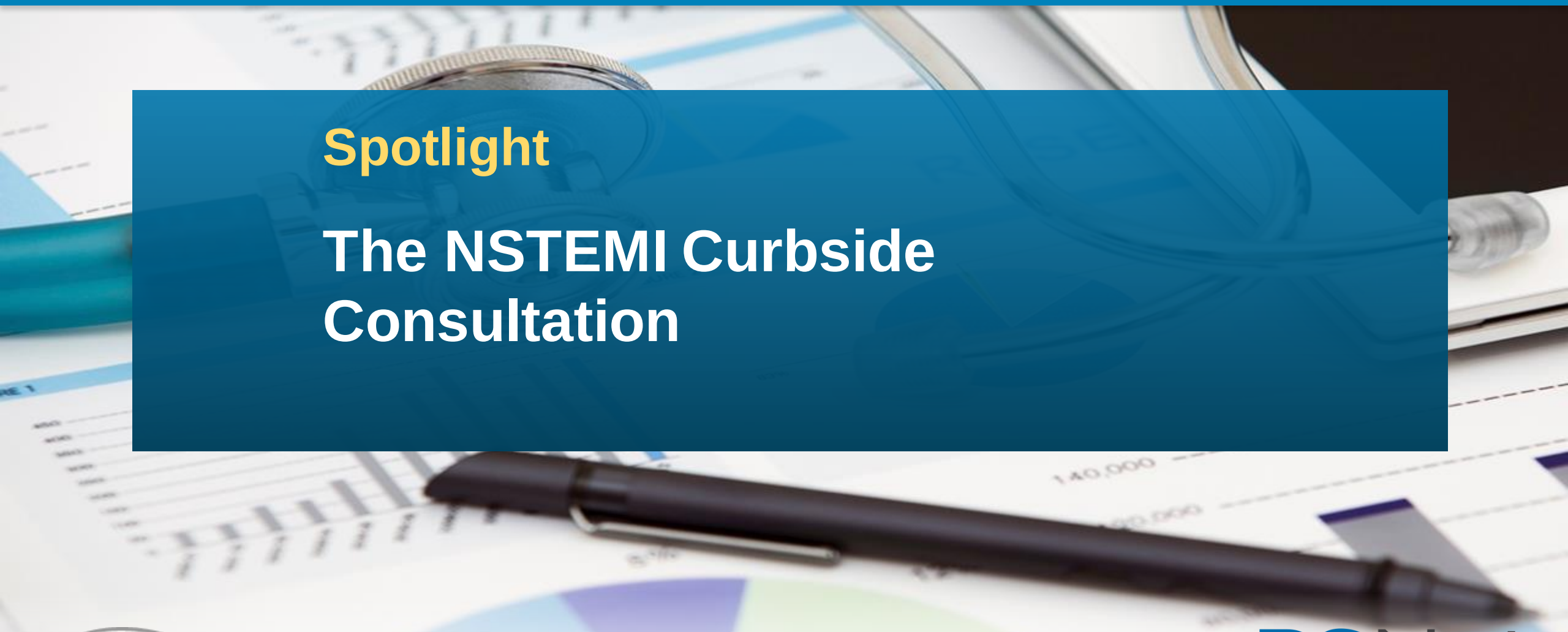
WebM&M
Morbidity and Mortality Rounds on the Web



Spotlight

The NSTEMI Curbside Consultation

AHRQ Agency for Healthcare Research and Quality
Advancing Excellence in Health Care

PSNet
PATIENT SAFETY NETWORK

Source and Credits

- This presentation is based on the July 2020 AHRQ WebM&M Spotlight Case
  - See the full article at https://psnet.ahrq.gov/webmm
  - CME credit is available
- Commentary by: Amparo C. Villablanca, MD and Gordon Wong, MD MBA
  - AHRQ WebM&M Editors in Chief: Patrick Romano, MD, MPH and Debra Bakerjian, PhD, APRN, RN
  - Spotlight Editors: Patrick Romano, MD, MPH and Ulfat Shaikh, MD
  - Managing Editor: Meghan Weyrich, MPH

Objectives

At the conclusion of this educational activity, participants should be able to:

- Describe key causes of diagnostic errors including cognitive bias, anchoring bias, and confirmation bias and discuss strategies to mitigate these biases
- Increase understanding of differences in cardiovascular disease presentations between men and women
- Discuss the appropriate use and best practices for curbside consultations in acute care settings
- Articulate advantages and pitfalls of curbside consultations

THE NSTEMI CURBSIDE CONSULTATION

A case of presumed acute pulmonary edema highlights diagnostic errors resulting from differences in cardiovascular disease presentation between men and women and the advantages and pitfalls of curbside consultations

Case Details

- 52 year old woman with coronary artery disease and previous ST segment-elevation myocardial infarction with drug-eluting stent placement in the left anterior descending artery (LAD), complicated by ischemic cardiomyopathy, presented to the ED with dyspnea, cough and fever
- Labs: Troponin 0.09
- EKG: No ischemic changes noted
- Imaging: Chest x-ray reveals patchy consolidations bilaterally, confluent in the right upper lung.

Case Details

- Admitted, started on antibiotics for CAP
- TTE is performed due to progressive dyspnea, showing decrease in left ventricular ejection fraction from 50-55% to 25-30%, without new wall motion abnormalities.
- Troponins 0.09 → 0.15 without ECG changes
- “Curbside” cardiology consultation obtained → consultant felt that the picture was consistent with demand ischemia and that worsening systolic function could be due to acute pulmonary edema.

Case Details

- Patient was managed with diuretics and antibiotics, ultimately discharged on this regimen until cardiology outpatient appointment at 1-week post-discharge.
- Unfortunately, post-discharge follow-up with cardiology did not occur until two months after discharge.
- At that appointment, a nuclear stress test was ordered, showing a large perfusion defect suggestive of infarction.

Case Details

- Patient underwent left heart catheterization with coronary angiography, which showed 100% mid-LAD occlusion and a hypokinetic scar in the distal anterior wall and apex.
- Cardiac MRI showed no viability of the mid-anterior wall of the left ventricle.
- A multi-disciplinary discussion between interventional cardiology and cardiothoracic surgery concluded that there was no benefit for percutaneous or surgical revascularization.

THE NSTEMI CURBSIDE CONSULTATION

THE COMMENTARY

By Amparo C. Villablanca, MD
and Gordon Wong, MD MBA

What went wrong?

Two major issues contributed to a poor outcome in this patient:

1) Diagnostic error (primary problem)
2) Inappropriate use of curbside consultations (secondary problem)

Part One – Diagnostic Error

Diagnostic Errors

- A prevalent "blind spot" in patient safety → lead to poor patient outcomes
  - Up to 17% of preventable errors are diagnostic errors (Harvard Medical Practice Study)
- Rooted in several cognitive biases:
  - *Availability heuristic* –biased by past case experiences
  - *Anchoring heuristic* – reliance on initial diagnostic impression, despite subsequent information of the contrary
  - *Framing effects* – diagnostic decision-making biased by subtle cues
  - *Blind obedience* – over-reliance on test results or "expert" opinion

Diagnostic Errors

- Strategy:
  - Mitigate cognitive biases
  - Address cognitive errors with objective information to assist medical decision-making
  - Improve knowledge and experience

Cardiovascular Disease in Women

- Leading women's health issue, with more yearly deaths in women than men
- Gender differences in anatomy, physiology, and pathogenesis of CAD
- Compared to men, women are under-prevented, under-diagnosed, under-treated, and under-studied
- Additional factors: underestimate of CVD risk in women, lack of awareness of gender differences in CVD, and discomfort in managing women with CVD

Avoiding cognitive errors in diagnosing MI

- Typical triad for MI: chest pain, elevated cardiac enzymes, abnormal ECG
  - Cardiac troponins (cTn) T and I are expressed by myocardium; preferred biomarker for measuring myocardial injury
- Not all cTn elevations are MIs
  - can be present in heart failure, arrhythmias, renal failure, sepsis, pulmonary embolism, etc.
- While dyspnea and elevated cTn can be caused by CAP, “atypical” symptoms are more common in women and suggest acute ischemia
- Based on clinical history and elevated cTn, coronary angiography or other cardiac imaging should be considered

Demand ischemia

- Defined as Type 2 MI, or an MI caused by a mismatch between oxygen supply and demand by a pathophysiological mechanism other than coronary atherothrombosis (i.e., type 1 MI)
- Requires at least one of the following criteria:
  - symptoms of acute myocardial ischemia
  - new ischemic ECG changes
  - development of pathologic Q waves
  - imaging evidence of new loss of viable myocardium or new regional wall motion abnormality in a pattern consistent with an ischemic etiology

Using Pre-test Probability for Clinical Decision-Making

- As a predictor of CVD events, the Framingham Risk Score may inaccurately predict CVD risk in women affected earlier in life by stroke, angina, or heart failure
- Compared to men with CAD, women with CAD have worse prognosis, greater mortality, and substantially high risk of MACE
  - Women hospitalized for ACS also have increased risk of complications (i.e. re-infarction, heart failure, stroke, and death).
- This patient's cardiac history of CAD and STEMI s/p PCI, now with decreased EF not fully explained by CAP, raises high pre-test probability for ACS
  - Key issue: Lack of recognition of high pre-test probability → missed diagnosis

Part Two –
Use of Curbside Consultations

Types of Consultations

- Formal consultation: consultant physician evaluates the patient, performs chart review, and provides written recommendations
- Informal (“curbside”) consultation: a direct question is answered, without patient examination or chart review
- Electronic consultation (e-consult): specialist provides written recommendations after chart review, without a patient visit

Pros of Curbside Consultations

- Improves access to specialist knowledge
  - Assists in finding the right subspecialist
- Facilitates earlier coordination of patient care → efficiency
- Can serve as a bridge to formal consultation or expedited outpatient follow-up
- "Highly approved" by both specialists and generalists
  - Professional satisfaction in educating and maintaining good relations with colleagues

Cons of Curbside Consultations

- Incomplete and inaccurate information is relayed in as much as 51% of curbside consultations
- Asymmetric information can lead to unnecessary, expensive testing or provide a false sense of reassurance
- If this leads to a gap in quality of care, there is a chance for patient harm and increased risk of physician medical-legal liability

Cardiology Curbside Consultation

Three key pitfalls of curbside consults in this case were:

1) Curbside consults should not be used for diagnosis or treatment recommendations
2) Incomplete exchange of information → imperfect recommendations
3) Failure to establish timely outpatient follow-up

TAKE HOME POINTS

Take-Home Points (1)

- Heart disease in women is often under-recognized, under-diagnosed, and under-treated, leading to worsened outcomes that are in part due to insufficient knowledge and awareness of gender differences in cardiovascular disease on the part of treating physicians and other health professionals.

Take-Home Points (2)

- In the setting of obstructive coronary artery disease, women have worse prognoses than men, higher short- and long-term mortality rates, and substantially higher risk of subsequent MI, heart failure, and death.

Take-Home Points (3)

- Cognitive biases—availability bias, anchoring bias, confirmation bias, and others—are important contributors to diagnostic errors and can be countered by health professional education and use of evidence-based guidelines for disease management.

Take-Home Points (4)

- Curbside consults are a valuable part of medical practice. However, the decision to pursue an informal consultation can result in challenges that could contribute to a delay in appropriate diagnosis and treatment.

Take-Home Points (5)

- In busy practice, it is tempting to rely on curbside consultations to obtain specialist input in a timely and inexpensive manner, but key details are inevitably left out of the referring physician's presentation and the consultant's impression is clouded by how the referring professional frames the consultation request.

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