

A large, bold, dark blue letter 'W' is centered on a white background. The 'W' is composed of thick, blocky strokes. The background of the slide is split diagonally from the top-left to the bottom-right, with the top-left portion being white and the bottom-right portion being a solid purple color. A thin, light purple curved line separates the white and purple areas, following the diagonal split.

The following training module was developed as a quality improvement project to serve as an educational tool for junior radiology residents. The following diagnostic radiology protocoling modules were developed by University of Washington radiology residents Patricia Ojeda and Mariam Shehata.

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Vascular and Chest

Common Clinical Scenarios

Protocols Module

Mariam Shehata & Patty Ojeda



Outline

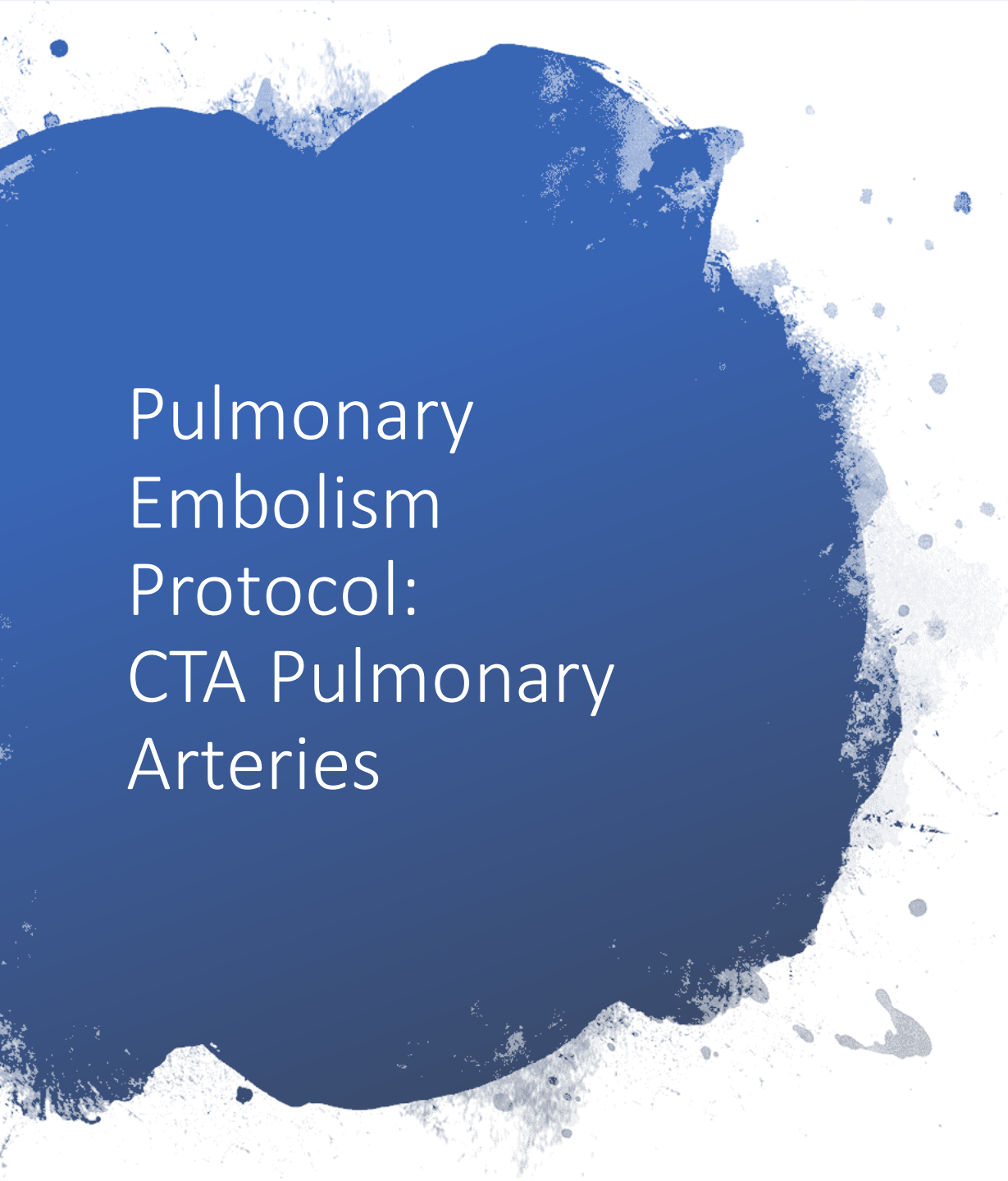
Chest-related protocols to be covered:

- CT-PA
- Double Rule Out
- Acute Aortic Syndrome Protocols
- CTA Lower Extremity Runoff



Case Scenario

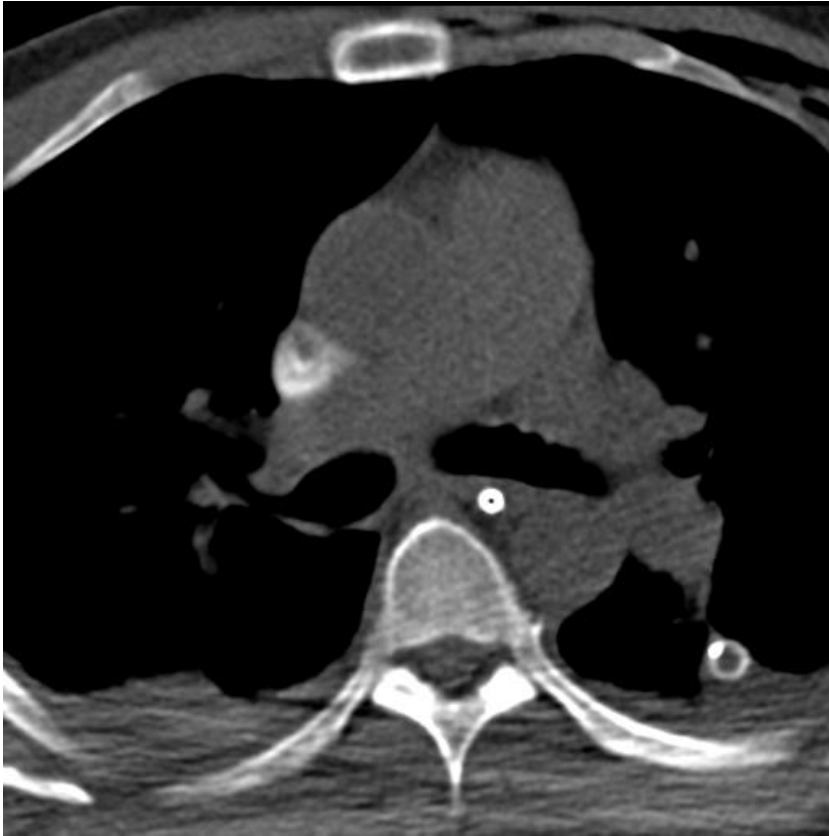
Patient with acute shortness of breath
and elevated D-dimer



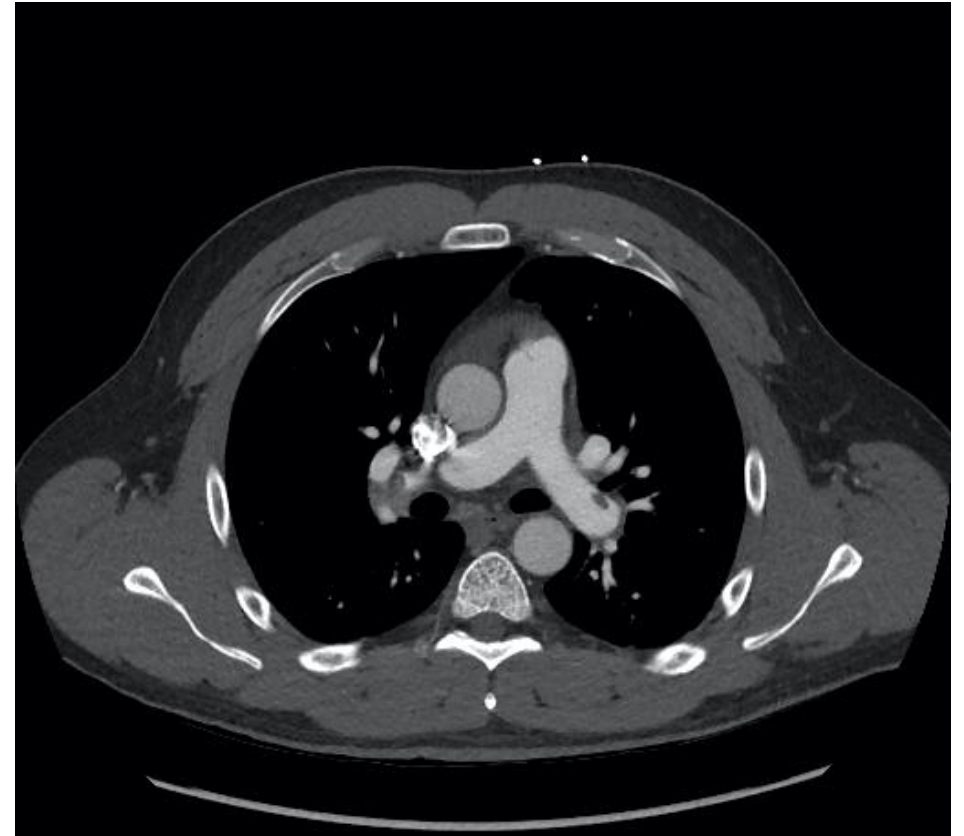
Pulmonary Embolism Protocol: CTA Pulmonary Arteries

- Indication: Concern for pulmonary embolism
- At HMC, the PE protocol is the same as the Double Rule-Out protocol
 - The double rule-out protocol will be explained in subsequent slides
- Need to ensure the scan is of appropriate image quality
 - Pulmonary vessels should be well opacified

Pulmonary Embolism Protocol: CTA Pulmonary Arteries



Inadequate PE Study

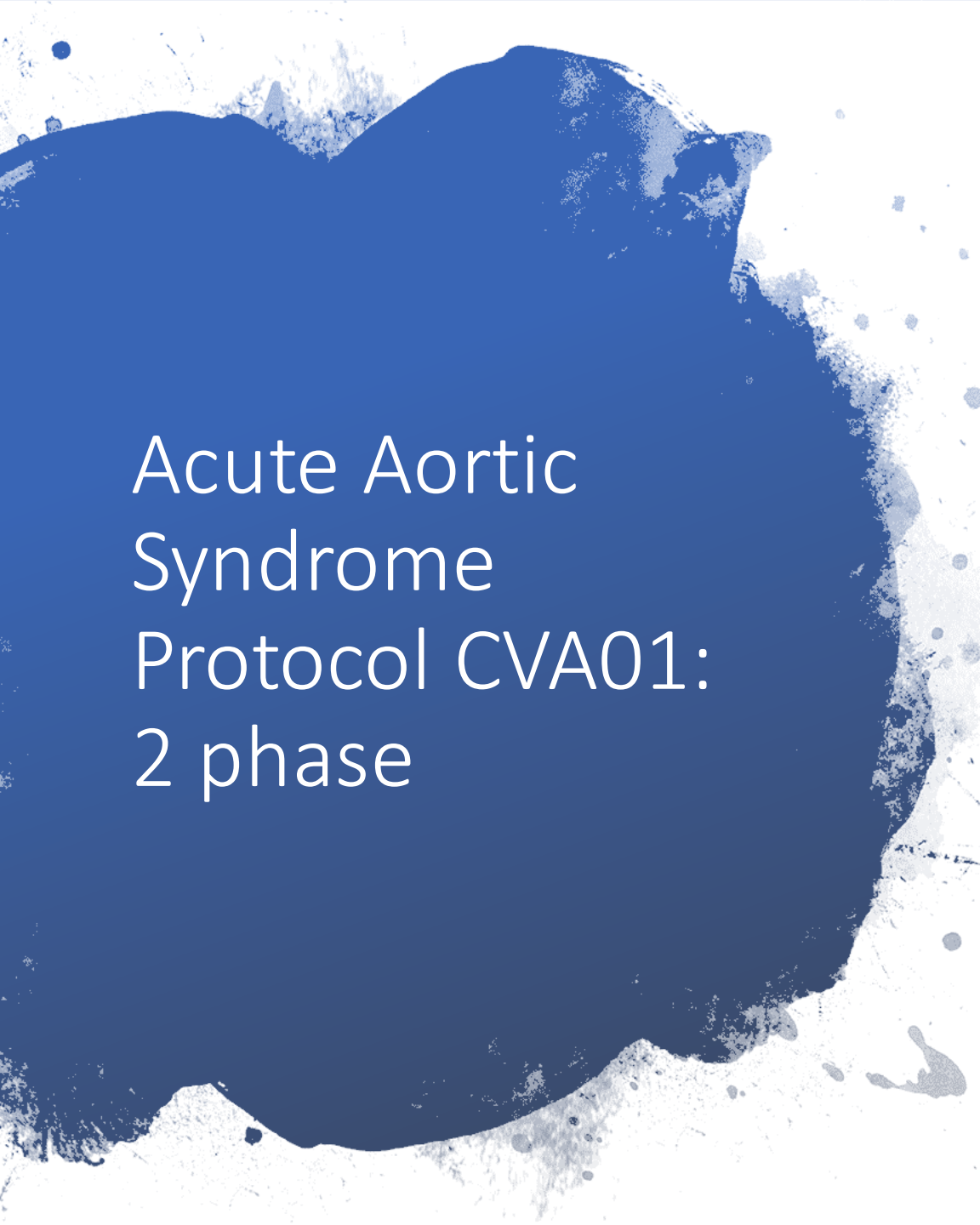


Adequate PE Study



Case Scenario

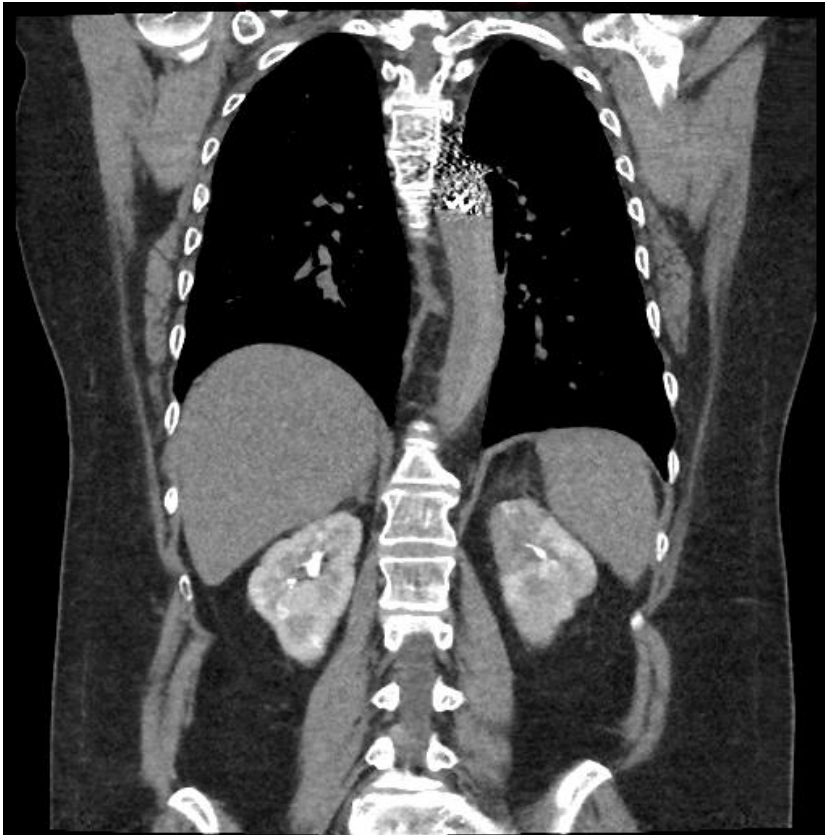
Patient presents with tearing back pain and hypotension; concern for acute dissection



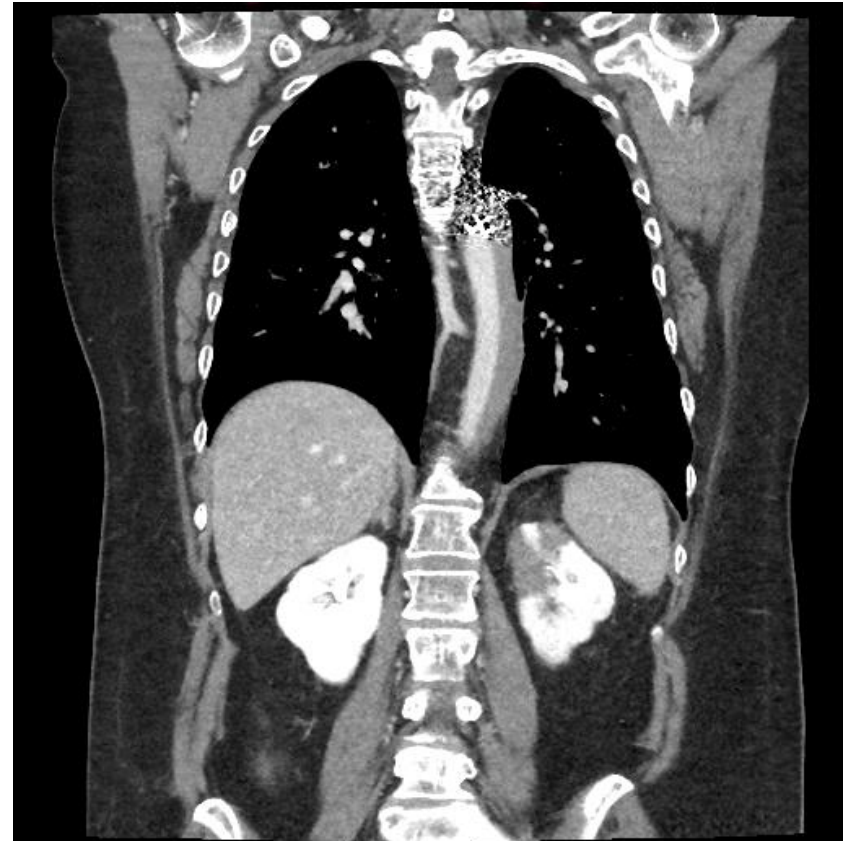
Acute Aortic Syndrome Protocol CVA01: 2 phase

- Indication: Concern for aortic dissection
- Two Phase Chest/Abdomen/Pelvis:
 - 1. Non-contrast**
 - Only for patients >50 to detect intramural hematomas.
 - 2. Arterial phase**
 - To detect aneurysms/dissection.
- Will be gated or not gated depending on HR
 - Gated for HR<100

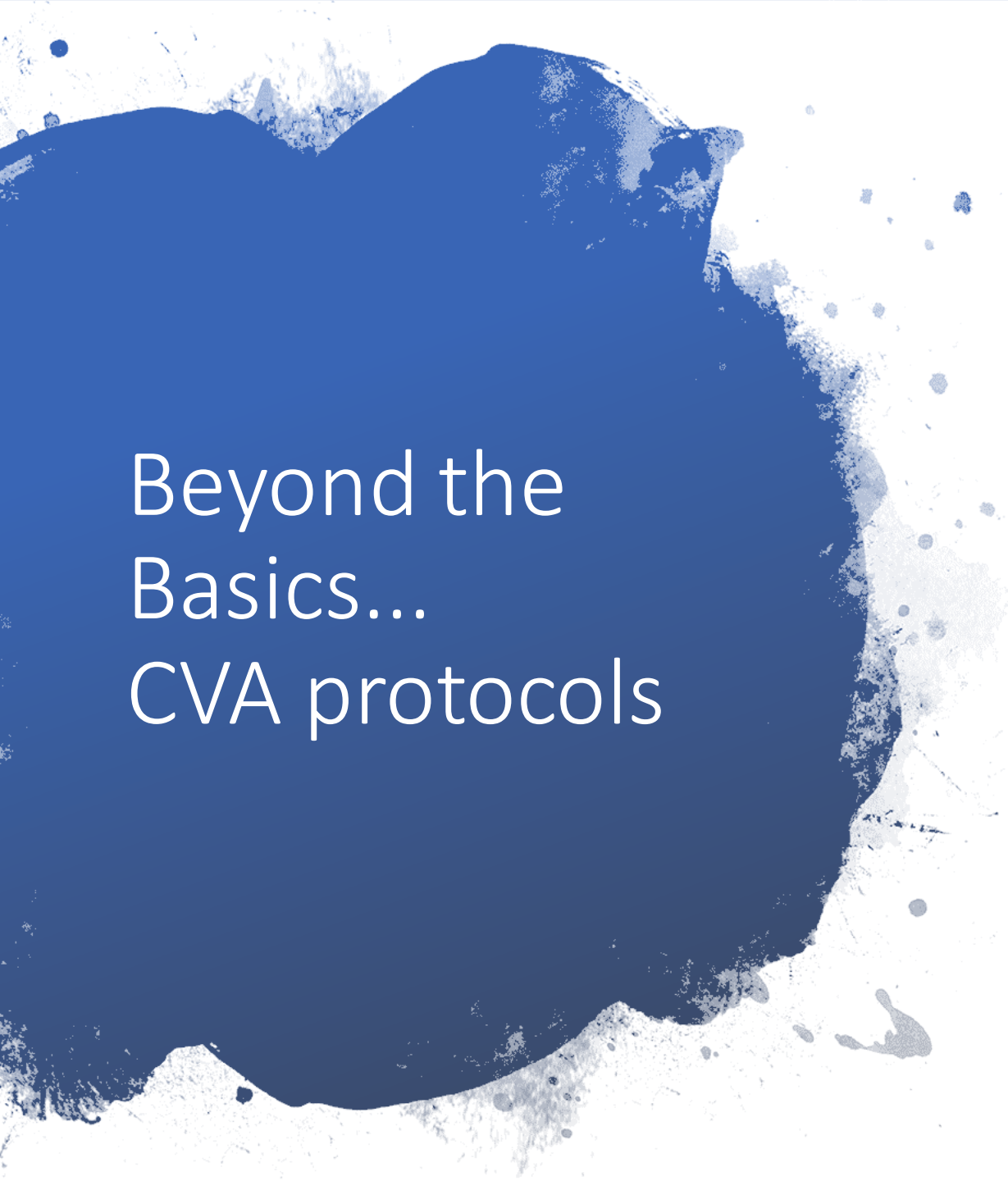
Acute Aortic Syndrome Protocol CVA01: 2 phase



Non-Contrast



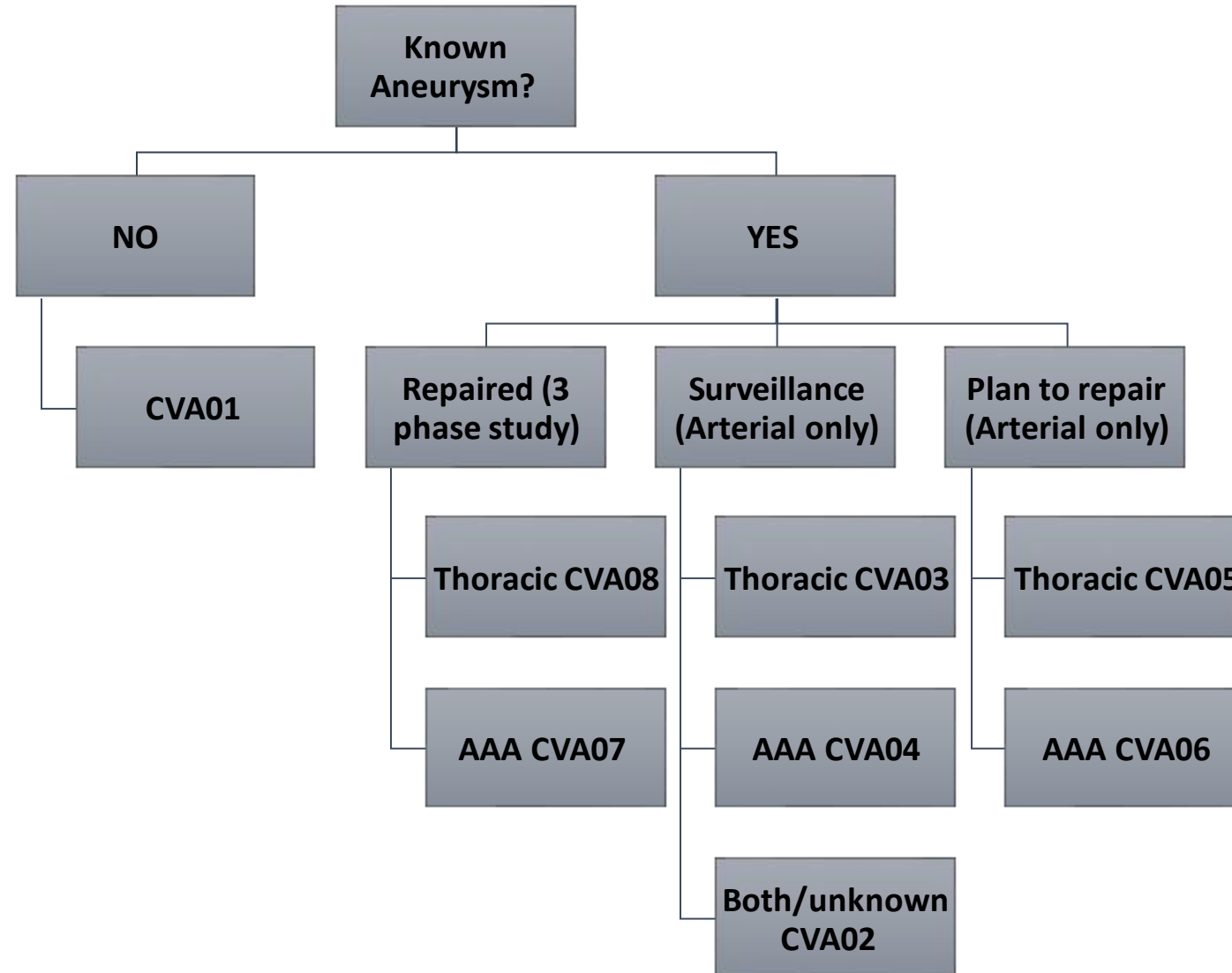
Arterial Phase



Beyond the Basics... CVA protocols

- CVA protocols are often a point of confusion
- Eight existing CVA protocols for different indications specifically involving aortic aneurysms
- Indications include:
 - New, suspected dissections
 - Surveillance of known aneurysms
 - Surveillance of an aneurysm endograft

Solving the CVA Aneurysm Protocol Mystery





Other Important CVA Protocols

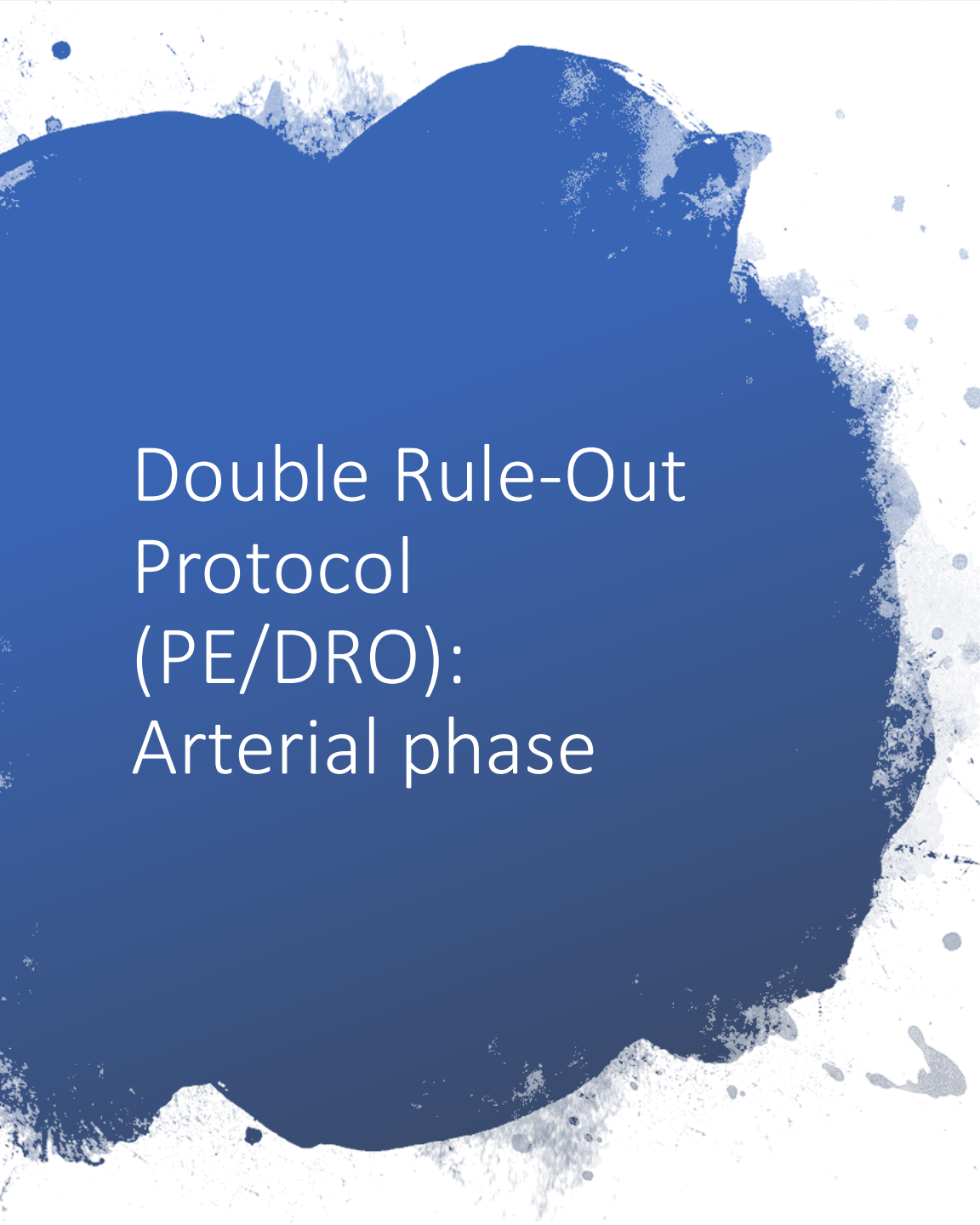
- CVA09: Mesenteric Ischemia CTA
- CVA09B: GI Hemorrhage CTA
- CVA10: CTA peripheral Runoff

These protocols will be discussed separately in other protocoling modules



Case Scenario

Patient presents with tearing back pain and acute shortness of breath; Concern for aortic dissection and a pulmonary embolism

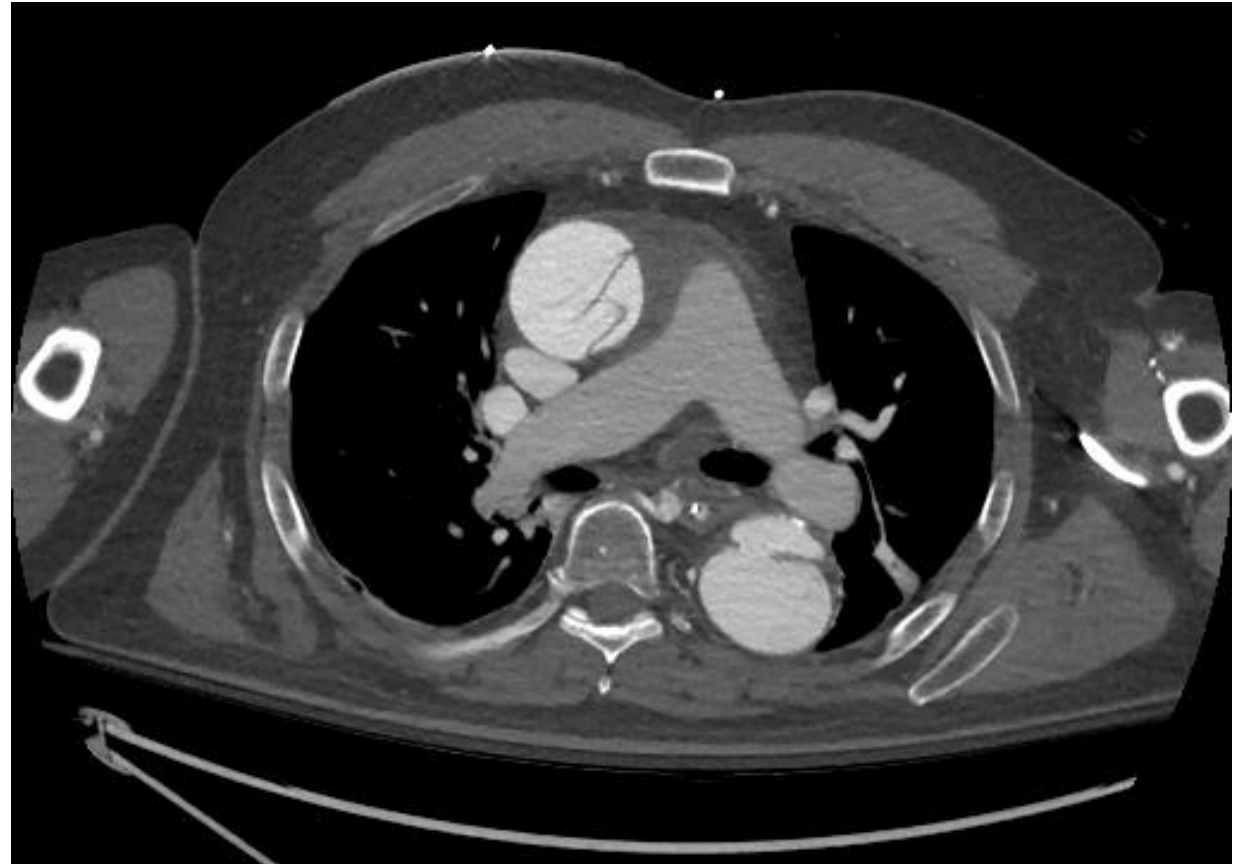


Double Rule-Out Protocol (PE/DRO): Arterial phase

- Indication: Concern for either aortic dissection or pulmonary embolism
- Arterial Phase:
 - For detection of aneurysms/dissection
 - For detection of pulmonary embolism
- Double-rule out studies have been proven to be equally diagnostic as dedicated pulmonary embolism protocols

Cornea AM, McCullough BJ, Mitsumori LM, Gunn ML. Enhancement of the pulmonary arteries and thoracic aorta: comparison of a biphasic contrast injection and fixed delay protocol with a monophasic injection and a timing bolus protocol. *Emerg Radiol.* 2015 Jun;22(3):231-7. doi: 10.1007/s10140-014-1269-2. Epub 2014 Sep 17.

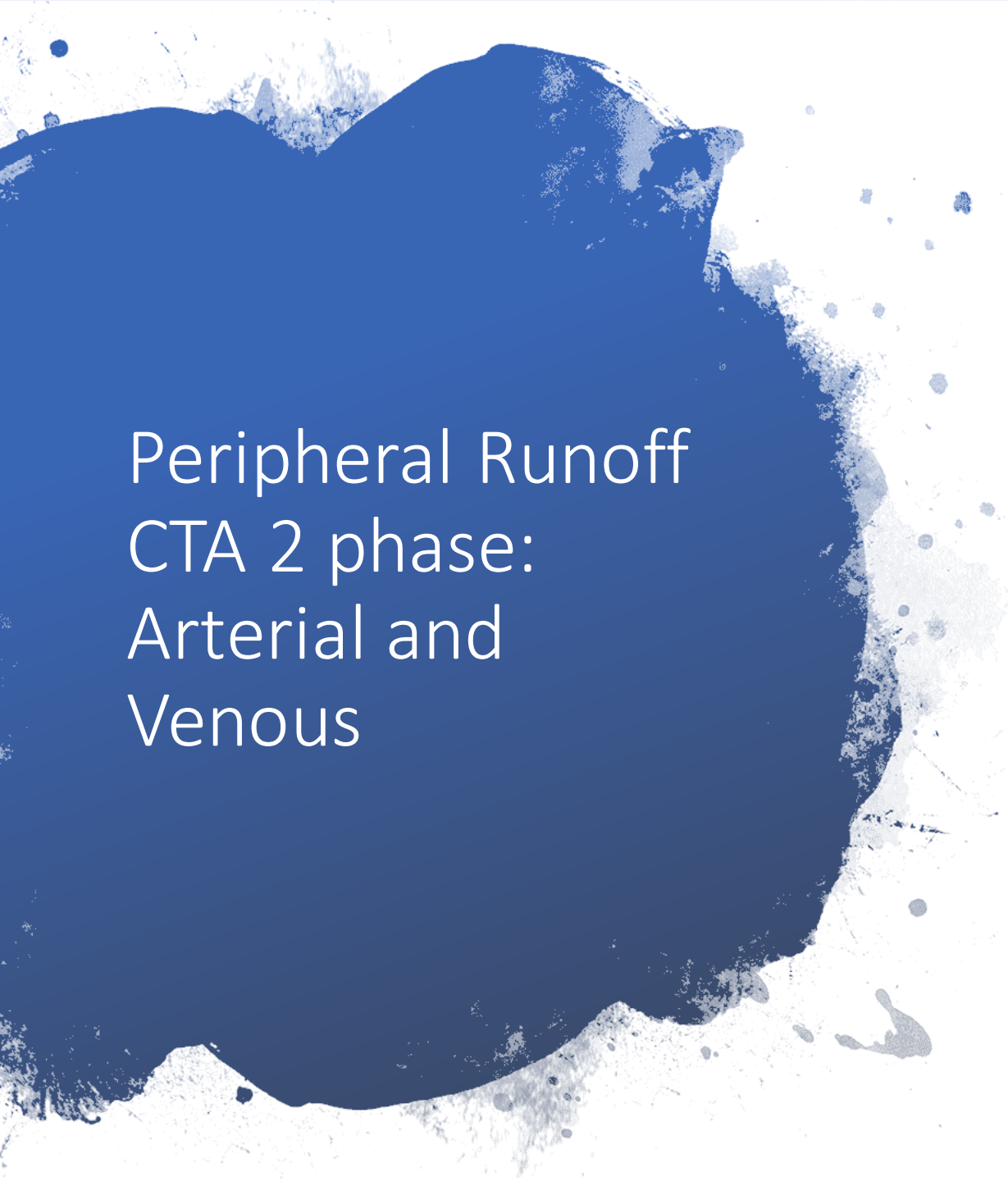
Double Rule-Out
Protocol
(PE/DRO):
Arterial phase





Case Scenario

63 year old male smoker with atrial fibrillation presents with a cold, painful leg.



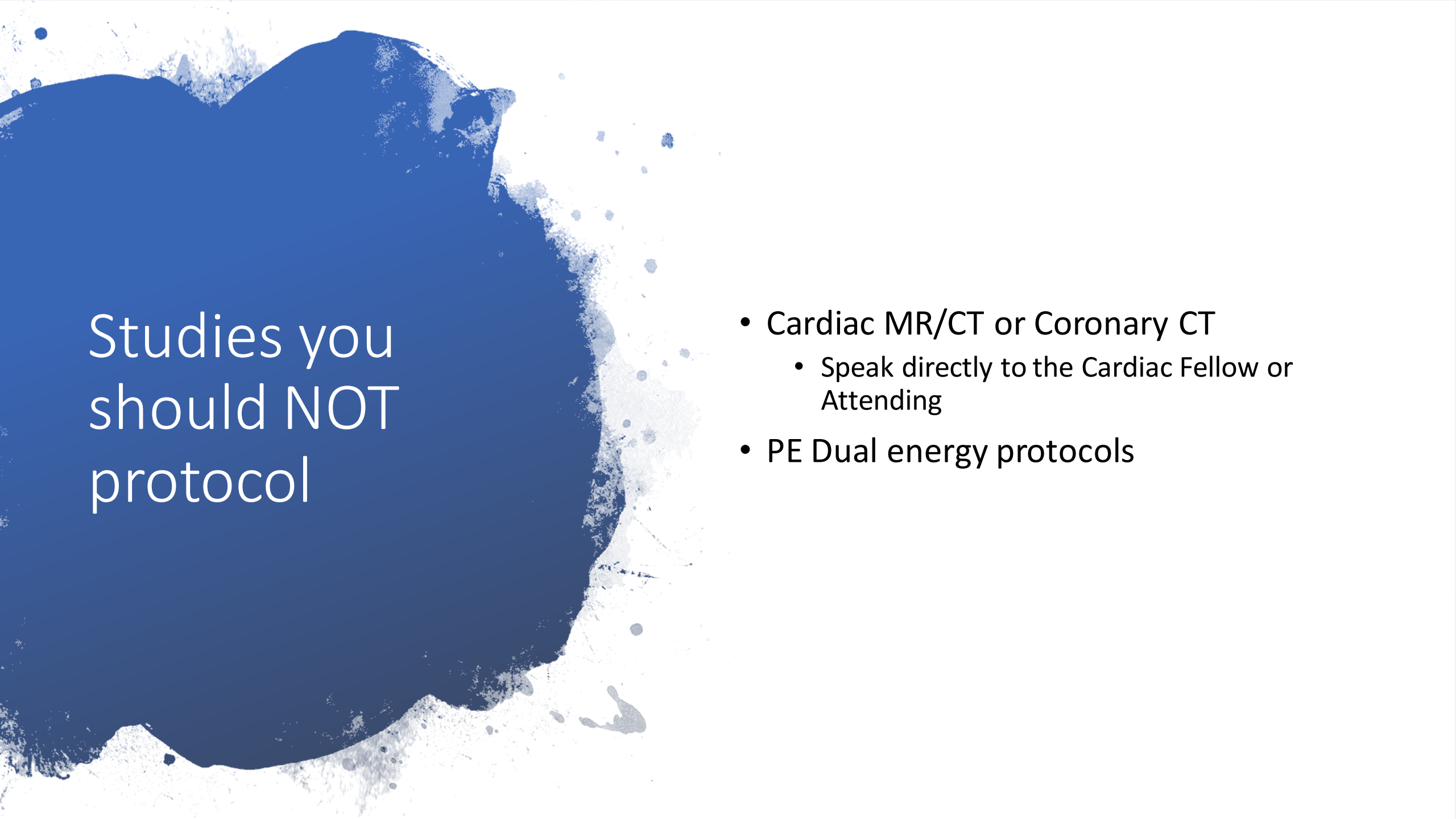
Peripheral Runoff CTA 2 phase: Arterial and Venous

- Indication: Evaluation of lower extremity vascular patency.
- 2 phases:
 1. Arterial
 2. Venous (immediately after arterial)
- Although the ordering providers often specify evaluation of one leg, both legs are scanned as both are in the scanner's field-of-view

Peripheral Runoff
CTA 2 phase:
Arterial and
Venous

Peripheral Runoff MIP





Studies you should NOT protocol

- Cardiac MR/CT or Coronary CT
 - Speak directly to the Cardiac Fellow or Attending
- PE Dual energy protocols