

The Perfect Storm: Casting a Safety Net Around Medical Errors



PAEA Conference (Session #1048)

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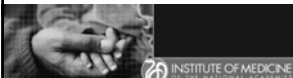
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Session Objectives

- At the conclusion of this session, participants will be able to:
- Describe the impact of medical errors on morbidity, mortality and financial costs in the U.S healthcare system.
- Classify and discuss types of medical errors in the context of patient care.
- Describe strategies that permit students to identify medical errors in patient care using a case-based approach.
- Recognize the importance of students experiencing medical errors in a safe, protected environment while promoting peer learning from others' mistakes.
- Guide students through a simulated re-enactment of medical errors resulting in patient demise using a morbidity and mortality approach.
- Assist students in formulating tasks and methods to reduce medical errors both individually and system-wide.

IOM: Adverse Outcomes

- Institute of Medicine (IOM)
- 1999 Report - *To Err is Human: Building a Safer Health System*
 - >1 million preventable adverse events/yr in USA
 - Medical errors cause 44 – 98k deaths/yr



INSTITUTE OF MEDICINE

<http://www.iom.edu/>

AAPA: Adverse Outcomes

- Acknowledging and Apologizing for Adverse Outcomes (AAPA, Adopted 2007)
- What does AAPA say?



American Academy of
Physician Assistants

Disclosure & Apology?

“an aura of infallibility . . . makes it extremely difficult for an open discussion of mistakes to occur.”

“Disclosing medical errors respects patient autonomy and truth-telling . . .”

“Students should be taught that it is appropriate to acknowledge mistakes and essential to apologize to patients.”

“Errors do not always constitute improper, negligent or unethical behavior, but failure to disclose them may.”

“Experts say that breakdowns in the provider-patient relationship – not communicating honestly or completely . . . were at the root of nearly 75 percent of malpractice claims filed against physicians.”

NCCPA: PA Competencies

- The PA profession defines the specific knowledge, skills, and attitudes required and provides educational experiences as needed in order for physician assistants to acquire and demonstrate these competencies
- What do these Competencies include?

Version 3.5 (3/22/05)

NCCPA-Connect NATIONAL COMMISSION ON
CERTIFICATION OF PHYSICIAN ASSISTANTS

NCCPA: PA Competencies

- Medical knowledge, interpersonal and communication skills, patient care, professionalism, practice-based learning and improvement, systems-based practice, as well as an unwavering commitment to continual learning, professional growth and the physician-PA team, for the benefit of patients and the larger community being served
- What are some specifics?

Version 3.5 (3/22/05)

NCCPA: PA Competencies

- Manage general medical and surgical conditions to include understanding the indications, contraindications, side effects, interactions and adverse reactions of pharmacologic agents and other relevant treatment modalities
- Accountability to patients, society, and the profession
- Accept responsibility for promoting a safe environment for patient care and recognizing and correcting systems-based factors that negatively impact patient care

Version 3.5 (3/22/05)

ACGME Core Competencies

- 1983 – Accreditation Council for Graduate Medical Education required all training programs to institute regular M&M conferences



Morbidity & Mortality

- Fifth Annual Patient Safety in American Hospitals study (2004 – 2006)
- Analysis of 41 million Medicare patient records
 - 238,337 potentially preventable deaths
 - \$8.8 billion
- Overall error rate was ~3%

Morbidity & Mortality

- Error incidents resulted in a 20% chance of dying
- Most common errors (63%)?
 - Bed sores
 - Failure to rescue
 - Post-op respiratory failure
- Good News?
 - Overall death rate among patients experiencing one or more safety incidents fell by ~5% between 2004 and 2006

http://www.nlm.nih.gov/medlineplus/news/fullstory_63168.html

Primary Care Visits

- Cross section study of 32 primary care clinics in Colorado
 - 253 clinicians
 - 1614 patient visits
 - May to December 2003

Smith PC, Araya-Guerra R, Bubltz C et.al. Missing Clinical Information During Primary Care Visits. JAMA 2005;293:565-571.

Primary Care Visits

- What was missing?
 - 13.6% of visits revealed missing information
 - Lab results 1%
 - Letters/dictation 5.4%
 - Radiology results 3.8%
 - Medications 3.2%
 - Caused delayed care, adverse outcomes, and lost time.

The Wisdom of Solomon, the Bravery of Achilles, and the Foolishness of Pan



Types of Medical Errors

- Diagnostic, therapeutic or procedure decision that would be considered erroneous by skilled and knowledgeable peers
- Failure of execution
 - The correct treatment performed incorrectly or at the wrong time

Murphy JG, Stee L, McEvoy MT, Oshiro J. The Wisdom of Solomon, the Bravery of Achilles, and the Foolishness of Pan. *Chest* 2007;131:890-896.

Types of Medical Errors

- Direct action, failing to detect disease, or failing to treat disease in a timely or effective manner
- “Near misses” that are characterized by potential (but not actual) injury to patients.

Reducing Medical Errors

- Create a blame-free, protected environment that encourages reporting
- Produce a credible root-cause analysis of serious adverse events
- Implement concrete planned action to reduce future errors
- Establish patient safety standards
- Disseminate experiential information learned from errors to all

Welcome to Morbidity and Mortality Conference (M&M)



Case # 1

Modified from PA-S presentation on September 25, 2007 by
Mary Beth Hughes, Brooke Pringle & Cynthia Recca

Welcome to M&M!

- Ground rules
 - Full Participation expected of all PA students, interns and residents in the room
 - Next time it “could be you standing up here!”
- M&M Case Analysis Form (2 sided)
 - Complete in entirety, even the last question
 - Be in the moment. Let’s learn together
 - *To Err is Human, to Forgive Divine*
 - Alexander Pope: An Essay on Criticism. (1688 - 1744)

CHIEF COMPLAINT (C.C.)

- Patient states “my tummy hurts”

History of the Present Illness (HPI)

- Historian: patient's mother, reliable.
- Christopher D is a six year old Caucasian male in his usual state of health until two hours ago when he came in from playing on the backyard swingset because his 'tummy hurt'. Mother gave 1 spoonful of Pepto bismol two hours ago and put child in front of TV to rest. Pt was "whimpering" on couch, continuing to complain of abdominal pain and "looked pale" so she brought him to ED approx. 1 hr ago. Mother states "he hasn't been himself for a couple of weeks, is very tired and sleeping more but didn't have a fever so thought it was just a growth spurt." Patient vomited once about fifteen minutes ago in the waiting room. Child's usual caretaker is sick with something but she does not know what.

History of the Present Illness (HPI)

- Mother states patient has a history of constipation which began last year for which he receives half a Metamucil cookie each morning with a glass of water as per Pediatrician which has improved the constipation, and denies any other significant history of gastrointestinal disease. Pt. has only eaten half a pop tart for breakfast and picked on a chicken nugget Kid Cuisine for lunch and his appetite is "off" for the last 1-2 weeks. Mother states she does not know if patient has had recent diarrhea, melena, hematochezia, or changes in stool. Mother denies any significant family medical history, allergies to drugs, food, or environment. Pt. takes Poly-Vi-Flor with iron daily as per pediatrician.

PAST MEDICAL HISTORY (PMH)

- **Childhood Illnesses:** Mother denies history of measles, mumps, rubella, Rheumatic fever, scarlet fever, diphtheria, varicella, asthma, influenza, cancer, DM, ulcers hepatitis, heart DZ, kidney dz, anxiety, depression, strokes, TB, HIV/AIDS
- **Medications:** See HPI
- **Surgery:** No surgical Hx
- **Hospitalization:** None
- **Injuries:** No major injuries
- **Allergies:** See HPI
- **Immunizations:** Up to date
- **Transfusions:** None
- **Recent Screenings:** None

SOCIAL HISTORY

- **Personal:**
- DOB 9-21-2002, Savannah General, GA
- Christopher is an only child, parents married 8 years, first marriage for both
- Home Environment: single family home with large fenced yard and large playset, safe neighborhood
- Recent travel: none
- Religion: none specified
- Care: Christopher is enrolled in a three day/wk preschool program at local Montessori and cared for by teenage nanny and mother who works 3 days per week

SOCIAL HISTORY

- **Habits:**
- Christopher normally eats three to six times a day, typically chicken nuggets, French fries, cereals and convenience foods. "Whatever the nanny can microwave or pour out of a box"
- Caffeine: one to two sodas per day
- Exercise/ recreation: plays outdoors daily and takes swim classes at the local YMCA
- Safety measures: parents use car seat, bike helmet, no weapons in the home.
- Tobacco: No exposure to second hand smoke
- **Education/ Occupation:** Parents are college graduates working in the financial industry

FAMILY HISTORY

- **Family History**
- Maternal and Paternal Grand-parents: All living and in good health
- Mother- age 34, no significant medical history
- Father- age 36, no significant medical history
- Siblings – Mother is expecting second child
- No history of significant familial disease

REVIEW OF SYSTEMS (ROS)

- **The Mother is the historian.**
- **General:** See HPI. Denies fever, chills, fatigue, malaise, weakness, night sweats, or weight change.
- **Skin/Hair/Nails:** Denies rash, masses, moles, itching, excessive sweating, abnormal hair/nail growth, piercings, and birthmarks.
- **Head:** Denies headaches, dizziness, lightheadedness, syncope, head injuries or loss of consciousness.
- **Eyes:** Denies corrective lenses. Last eye exam was 5/2008 and unremarkable. Denies pain, redness, infection, color blindness, excessive lacrimation, trauma and eye medications.
- **Ears:** Denies hearing loss, pain, discharge, bleeding, hearing aids and infections.

ROS Con't

- **Nose/Sinuses:** Denies frequent colds, hay-fever, epistaxis, and injury.
- **Respiratory:** Denies dyspnea, cyanosis, wheezing, cough, sputum, hemoptysis, night sweats, exposure to TB. Never had a CXR.
- **Cardiovascular:** Denies patient has history of murmur, syncope, dyspnea, HTN, edema, rheumatic fever.
- **Gastrointestinal:** See HPI. Mother denies patient has dysphagia, hematemesis, diarrhea, jaundice, rectal conditions.
- **Urinary:** Denies frequency, urgency, nocturia, dysuria, incontinence.
- **Peripheral Vascular:** Denies hx of clots, edema, color changes in fingertips and toes during cold weather.

ROS Con't

Musculoskeletal: Denies fractures, stiffness, muscle/joint pain, swelling, redness, tenderness, limitations of activity, and trauma.

- **Neurologic:** Mother denies patient has changes in mood or attention. Denies speech/memory disorders, weakness, paralysis, clumsiness of movement, headaches, and loss of consciousness.
- **Psychiatric:** Denies depression, mood changes, difficulty concentrating, nervousness, irritability, sleep disturbances, and hospitalizations.
- **Hematologic:** Denies anemia, tendency to bruise/bleed easily, and blood cell abnormalities. Denies any past transfusions.
- **Endocrine:** See HPI. Denies weight change, polydipsia, polyuria, polyphagia, excessive sweating, nervousness, and skin striae.

PHYSICAL EXAM

Vital Signs

- **BP:** 82/40 (normal= 93/50) R arm sitting
- **RR:** 32 (normal = 20-25)
- **Temp:** 100.8 °F tympanic
- **HR:** 145 bpm (normal avg =120) L radial
- **HT:** 46 inches (50th)
- **WT:** 42 lbs (25th)

PHYSICAL EXAM

- **General:** Well nourished, well developed, 6 yr old boy who appears in mild acute distress. Appearance is consistent with age.
- **Skin:** Skin is warm and moist with generalized pallor. Two fresh superficial abrasions on left lateral elbow measuring 2 x 3 cm and left anterior knee measuring 3 x 3 cm. Nails without clubbing or cyanosis.

PHYSICAL EXAM

- **Head:** Normocephalic, atraumatic. Scalp and face nontender to palpation with no lesions noted.
- **Eyes:** Eyes aligned. PERRL. Sclera is white. +Conjunctival pallor
- **Ears:** No deformity or tenderness to palpation of tragus, pinna, or mastoid. TMs are pearly with sharp light reflex, bony landmarks visualized.
- **Nose:** No septal deviation. Nasal mucosa pink without discharge or polyps.

PHYSICAL EXAM

- **Thorax:** AP:lateral diameter 1:2. No retractions or paradoxical movement. Clear to auscultation all lung fields with good air entry.
- **Cardiovascular:** Increased rate, regular rhythm S1 and S2 noted with no murmurs, rubs or gallops. PMI palpated at 5th interspace on L MCL.
- **Abdomen:** Slightly protuberant with no visible pulsations. No scars. Bowel sounds diminished, no bruits over aorta, renal, or iliac arteries. Epigastric and LUQ pain on light palpation. No deep palpation or percussion done due to pain. No tenderness or enlargement of inguinal nodes.

PHYSICAL EXAM

- **Male Genital:** Circumcised male. No penile discharge or lesions. No scrotal swelling or discoloration. Testes descended bilaterally, smooth without masses. No inguinal or femoral hernias.
- **Rectal:** No perirectal lesions, external hemorrhoids or fissures. External sphincter tone intact. No masses palpable. Stool brown and heme negative.

Differential Diagnosis

- 1.
- 2.
- 3.

Assessment

“Bad tummy ache” x 2 hours

- Possible gastroenteritis
- Possible constipation
- Possible gaseous abdominal distention

Plan

- Order CBC w/diff, UA, Stool Collection for culture and blood
- Advised to increase fluids for Pt (gingerale/broth; avoid dairy, caffeine, fruit juice, heavily carbonated drinks & sports drinks such as Gatorade)
- Advised to introduce easy to digest/bland foods after 3 H digestive rest (toast, apple, bananas, rice)
- Aspirin free acetaminophen (Tylenol™) for pain as needed following pkg label (advised not to use aspirin due to Reye's syndrome)
- May benefit from rest
- Gastroenteritis is highly contagious-encourage hand-washing
- If symptoms worsen, return to ED

Lab Results

- CBC w/differential:
- HGB 6.8
- HCT 25
- RBC 2.8
- MCV 78
- MCH 26
- MCHC 36

Lab Results

- CBC w/differential continued:
- WBC 12,300
- Segs 4020
- Bands 696
- Eos 255
- Basos 52
- Monos 610
- Lymphs 4450
- Platelet 250,000

Lab Results

- UA:
- Protein neg
- Albumin neg
- Bilirubin neg
- Glucose neg
- Ketones neg
- Nitrite neg
- Occult Blood neg
- PH 6.2

Lab Results

- UA: Continued
- Spec. Gravity 1.026
- Urobilinogen neg
- Erythrocytes neg
- Leukocytes neg
- Bacteria neg
- Parasites neg
- Stool:
 - Pathogens pending
 - RBC pending

Call the Code

While awaiting lab results,
Christopher became unresponsive.
Despite a full code he died.

Answer the last question on your
worksheet.

Differential Diagnosis of Acute Abdominal Pain by Predominant Age ages 6 to 11 years

- Gastroenteritis
- Appendicitis
- Constipation
- Functional pain
- Urinary tract infection
- Sickle Cell Crisis
- Trauma
- Pharyngitis
- Pneumonia
- Henoch-Schonlein Purpura
- Mesenteric Adenitis

(Adapted from American Family
Physician, 2003)

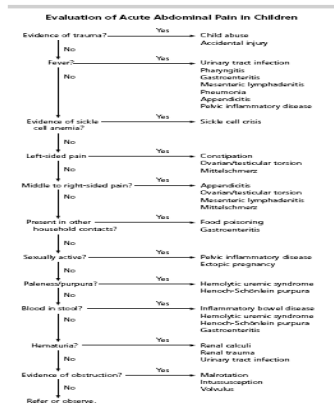
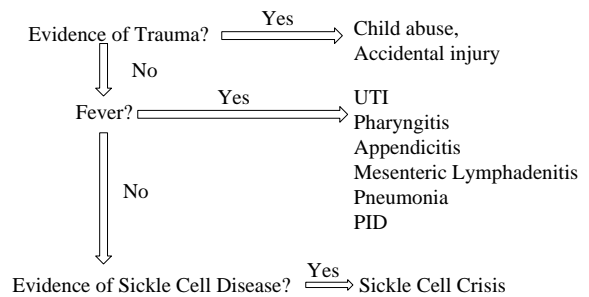


FIGURE 1. Algorithm for evaluating acute abdominal pain in children. Adapted with permission from King BR. Acute abdominal pain. In: Alakshman SC. Primary pediatric care. 3rd ed. St. Louis: Mosby; 1997:155.

Evaluation of Acute Abdominal Pain in Children



What really happened?

- After looking at the labs, one can see that Christopher was hypovolemic in a manner consistent with a major bleed. He also had elevated monocytes, later to be revealed as mononucleosis contracted from his teenage babysitter.
- Mononucleosis may cause splenomegaly in children increasing the chance of rupture on blunt trauma. Christopher had a minor fall while playing outside on his swingset that caused his spleen to rupture. By the time the ED came to this conclusion, it was too late.

Flaws in Critical Thinking

- *Hasty* with insufficient investment in deep processing or examination of alternatives
- *Narrow* with failure to challenge assumptions or consider other points of views
- *Fuzzy* or imprecise and prone to conflation
- *Sprawling* or disorganized with a failure to conclude.



Koe F, Bickle I. Critical thinking and critical appraisal: the chicken and the egg? Q J Med 2004;97: 609-614.

Structure: How to do Student Driven M&M?

- How to set this up?
- When is the best time to use this process?
- Demo a previous student case.
- Who is best qualified to facilitate it?
- Small groups vs large groups?
- Assessment
- Grading

Teaching Points: Developing Critical Thinking

- “The process of actively and skillfully applying, relating, creating, or evaluating information that one has gathered.”
- Integration and synthesis
 - H&P
 - Laboratory diagnostics
 - Pathophysiology
 - Pharmacology
 - Internal Medicine/ Surgical

Abraham RR, et al. Clinically oriented physiology teaching: strategy for developing critical-thinking skills in undergraduate medical students. *Advanced Physiol Educ* 2004; 28:102-104.

Teaching Points: Developing Interpersonal Skills

- Communication
- Presentation
- Consensus building
- Problem solving
- Conflict management
- Team building
- Building an emotional IQ
 - Safe environment



Sample of Errors Revealed

- | | |
|---|---|
| <ul style="list-style-type: none"> ■ Missed Hx of Marfan's <ul style="list-style-type: none"> ■ Aortic dissection ■ Focused only on pain: ignored Hx adrenal <ul style="list-style-type: none"> ■ Adverse surgical outcome ■ Missed Hx of Hepatitis C & medication handwriting error <ul style="list-style-type: none"> ■ Metformin for metronidazole - metabolic acidosis | <ul style="list-style-type: none"> ■ Poor Hx in syncopal episode <ul style="list-style-type: none"> ■ Missed CO poisoning ■ Missed HIV risk in elderly woman w/ altered mental status <ul style="list-style-type: none"> ■ Brain opportunistic infection ■ And of course: The death of Christopher |
|---|---|

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Thank you for your kind attention –
Now back to the floors.