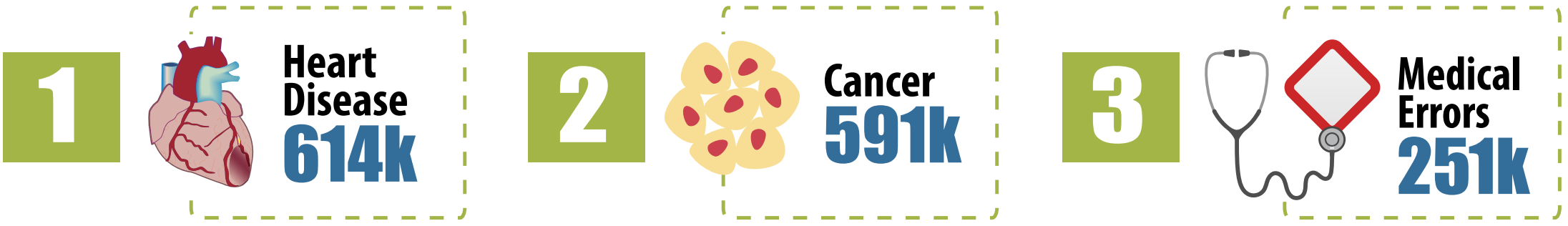


# Common Errors in Chest Pain Diagnosis

## Leading Causes of Death in the U.S.



### WHERE ARE WE MISSING IT?



## Common Errors in Diagnosis

### INITIAL DIAGNOSTICS ASSESSMENT

Responsible for **79%** of errors in heart disease claims.

- 1

Failure to elicit and record a full history from the patient.
- 2

Inadequate physical examination.
- 3


Failure to thoroughly address the complaint or symptoms.
- 4

Differential diagnosis too narrow or not established.
- 5

Failure to order appropriate diagnostic testing.

### TESTING AND RESULTS PROCESSING

Responsible for **19%** of errors in heart disease claims.

- Tests are improperly performed, not performed at all, or results are misinterpreted.
- 

### FOLLOW-UP AND COORDINATION

Involved in **55%** of errors in heart disease claims.

Patient does not follow up; is not appropriately referred; or there is failure of communication among care team.

### COGNITIVE ERRORS

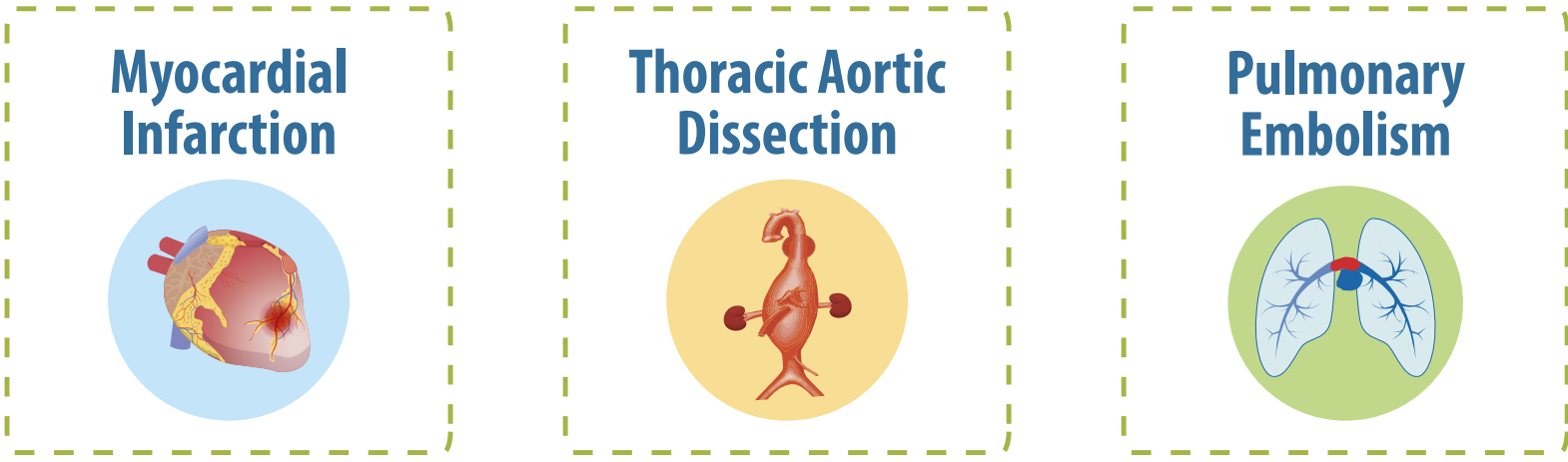
Anchoring, diagnostic momentum, premature closure, gender bias.



### FAILURE TO RECOGNIZE ATYPICAL PRESENTATION

Particularly in women and elderly (nausea, fatigue, dyspepsia, dyspnea).


## Common Malpractice Claims Related to Chest Pain



## Myocardial Infarction (MI)

### HEART DISEASE IN WOMEN

Cardiovascular disease is the **#1** cause of death among women.

- 
- ♥ More women die of this disease than of the next seven causes of death in women combined.

♥ Men have more heart attacks than women, but women have a higher death rate.

♥ Women experience more atypical presentations of Coronary Artery Disease and Acute Coronary Syndrome than men.

♥ Recent studies found undertreatment of women for CAD and ACS.

♥ Women's atypical symptoms are as subtle as fatigue and sleep disturbance.



♥ African-American women have a higher incidence and mortality from Coronary Heart Disease than Caucasian women.

### MAJOR GENDER DIFFERENCES IN THE PRESENTATION OF CORONARY HEART DISEASE

- Women are more likely to present with angina than MI or sudden death.

Women are more likely to be misdiagnosed at presentation.

Women are less likely to have obstructive CHD, thus lowering diagnostic accuracy of tests.


- 

Women are more likely to have silent or unrecognized MI.

Women hospitalized for CHD have higher complication and mortality rates.

Women with acute coronary syndrome are less likely to receive guideline-based care.

## Thoracic Aortic Dissection (TAD)

### FACTORS CONTRIBUTING TO TAD MISSED OR DELAYED DIAGNOSIS

- 1

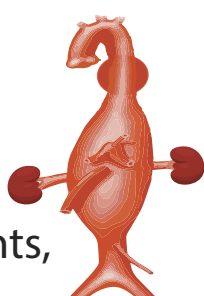
TAD is relatively rare, and the diagnosis is often missed because it is overshadowed by more common conditions that present to the emergency department and primary care physicians.
- 2

Most medical providers have seen few, if any, cases of TAD and may not be aware of the variability of the presenting symptoms and signs.
- 3

TAD may occur in younger patients, whereas other cardiovascular emergencies are less common in younger patients. TAD has been reported in children **as young as 3 years old!**
- 4

Patients with TAD present with a wide spectrum of symptoms and signs. The classic presentation of TAD is not common.
- 5

There are no screening tests that are well-studied, rapidly available and effective in diagnosing TAD. Contrast this to STEMI, where the ECG and cardiac markers play an integral part in screening.



### COMMON ERRORS IN THE DIAGNOSIS OR TREATMENT OF TAD

- Failure to obtain an adequate history and recognize the classic presentation.

• Failure to perform a bedside risk assessment specifically for TAD.

• Failure to recognize physical findings consistent with TAD.

• Failure to include TAD in the differential diagnosis.

• Failure to integrate the symptoms and signs of multiple organ involvement of TAD.

• Failure to order appropriate diagnostic studies.

• Inadvertent treatment of other conditions that mimic TAD.

• Failure or delay in diagnosis due to cognitive errors in decision-making.
- 
- ## Pulmonary Embolism (PE)
- More than **400k** cases of PE are missed annually in the United States, resulting in the death of more than **100k** patients who would have survived with the proper diagnosis and treatment.
- About **10%** of deaths from PE occur within **60 minutes** after the initial onset of symptoms.
- 1

out of 9


will develop DVT before age 80

1

out of every 20

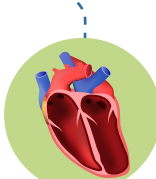
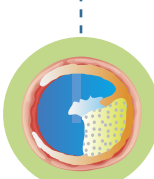
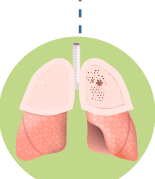
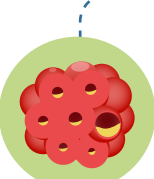
deaths after age 50 occurs from VTE
- ### DIFFICULT TO DIAGNOSE
- 2/3**s of patients with proven PE have no symptoms of Deep Vein Thrombosis.
- 50%** of patients with proven symptoms of PE actually have pulmonary emboli of significant size. This diagnosis is often missed.
- History is only suggestive of the disease, and there is no physical finding that makes this diagnosis. Diagnosis generally requires more than clinical judgment.
- Risk of recurrent embolism increases from **4%** to **23%** with a fivefold increase in the likelihood of death within one year if the diagnosis is missed at the initial presentation and therapeutic anticoagulation is delayed for only **24 hours**.
- 4%

23%


- ### COMMON ERRORS IN THE DIAGNOSIS OF PE
- Failure to gather or consider the risk factors for PE.

• Failure to recognize tachycardia and tachypnea as physiologic abnormalities commonly associated with PE.

• Cases in which pulmonary embolism masquerades as pneumonia, COPD, angina/STEMI or heart failure.



• PE presenting with syncope.

• Delay in treatment of PE.

• Failure to administer thrombolytic therapy to appropriate patients with PE.

• Failure to rule out PE with an evidence-based diagnostic approach.

• The Legal Fiction that every death from PE must be due to a medical error.

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