Case Overviews & Active Learning Classroom Strategies

CLINICAL LOCATION:  = Hospital  = Emergency Department

CASE LIST

Diagnostic Excellence 01: Two women with iron-deficiency anemia

Diagnostic Excellence 02: 35-year old man with abdominal pain

Diagnostic Excellence 03: 16-year old female with pelvic pain

Diagnostic Excellence 04: 10-year old male with chronic abdominal pain

Diagnostic Excellence 05: 84-year-old woman with sepsis

Diagnostic Excellence 06: 12-day-old male infant with bloody stool
DIAGNOSTIC EXCELLENCE 01: TWO WOMEN WITH IRON-DEFICIENCY ANEMIA

Original Case Authors: Andrew Olson, MD, Robert Trowbridge, MD, Gurpreet Dhaliwal, MD

CLINICAL LOCATION:  
EMERGENCY DEPT

CASE SYNOPSIS:
Ms. Shakil, a 52-year-old post-menopausal female with a history of iron deficiency anemia, presents to the emergency department with rectal bleeding. The student interviews her and also reviews her outpatient medical records. The records reveal that she was seen one year prior and diagnosed with iron deficiency anemia, which was attributed to menorrhagia (although her periods had stopped six months prior to that visit one year ago). She was treated with iron with slight improvement in her hemoglobin level. She is admitted and found to have metastatic colon cancer. 

The inpatient team discusses the case with the patient’s outpatient primary care provider, who is understandably upset. The student then rotates to the Family Medicine clinic to work with the patient’s primary care provider. The provider sees a 25-year-old female who presents with iron deficiency anemia that is likely due to menorrhagia. However, the primary care provider orders a colonoscopy because he doesn’t want to miss any more cases of cancer.

LEARNING OBJECTIVES:
1. Determine whether a diagnostic error occurred.
2. Define overdiagnosis.
3. Distinguish overdiagnosis from other types of diagnostic error.
4. Analyze a case of diagnostic error to ascertain physical, emotional, and financial harms resulting from the error(s).
5. Discuss how diagnostic error(s) lead to system-level cost and waste.
6. Define the “second victim” effect that results from diagnostic error.
7. Determine what psychological forces/processes may lead to excessive testing or treatment.
8. Define eight common cognitive biases (visceral bias, anchoring bias, availability heuristic, premature closure, confirmation bias, base-rate neglect, blind obedience, framing bias).
9. Discuss eight common cognitive biases (visceral bias, anchoring bias, availability heuristic, premature closure, confirmation bias, base-rate neglect, blind obedience, framing bias) using real-world examples.
10. Communicate safely and accurately with team members or health care providers about diagnostic errors discovered during handovers.

ACTIVE LEARNING CLASSROOM STRATEGY
This active learning strategy focuses on reinforcing concepts from this module through the analysis of other prepared cases and, if applicable, cases from learners’ own experiences.

This module is designed to take 60 minutes, but can easily be adapted for other durations.

• Activity Details & Worksheet
CASE SYNOPSIS:
In this case, Mr. Anderson, a 35-year-old male with a history of chronic pain, presents to the emergency department with abdominal pain and vomiting. He is found to have gallstones, and a laparoscopic cholecystectomy is performed. He has significant pain after the operation, but is discharged on the first postoperative day. He calls the surgical team from home stating that his pain is severe, but no intervention is suggested by the team. He presents the next day with severe abdominal pain, sepsis, and evidence of a bowel perforation. An exploratory laparotomy is performed that reveals an iatrogenic enterotomy from the first surgery. A bowel resection is performed and the patient recovers slowly.

The surgical team discusses the case at its departmental morbidity and mortality (M&M) conference, and appropriate means to calibrate decision-making are addressed. Each learner is encouraged to identify his or her own biases that may impact decision-making and seek strategies to mitigate the effect of these biases.

LEARNING OBJECTIVES:
1. Define eight common cognitive biases (visceral bias, anchoring bias, availability heuristic, premature closure, confirmation bias, base-rate neglect, blind obedience, framing bias).
2. Identify system-level and personal-level mechanisms to track diagnostic decision-making.
3. Discuss three methods to calibrate lifelong learning in response to a diagnostic error in order to avoid minimization and overreaction.
4. Discuss the role of metacognition in preventing error.

ACTIVE LEARNING
CLASSROOM STRATEGY
This active learning strategy focuses on reinforcing concepts from this module as well as encouraging learners to identify how their own biases and experiences may impact their diagnostic decision-making.

This module is designed to take 60 minutes, but can easily be adapted for other durations.

- Activity Details & Worksheet
CASE SYNOPSIS:
In this case, Kayla, a 16-year-old female, is seen in the emergency department (ED) with abdominal pain. The ED is quite busy and there are multiple distractions for the care team. She had been seen two days ago and diagnosed with pelvic inflammatory disease (PID) but returns because her abdominal pain is worsening. The attending physician, Dr. Roberts, thinks that her symptoms are related to medication non-adherence and she is admitted for IV antibiotics. After admission, the correct diagnosis of ovarian torsion is made.

A video is used to show how providers are influenced by cognitive biases, and specific strategies to mitigate these biases are discussed.

LEARNING OBJECTIVES:
1. Define analytic and non-analytic decision-making processes.
2. Discuss how each analytic and non-analytic decision-making processes may lead to diagnostic error.
3. Describe three different systems factors that contribute to diagnostic error.
4. Communicate safely and accurately with team members or health care providers about diagnostic errors discovered during handovers.
5. Discuss the role of metacognition in preventing error.

ACTIVE LEARNING CLASSROOM STRATEGY
This session will focus on how the systems in which we learn and practice medicine influence the way we make decisions; specifically, the role of time pressure and distraction in our decision-making processes is addressed. Students will also be empowered to engage in feedback about the diagnostic process with peers in an effective, emotionally safe manner.

This module is designed to take 60 minutes, but can easily be adapted for other durations.

- Activity Details & Worksheet
CASE SYNOPSIS:
In this case, Benjamin, a 10-year-old male, is admitted to the pediatric service for evaluation of abdominal pain. The pain has been present over the last few months and tends to worsen near the end of the school day. An extensive evaluation has been performed, and thus he was admitted for further evaluation. The resident physician is excited to care for Benjamin since Benjamin’s parents are from her hometown. The team performs a history and physical, and a computed tomography (CT) scan is performed to evaluate his abdomen. After admission, a nurse completes an admission checklist and asks if there is violence in the home; Benjamin states that his father is violent in the home and it is determined that his abdominal pain is likely functional in nature and due to the toxic stress at home.

LEARNING OBJECTIVES:
1. Define the “second victim” effect that results from diagnostic error.
2. Define eight common cognitive biases (visceral bias, anchoring bias, availability heuristic, premature closure, confirmation bias, base-rate neglect, blind obedience, framing bias).
3. Discuss eight common cognitive biases (visceral bias, anchoring bias, availability heuristic, premature closure, confirmation bias, base-rate neglect, blind obedience, framing bias) using real-world examples.
4. Demonstrate the ability to give and receive feedback on patient outcomes after a diagnosis.
5. Discuss three methods to calibrate lifelong learning in response to a diagnostic error in order to avoid minimization and overreaction.
6. Discuss the role of metacognition in preventing error.
7. Identify two specific clinical situations in which checklists could help prevent diagnostic errors.

ACTIVE LEARNING CLASSROOM STRATEGY
This session will focus on the role of expanding the diagnostic team to include other health care professionals, patients, and families. After discussing the case, learners will develop specific strategies to try to actively expand the diagnostic team to avoid diagnostic error and improve the health of patients.

This module is designed to take 60 minutes, but can easily be adapted for other durations.

- Activity Details & Worksheet
CASE SYNOPSIS:
In this case, an 84-year-old female with a history of recurrent urinary tract infections (UTIs) is admitted to the hospital with altered mental status and systemic inflammatory response syndrome (SIRS). She is treated empirically for a UTI since has mild pyuria on her urinalysis. She worsens and her antibiotics are broadened. However, the team then re-evaluates and notes that she has been having diarrhea and actually has Clostridium difficile colitis and not a UTI.

This active learning session will focus on strategies to analyze cases of diagnostic error to determine the factors leading to the error.

LEARNING OBJECTIVES:
1. Identify three different limitations of laboratory and imaging testing in the diagnostic process.
2. Explain a diagnostic decision that overrides isolated test results or input from consultants and give an example of such a situation.
3. Identify two specific clinical situations in which checklists could help prevent diagnostic errors.
4. Name a clinical decision support tool that could be applied to practice to reduce diagnostic errors.

ACTIVE LEARNING CLASSROOM STRATEGY
This session will focus on using a fishbone diagram to analyze diagnostic errors. After discussing the case, learners will develop specific strategies to try to actively expand the diagnostic team to avoid diagnostic error and improve the health of patients.

This module is designed to take 60 minutes, but can easily be adapted for other durations.

- Activity Details & Worksheet
DIAGNOSTIC EXCELLENCE 06: 12-DAY-OLD MALE INFANT WITH BLOODY STOOL

Original Case Authors: Satid Thammasitboon, MD

CLINICAL LOCATION: HOSPITAL

CASE SYNOPSIS:
In this case, a 12-day-old male infant is admitted to the hospital with bloody bowel movements. The team informally discusses the case with the surgery team at admission and a contrast enema is performed that does not reveal evidence of intussusception, which was the team’s major concern. However, the infant worsens and further discussion is held with the surgery and radiology teams, and a diagnosis of malrotation with volvulus is made. The importance of considering demographic features (such as age) when formulating a diagnosis are emphasized and a recording is used to illustrate a productive conversation between radiology and the pediatrics team.

LEARNING OBJECTIVES:
1. Determine whether a diagnostic error occurred.
2. Describe three different systems factors that contribute to diagnostic error.
3. Identify three different limitations of laboratory and imaging testing in the diagnostic process.
4. Communicate safely and accurately with team members or health care providers about diagnostic errors discovered during handovers.
5. Discuss the role of metacognition in preventing error.

ACTIVE LEARNING CLASSROOM STRATEGY
In this session, learners will discuss the barriers to team-based diagnosis and potential strategies to overcome those barriers. In an increasingly hectic, fragmented and sometimes frenzied care environment, collaboration between teams can be quite difficult, leading to communication challenges, miscommunication, and even errors.

This module is designed to take 50 minutes, but can easily be adapted for other durations.

- Activity Details & Worksheet