens/tests, erroneous reading of a test.

Diagnostic Errors

Leading type of medical error at 28.6%

More often resulted in death

More prevalent outpatient than inpatient

Inpatient often more lethal

Original research


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Author affiliations +

Abstract

Background We sought to characterise the frequency, health outcomes and economic consequences of diagnostic errors in the USA through analysis of closed, paid malpractice claims.

Methods We analysed diagnosis-related claims from the National Practitioner Data Bank (1986–2010). We describe error type, outcome severity and payments (in 2011 US dollars), comparing diagnostic errors to other malpractice allegation groups and inpatient to outpatient within diagnostic errors.

Results We analysed 350,706 paid claims. Diagnostic errors (n=100,249) were the leading type (28.6%) and accounted for the highest proportion of total payments (35.2%). The most frequent outcomes were death, significant permanent injury, major permanent injury and minor permanent injury. Diagnostic errors more often resulted in death than other allegation groups (40.9% vs 23.9%, p<0.001) and were the leading cause of claims-associated death and disability. More diagnostic error claims were outpatient than inpatient (68.8% vs 31.2%, p<0.001), but inpatient diagnostic errors were more likely to be lethal (48.4% vs 36.9%, p<0.001). The inflation-adjusted, 25-year sum of diagnosis-related payments was US$38.8 billion (mean per-claim payout US$386,849; median US$213,250; IQR US$74,545–484,500). Per-claim payments for permanent, serious morbidity that was 'quadriplegic, brain damage, lifelong care' (4.5%; mean US$808,591; median US$564,300), 'major' (13.3%; mean US$586,599; median US$355,350), or 'significant' (16.9%; mean US$419,711; median US$269,255) exceeded those where the outcome was death (40.9%; mean US$390,186; median US$251,745).

Conclusions Among malpractice claims, diagnostic errors appear to be the most common, most costly and most dangerous of medical mistakes. We found roughly equal numbers of lethal and non-lethal errors in our analysis, suggesting that the public health burden of diagnostic errors could be twice that previously estimated. Healthcare stakeholders should consider diagnostic safety a critical health policy issue.

http://dx.doi.org/10.1136/bmjqs-2012-001550
Diagnostic Errors

• Over diagnosis is NOT a diagnostic error
  “This isn’t misdiagnosis – the erroneous diagnosis of a disease. This is the correct diagnosis of a disease that is never going to bother you in your lifetime.”
  -Atul Gawande, 2015

While over diagnosis can lead to overtreatment, causing patient distress and cost, it’s not faulty medical practice. It is merely an area where clinicians can and should practice appropriate professional judgment.

No-fault Diagnostic Errors

• Common causes of error:
  • Atypical disease presentation
  • Patient self-report limitations
  • Incomplete records

Image credit: Koren Shadmi

Systems Diagnostic errors

- Common causes of error:
  - Inter-departmental communication
  - Technological difficulties
  - Lack of care coordination

Photo retrieved from: http://ww2.hdnux.com/photos/47/60/32/10421949/5/920x920.jpg

Cognitive Diagnostic Errors

Human/Clinician Factors:
- Separate errors of planning from errors of execution
- Address cognitive error
- Skill-set error
- Task-based error
- Personal impairment

Image Credit: http://img.medscape.com/thumbnail_library/dt_150817_doctor_studying_books_800x600.jpg
Most Common Malpractice Suits

5 MOST COMMON SUITS FILED¹:
* Failure to diagnose
* Injury during treatment
* Failure to treat
* Poor documentation
* Medication administration errors

5 MOST COMMON SPECIALTIES SUED(not ordinal) ²:
* Obstetrics/Gynecology
* Surgery
* Orthopedics
* Radiology
* Anesthesiology

Cancer Misdiagnosis

- Cancer patients are often misdiagnosed:
  - Cause of cancer diagnosis may be underdiagnosed based on the different body parts
    - Lung Cancer (14% misdiagnosed) – misreading x-ray, lack of follow-up
    - Breast Cancer (12% misdiagnosis) - misreading diagnostic exams, poor documentation, importance of biopsy
    - Prostate Cancer (17% misdiagnosis) – failure to diagnose (PSA), lack of follow up, treatment misadventures
    - Colorectal (17% misdiagnosis) – failure to diagnose, poor documentation

Case: Missed Cancer

A man in his forties, presenting with persistent sore throat & ear ache

Repeatedly consulted with his primary care doctor, then 3 other PCP’s, then 5 hospital physicians, and 3 specialists over the course of 8 months.

When cancer was finally caught, larynx, tongue, and part of his jaw were removed, along with receiving highly aggressive radiation and chemotherapy

After a brief remission, the cancer returned, leading to his death at 42.

Early stage oral cancer presents with pain/normal looking ulcers. Attention to patient complaint and duration is important to timely detection.

Retrieved from: http://news.bbc.co.uk/2/hi/health/745433.stm
Cancer Misdiagnosis

6.8% rate of apparent failures to inform patients of abnormal test results, these were associated with missed cancer diagnoses.¹

¹ Callen, J.L., et al. (2012), Failure to follow-up test results for ambulatory patients: a systematic review. Journal of General internal Medicine, 27(10)
Neurological Related Issues

- Stroke patients
  - Complex treatment plans due to multi-comorbid illnesses
- Bell Palsy
  - Confused with stroke
- Seizure patients
  - Patient’s age
  - Incomplete history and over interpretation
- Multiple Sclerosis
  - Over-reliance on MRI abnormalities with nonspecific neurologic symptoms
- Dementia
  - Confused with depression
- Migraines/Headaches
  - Confused with rhinosinusitis

Neurological Related Issues-Stroke

• Stroke is one of the most commonly missed or delayed diagnosis, which reduces survival rates\(^1\)

• Diagnosis of strokes are missed in 14-22% of patients presenting with atypical symptoms like disorientation, focal weakness, and dizziness. \(^2,3\)

• Because the time window for tPA is short, suspected stroke or transient ischemic attack should be triaged as if patient were a serious trauma patient\(^4\)

4. Flagler Hospital Policy MM-002
Spine Related Issues

Red Flags for Acute Lower Back Pain

<table>
<thead>
<tr>
<th>Red Flags</th>
<th>Possible Cause</th>
</tr>
</thead>
<tbody>
<tr>
<td>Duration &gt;6 wk</td>
<td>Tumor, infection, rheumatologic</td>
</tr>
<tr>
<td>Age &lt;18 y</td>
<td>Congenital defect, tumor, infection, spondylolysis, spondylolisthesis</td>
</tr>
<tr>
<td>Age &gt;50 y</td>
<td>Tumor, infection, intra-abdominal process (abdominal aortic aneurysm, pancreatitis, kidney stone)</td>
</tr>
<tr>
<td>Major trauma, or minor trauma in elderly</td>
<td>Fracture</td>
</tr>
<tr>
<td>Cancer</td>
<td>Tumor</td>
</tr>
<tr>
<td>Fever, chills, night sweats</td>
<td>Tumor, infection</td>
</tr>
<tr>
<td>Weight loss</td>
<td>Tumor, infection</td>
</tr>
<tr>
<td>Injection drug use</td>
<td>Infection</td>
</tr>
<tr>
<td>Immunocompromised status</td>
<td>Infection</td>
</tr>
<tr>
<td>Recent genitourinary or gastrointestinal</td>
<td>Infection</td>
</tr>
<tr>
<td>procedure</td>
<td></td>
</tr>
<tr>
<td>Night pain</td>
<td>Tumor, infection</td>
</tr>
<tr>
<td>Unremitting pain</td>
<td>Tumor, infection</td>
</tr>
<tr>
<td>Pain worsened by coughing, sitting, or Valsalva</td>
<td>Herniated disc</td>
</tr>
<tr>
<td>maneuver</td>
<td></td>
</tr>
<tr>
<td>Pain radiating below knee</td>
<td>Herniated disc or nerve root compression below the L3 nerve root</td>
</tr>
<tr>
<td>Incontinence</td>
<td>Epidural compression syndrome</td>
</tr>
<tr>
<td>Saddle anesthesia</td>
<td>Epidural compression syndrome</td>
</tr>
<tr>
<td>Severe or rapidly progressive neurologic deficit</td>
<td>Epidural compression syndrome</td>
</tr>
</tbody>
</table>
Cardiac Related Issues

Acute Coronary Syndrome (ACS) is the most prevalent life-threatening cause of chest pain presented to emergency departments\(^1\). Up to 17% of cases of ACS are missed. \(^2\)

Classic symptoms include tightness, sensation of pressure, heaviness, crushing, vise-like, aching pain

**BUT** women and older patients may present with atypical symptoms, like numbness, tingling, burning, stabbing, prickling, jaw pain, epigastric pain

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Cardiac Related Issues

Atypical chest pain areas include back, between shoulder blades, upper abdomen, shoulder, elbows, axillae, ears, or jaw.

Other reasons for missed ACS diagnosis include failure to:
- interpret history
- interpret of electrocardiogram
- perform EKG
- lack proper cardiac enzyme test

Infectious/Communicable Issues

- Incomplete History & Physical
  - Sexual history
- Cultures
  - Follow up for UTI in geriatric patients
  - TB
- Antibiotics
  - Over or inappropriate prescribing
- Healthcare-associated infections
  - Central line associated (CLABSI)
  - Catheter-associated UTI (CAUTI)
  - Surgical site infections (SSI)
  - Clostridium difficile (C. difficile)
  - Pneumonia


Sepsis recognition

- Low threshold for suspecting bacteremia – 10% of blood cultures have positive results
- Represented by increase in Sequential [Sepsis-related] Organ Failure Assessment (SOFA) score of 2 points or more
- 1.5 million people diagnosed with sepsis each year in U.S.
- Approximately 250,000 Americans die from sepsis each year
- 1 in 3 patients that die in a hospital have sepsis
- Common infections that can lead to sepsis

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Infectious/Communicable Issues (continued)

Break transmission: Use Hand Hygiene

Your 5 Moments for Hand Hygiene

1. Before touching a patient
2. Before clean/aseptic procedure
3. After body fluid exposure risk
4. After touching a patient
5. After touching patient surroundings

Infectious/Communicable Issues (continued)

Break transmission: Use Standard Precautions

**USE STANDARD PRECAUTIONS FOR THE CARE OF ALL PATIENTS**

**STANDARD PRECAUTIONS APPLY TO:**
- Blood
- Non-intact skin
- Mucous membranes
- All body fluids, secretions and excretions except sweat.

- **WASH HANDS**
  - Wash hands properly and thoroughly between patient contact and other contact with body fluids or soiled equipment.

- **WEAR GLOVES**
  - Wear gloves when handling blood, body fluids, non-intact skin or soiled items. Change gloves between patients. Wash hands after removing gloves.

- **WEAR MASK**
  - Wear a mask and eye protection or face shield to protect mucous membranes of the eyes, nose, and mouth when likely to be splashed or sprayed. Wash hands after removing gown.

- **WEAR GOWN**
  - Wear a gown to protect skin and prevent soiling of clothing when likely to be splashed or sprayed. Wash hands after removing gown.

- **DO NOT RECAP**
  - Dispose of syringes and other sharps into a designated closed container. Do not break or bend needles.

**FOLLOW ESTABLISHED POLICIES AND PROCEDURES FOR PATIENT PLACEMENT, ENVIRONMENTAL CONTROLS, PATIENT-CARE EQUIPMENT, AND LINEN**
Infectious/Communicable Issues (continued)

Break transmission: Don’t Work Sick

- 51% clinicians reported working with flu like symptoms at least once in year
- 16% clinicians reported working sick 3 times in year
- 21% clinicians believed they transmitted illness to patient

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**Table. Reasons Given by Resident Physicians for Working When Ill**

<table>
<thead>
<tr>
<th>Reason for Working When Ill</th>
<th>Resident Physicians, No. (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>All (n=77)</td>
</tr>
<tr>
<td>Did not want to force colleagues to cover</td>
<td>44 (57)</td>
</tr>
<tr>
<td>Felt pressured to repay colleagues for coverage</td>
<td>6 (8)</td>
</tr>
<tr>
<td>Afraid colleagues would think they were “weak”</td>
<td>9 (12)</td>
</tr>
<tr>
<td>Felt responsibility to care for patients</td>
<td>43 (56)</td>
</tr>
</tbody>
</table>

_Data are from a convenience sample of resident physicians attending the 2010 annual meeting of the American College of Physicians, Illinois chapter. A total of 77 of 150 residents reported coming into work sick at least once in the previous year. Differences between program years and sex were not statistically significant at the P<.05 level._

Pulmonary Issues

Pulmonary embolism (PE) - 1/3 had delayed diagnosis or misdiagnosis

- Delayed diagnosis
  - Patients with history of cardiopulmonary disease, coronary artery disease, heart failure and/or age 65+ have longer arrival to diagnosis times
  - Less accurately diagnosed in patients with COPD
- Misdiagnosis (sent home from ED with wrong diagnosis and returned to ED with same complaint)
  - Absence of risk factors for PE (younger age, less comorbidities, and absence of history of previous major surgery)
  - Clinical profile of distal PE without dyspnea and sharing symptoms and signs with other respiratory issues
  - Presence of radiological infiltrate was independent predictor of misdiagnosis (pulmonary infarction might be confounded with a pneumonic infiltrate)

## Error Prevention of Misdiagnosed Conditions

<table>
<thead>
<tr>
<th>Investigate</th>
<th>Document</th>
<th>Review/ Follow Up</th>
<th>Communicate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Complaints related to the conditions</td>
<td>H&amp;P, physical exam, pertinent negatives</td>
<td>All lab studies and compare with previous</td>
<td>Consider referral</td>
</tr>
<tr>
<td>Risk factors related to conditions</td>
<td>Rationale for giving or withholding treatment</td>
<td>Avoid reliance on single test results, especially if negative or equivocal</td>
<td>Educate patients of risk factors</td>
</tr>
<tr>
<td>Consider atypical symptoms and age considerations</td>
<td></td>
<td>Delinquent follow ups: establish system in writing</td>
<td></td>
</tr>
</tbody>
</table>
Case: Retained Surgical Sponge

12 year old with ruptured appendix taken to the local pediatric hospital. 3 days after appendectomy, he developed another high fever. One week later, a surgical sponge was removed during a second procedure.

Postoperative sponge and instrument counts have been routine for decades. There is no single standard, although nursing and surgical organizations have developed best practices for sponge, needle, and instrument counts. This lack of standard can result in inconsistent methods used in the same OR, and even during the same procedure.

Nursing and surgical groups recommend that each member of the surgical team play an equal role in assuring accuracy of the counts. Manufacturers have made sponges with threads visible on x-rays, radiofrequency identifications systems, and bar coding to alert staff about missing sponges.
Surgical Complications/Errors

Current estimates show 1:100,000 wrong-site surgery and 1:10,000 procedures for retained surgical items¹

- Follow appropriate time-out procedures and use appropriate sponge-counting systems
- 80% of retained surgical items had a correct materials count at the end of the operation²

Postoperative complications account for up to 22% of preventable deaths among patients. ³

- Thorough assessment of patient both pre-surgery and within post-anesthesia care unit

2. The Joint Commission Sentinel Event Alert (October 2013)
Surgical Complications/Errors

Interventions to Prevent Surgical Errors

• Pre-procedure verification process
• Mark the operative/procedure site with an indelible marker
• Take an intentional, meaningful time-out with all team members immediately before starting the procedure

The Joint Commission, Applicability of Universal Protocol for Bedside/Outpatient Settings.
https://www.jointcommission.org/standards_information/up.aspx
Surgical Complications/Errors

Bedside Surgical Procedures - Utilize the Universal Protocol

Examples:

- Blood transfusion
- Circumcision
- PICC line insertion
- Central line insertion
- Thoracentesis/Paracentesis
- Lumbar puncture
- Port removal
- IUD insertion
- Any procedure completed using sedation

Take advantage of teamwork to prevent harm

- Recognize the Potential Red flags of errors
  - Task Saturation/overload
  - Complacency
  - Distraction
  - Fixation
  - Ambiguity
- Know limitations
- Always, Always, Always have a MEANINGFUL TIME OUT
  - What’s your name?
  - What are we doing?
  - Where are we doing it?

Right Patient. Right Care. Right Time.
Inappropriate Opioid Prescribing

Prescription Opioid Abuse

As of May 2017, Florida is officially in a state of Public health emergency caused by the opioid abuse epidemic¹

“Among patients who had an opioid overdose during long-term therapy for non-cancer pain, 91% received 1 or more opioid prescriptions after the overdose.” ²

• 17% of those patients experienced repeated overdose within 2 years. ²


²Larochelle, M.R., et al. (2016), Opioid prescribing after nonfatal overdose and association with repeated overdose. Annals of Internal Medicine, 164(1)
Inappropriate Opioid Prescribing

- Most doctors prescribe more pain medication than is recommended, at higher-than-necessary strengths.
- The CDC recommends prescribing no more than 3 days worth of opioids at a time.
  - 99% of physicians report that they prescribe more than that
  - 23% prescribing a month’s worth of opioids to their patients

Opiate Addiction

• **Risk Factors:**
  - Advanced age
  - Impaired renal or hepatic function
  - Obesity
  - Cardiopulmonary disorders
  - Sleep apnea
  - Mental illness, including personal or family history of alcohol or drug abuse
  - Patients that combine opioids with respiratory depressants (alcohol, sedative-hypnotics, benzodiazepines, barbiturates)

• **Signs of overdose:**
  - Intoxicated behavior – confusion, slurred speech, stumbling
  - Dizziness or fainting
  - Unusual snoring, gasping or snorting during sleep
  - Difficulty waking up from sleep
  - Acting drowsy or groggy and having trouble staying awake.
Chronic Pain

• “Extending in duration beyond the expected temporal boundary of tissue injury and normal healing, and adversely affecting the function or well-being of the individual” (American Society of Anesthesiologist). 1

• “Pain without apparent biological value that has persisted beyond the normal tissue healing time usually taken to be three months” (International Association for the Study of Pain). 1

• Affects approximately 50-76 million Americans2
• Chronic pain costs society up to $32,000 per patient annually in treatment and utilization3

# Characteristics of Chronic- Pain vs. Addicted Patients

<table>
<thead>
<tr>
<th>CHRONIC- PAIN PATIENT</th>
<th>ADDICTED PATIENT</th>
</tr>
</thead>
<tbody>
<tr>
<td>Medication use is not out of control</td>
<td>Medication use is out of control</td>
</tr>
<tr>
<td>Follows the practitioner-patient agreement for use of the opioid</td>
<td>Does not follow opioid agreement</td>
</tr>
<tr>
<td>May have left over medication</td>
<td>Does not have left over medication</td>
</tr>
<tr>
<td></td>
<td>Loses prescriptions</td>
</tr>
<tr>
<td></td>
<td>Always has a story about why more drug is needed</td>
</tr>
</tbody>
</table>
Prevention of Medication Error

- Obtain complete medical H&P evaluation prior to treatment and document within medical record
- Develop written plan for assessing patient’s risk of aberrant drug related behavior
- Provide on-going monitoring of drug-related behavior with drug testing as necessary
- Follow FDA Drug Schedule
- Use E-Force: [www.EFORCSE.com](http://www.EFORCSE.com)

- Off-Label Drugs use is associated with a higher risk of Adverse Drug Events (ADEs) than on-label

---

Non-FDA approved medications and devices

• Know the law: do not prescribe, dispense or administer, or use non-FDA approved medications and devices

• The FDA reports that there are unapproved drugs on the pharmaceutical market.
  • Even if a drug has been in use for many years, recommending it without FDA approval is never recommended
  • It is still legal to market unapproved drugs, or off-label uses

• Follow FDA guidelines
• Document treatment plan

1. Flagler Hospital Policy: MM-028
2. Information retrieved from: https://www.fda.gov/drugs/guidancecomplianceregulatoryinformation/enforcementactivitiesbyfda/selectedenforcementactionsonunapproveddrugs/default.htm

On July 13, 2017
Medication Errors

• 1 in 3 U.S. adults take 5 or more medication

• Adverse drug event (ADE) account for nearly 700,000 ED visits and 100,000 hospitalizations yearly

• Due to a variety of causes:
  • Poor communication
  • Ambiguity in product names, directions for use, medical abbreviation or writing
  • Poor procedures or techniques or
  • Patient misuse because of poor understanding of the product directions

Medication Case Study

- As part of treatment for an infection, actor Dennis Quaid’s one-month old twins were given two 10,000 units per milliliter doses of heparin accidentally.
- The labeling was the same color, font, and size as the appropriate 10 units per milliliter bottle.
- Because of the similarity, the pharmacy tech failed to double check, as did the nurse picking up, and the satellite pharmacy tech receiving the drug.
- Twice, the twins were given 1,000 times the correct dose of heparin before the mistake was corrected.
- The pharmacy company had redesigned the label of the 10,000 strength medication because of the similar packaging, but had failed to issue a recall on the over-similar products still in pharmacies.

Image credit: https://i.ytimg.com/vi/8357swSdrHg/hqdefault.jpg

Medication Errors - Patient Adherence

- Medication - ask your patients if they’ve missed a dosage
  - Only 50% of physicians, nurses, and pharmacists report regularly asking patients if they missed any doses of their medication\(^1\)
  - On average, 25% of patients are non-adherent to medication plans in palliative care and oncology.\(^2\)

- Talk to your patients about leaving “Against Medical Advice”:
  - Discuss with the patient why they need to stay
  - Discuss the consequences of not staying in the hospital

- Document your discussion by writing a progress note. In the event the patient decompensates at home, the physician has the documentation to protect themselves from liability.

# Official “Do Not Use” List

<table>
<thead>
<tr>
<th>Do Not Use</th>
<th>Potential Problem</th>
<th>Use instead</th>
</tr>
</thead>
<tbody>
<tr>
<td>U, u (unit)</td>
<td>Mistaken for “O” (zero, the number “4” (four) or “cc”)</td>
<td>Write “Unit”</td>
</tr>
<tr>
<td>IU (International Unit)</td>
<td>Mistaken for IV (intravenous) or the number (ten)</td>
<td>Write “International Unit”</td>
</tr>
<tr>
<td>Q.D., QD, q.d., qd(daily)</td>
<td>Mistaken for each other Period after the Q mistaken for “I” and the “O” mistaken for “I”</td>
<td>Write “Daily”</td>
</tr>
<tr>
<td>Q.O.D., QOD, Q.o.d., qod (every other day)</td>
<td>Mistaken for each other Period after the Q mistaken for “I” and the “O” mistaken for “I”</td>
<td>Write “Every other day”</td>
</tr>
<tr>
<td>Tailing Zero (x.0 mg)*</td>
<td>Decimal Point is missed</td>
<td>Write X</td>
</tr>
<tr>
<td>Lack of Leading Zero (.x mg)</td>
<td>*may be used when required to demonstrate level of precision of value (labs, imaging, etc.)</td>
<td>Write 0.x</td>
</tr>
<tr>
<td>MS MSO4 and MgSO4</td>
<td>Can mean morphine sulfate or magnesium sulfate</td>
<td>Write “morphine sulfate”</td>
</tr>
<tr>
<td></td>
<td>Confused for one another</td>
<td>Write “magnesium sulfate”</td>
</tr>
<tr>
<td>cc</td>
<td>Mistaken for U (units) when poorly written</td>
<td>Write ‘mL’ or “ml” or milliliters (“mL” is preferred)</td>
</tr>
<tr>
<td>ug</td>
<td>Mistaken for mg(milligrams) resulting in one thousand-fold overdose</td>
<td>Write “mcg” of “micrograms”</td>
</tr>
</tbody>
</table>

Reference: Flagler Hospital Policy PC-001 & MM012
## “Use With Caution” list

<table>
<thead>
<tr>
<th>Do Not Use</th>
<th>Potential Problems</th>
<th>Use Instead</th>
</tr>
</thead>
<tbody>
<tr>
<td>&gt; (greater than) or &lt; (less than)</td>
<td>Misinterpreted as the number “7” (seven) or the letter “L”. Confused for one another</td>
<td>Write “greater than” Write “less than”</td>
</tr>
<tr>
<td>Abbreviations for drug names</td>
<td>Misinterpreted due to similar abbreviations for multiple drugs</td>
<td>Write drug names in full</td>
</tr>
<tr>
<td>Apothecary Units</td>
<td>Unfamiliar to may practitioners. Confused with metric units</td>
<td>Use metric units</td>
</tr>
<tr>
<td>@</td>
<td>Mistaken for the number “2” (two)</td>
<td>Write “at”</td>
</tr>
</tbody>
</table>

Reference: Flagler Hospital Policy PC-001 & MM-012
An Ounce of Prevention is Worth a Pound of Cure

- Benjamin Franklin -
Root Cause Analysis

A process for identifying the factors that underlie variation in performance, including the occurrence or near miss of a sentinel event.

[Diagram showing the classification of errors into mistakes, skill-based errors, and their subcategories.]

Retrieved from: https://www.homestudycredit.com/courses/contentMED/secMED01_clip_image002_0000.jpg
Root Cause Analysis

- Focus on systems/processes - not individuals

The Swiss Cheese Model

- Seeks to answer: What happened? What should have happened? How can we prevent error from reoccurring? How do we know patient safety was improved?
Root Cause Analysis must include:

1. A determination of the human factors, processes, and systems most directly associated with the sentinel event and its occurrence
2. Analysis of the underlying systems and processes through a series of “why” questions to determine where redesign might reduce risk
3. Inquiry into all areas appropriate to the specific type of event
4. Identification of risk points and their potential contributions to this type of event
Root Cause Analysis must include (continued):

5. A determination of potential improvement in processes or systems that would tend to decrease the likelihood of such events in the future

6. The organization’s leadership and the individuals most closely involved in the process and systems under review must participate in the analysis

7. The analysis must be internally consistent: it must not contradict itself or leave obvious questions unanswered

8. The analysis must provide an explanation for all findings of “not applicable” or “no problem”

9. The analysis must include considerations of any relevant literature
Pursuit of Quadruple Aim – Care of the Provider

Medical Error and Provider Burnout

- Prevalent in 30%-50% of physicians, physician assistants, nurse practitioners\(^1\)
- Symptoms\(^2\):
  - Physical exhaustion
  - Emotional exhaustion
  - Depersonalization
  - Feelings of low achievement
  - Decreased effectiveness


Medical Error and Provider Burnout

Which Physicians Are Most Burned Out?

- Emergency Medicine: 59%
- Ob/Gyn: 56%
- Family Medicine: 55%
- Internal Medicine: 55%
- Infectious Disease: 55%
- Rheumatology: 54%
- Plastic Surgery: 53%
- Otolaryngology: 53%
- Critical Care: 53%
- Cardiology: 52%
- Urology: 52%
- Neurology: 51%
- Pediatrics: 51%
- Anesthesiology: 51%
- Gastroenterology: 50%
- Nephrology: 50%
- Orthopedics: 49%
- Surgery: 49%
- Pulmonary Medicine: 49%
- Radiology: 49%
- Oncology: 47%
- Dermatology: 46%
- Diabetes & Endocrinology: 46%
- Pathology: 43%
- Ophthalmology: 43%
- Allergy & Immunology: 43%
- Psychiatry & Mental Health: 42%

Physicians were asked to rate causes of their burnout on a scale of 1 to 7, where 1 equals "Does not contribute at all" and 7 equals "Significantly contributes."

Too many bureaucratic tasks: 5.3
Spending too many hours at work: 4.7
Feeling like just a cog in a wheel: 4.6
Increasing computerization of practice (EHRs): 4.5
Income not high enough: 4.1
Too many difficult patients: 4.0
Insurance issues: 4.0
Maintenance of certification requirements: 4.0
Lack of professional fulfillment: 3.9
Threat of malpractice: 3.9
Too many patient appointments in a day: 3.9
Difficult employer, colleagues, or staff: 3.7
The impact of the Affordable Care Act: 3.7
Inability to provide patients with the quality care that they need: 3.7
Compassion fatigue (overexposure to death, violence, and/or other loss in patients): 3.5
Family stress: 3.1
Inability to keep up with current research and recommendations: 3.1
Emerging areas of error

• With the adoption of EMRs, the convenience of copying and pasting patient notes should be used with caution
• Emerging studies have found that up to 82% of patient notes was copied or imported\(^1\)
• This leads to patient errors, notably in primary care, where copied and pasted patient notes were a factor in 7.4% of errors\(^2\)

Preventing Medical Errors is a Team Activity

Flagler Hospital is on the Road to Zero Harm to become a High Reliability Organization (HRO) by establishing an enterprise wide culture that promotes *safety as our core value*

Flagler Hospital...
Working toward becoming a High Reliability Organization (HRO)
Flagler Hospital works with other Florida Hospitals in Partnership for Patients Hospital Engagement Network (HEN)

Led by Florida Hospital Association in partnership with the American Hospital Associations’ Health Research & Educational Trust (HRET)

From 2012-2014, hospitals collaborating in the FHA HEN achieved significant quality gains, including a:

- **54 percent decrease** in patient harm
- **9.2 percent reduction** in hospital readmissions. With fragile, elderly patients making up a high percentage of admissions, the fact that Florida’s hospitals readmitted 15,000 fewer patients, and saved $138 million as a result, was an achievement.

By focusing on areas that ranked high for patient harm, hospitals achieved:

- **4,650 fewer** adverse drug events
- **97 percent fewer** non-medically necessary infant deliveries before 39 weeks’ gestation
- **An 18 percent lower rate** of catheter-associated urinary tract infections
- **1,000 fewer** falls with injury
- **61 percent fewer** pressure ulcers
- **$4.2 million in cost savings** by preventing bloodstream infections

The Future of Health Care

• Many payers, including the Centers for Medicare & Medicaid Services, have embedded patient safety into pay-for-performance and “no pay for errors” initiatives.

• This shift toward value-based care supports and encourages the maintenance of error prevention measures. The result is improved patient outcomes.
Conclusion

How can we reduce Medical Errors?
Analyze errors, change processes, and measure results.

Actively participate in the root cause analysis process, understanding the goal is not to blame but rather to make process improvements.

Die Operation, Gaspare Traversi, 1753/54