



HEALTHTRUST®

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Pulmonary Embolism Response Teams

A Panel Discussion with Dr. Labib Haddad, Dr. Gary Siskin & Jeffrey Hornyak, RN, BSN, MBA

Presenter Disclosures Related to Potential Conflicts of Interest

- Gary Siskin, M.D. has a vested interest in Research Grant with Inari Medical; Consultant with Boston Scientific and Angiodynamics.
- Labib Haddad, M.D., has a vested interest in or an affiliation with Medtronic, BD/Bard, Penumbra and HealthTrust
- Jeffrey Hornyak, RN, BSN, MBA has no conflicts of interest related to this topic
- This program may contain the mention of suppliers, brands, products, services or drugs presented in a case study or comparative format using evidence-based research. Such examples are intended for educational and informational purposes and should not be perceived as an endorsement of any particular supplier, brand, product, service or drug.

Learning Objectives

At the end of this session, participants should be able to...



1

Articulate the burden of Pulmonary Embolism.

2

Explain what a PERT Team is and understand the basics for how to implement within their organization.

3

Verbalize the treatment options for patients presenting with massive or submassive pulmonary embolism.



**900,000 cases of DVT/PE
in the U.S. annually**

**33% will have a reoccurrence
within 10 years**



**Pulmonary Embolism is the 3rd leading
cause of cardiovascular mortality**

- **60,000-100,000** US deaths annually
- **10-30%** will die within one month of diagnosis
- Sudden death is first symptom in 25% of patients
- **3.0-4.5%** present hypotensive but treatment varies widely

**Deep Vein Thrombosis (DVT) results in long
term complications in 1/3 to 1/2 of the patients**

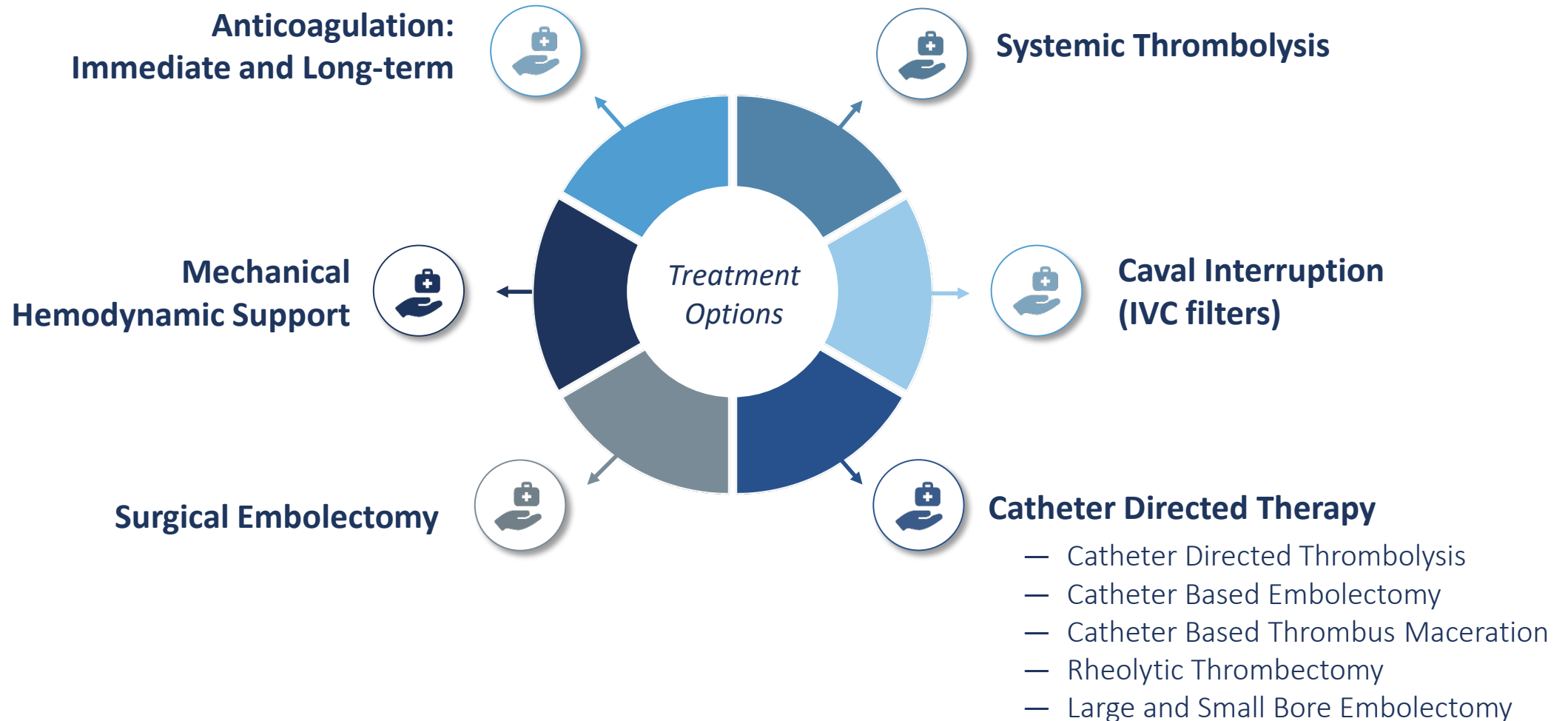


Source: CDC 2020. Data and Statistics on Venous Thromboembolism: <https://www.cdc.gov/ncbddd/dvt/data.html>

Risk Stratification

	Low risk	Intermediate Risk (Submassive)	High Risk (Massive)
Presentation	<ul style="list-style-type: none"> • Normotensive • Low risk per Pulmonary Embolism Severity Index (PESI) or Simplified Pulmonary Embolism Index (sPESI) • Normal Biomarkers 	<ul style="list-style-type: none"> • PESI class III-IV • sPESI ≥ 1 • Echo or CT evidence of RV strain • Positive troponin • Elevated B-type natriuretic peptide or N-terminal B-type natriuretic peptide 	<ul style="list-style-type: none"> • Hypotension (systolic BP < 90 mmHg for ≥ 15 min, drop in systolic BP of ≥ 40 mmHg) • Thrombus in transit • Syncope • Cardiac arrest

Treatment Options



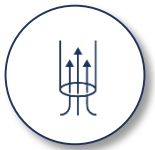
Catheter Directed Treatment Options



Catheter directed thrombolysis



Ultrasound assisted thrombolysis



Suction Thrombectomy

PERT Teams



Multi-disciplinary

- Cardiology, emergency medicine, interventional radiology, cardiothoracic surgery, pulmonary critical care, hematology



Rapid response similar to Stroke or STEMI alerts



Efficiently mobilizes resources



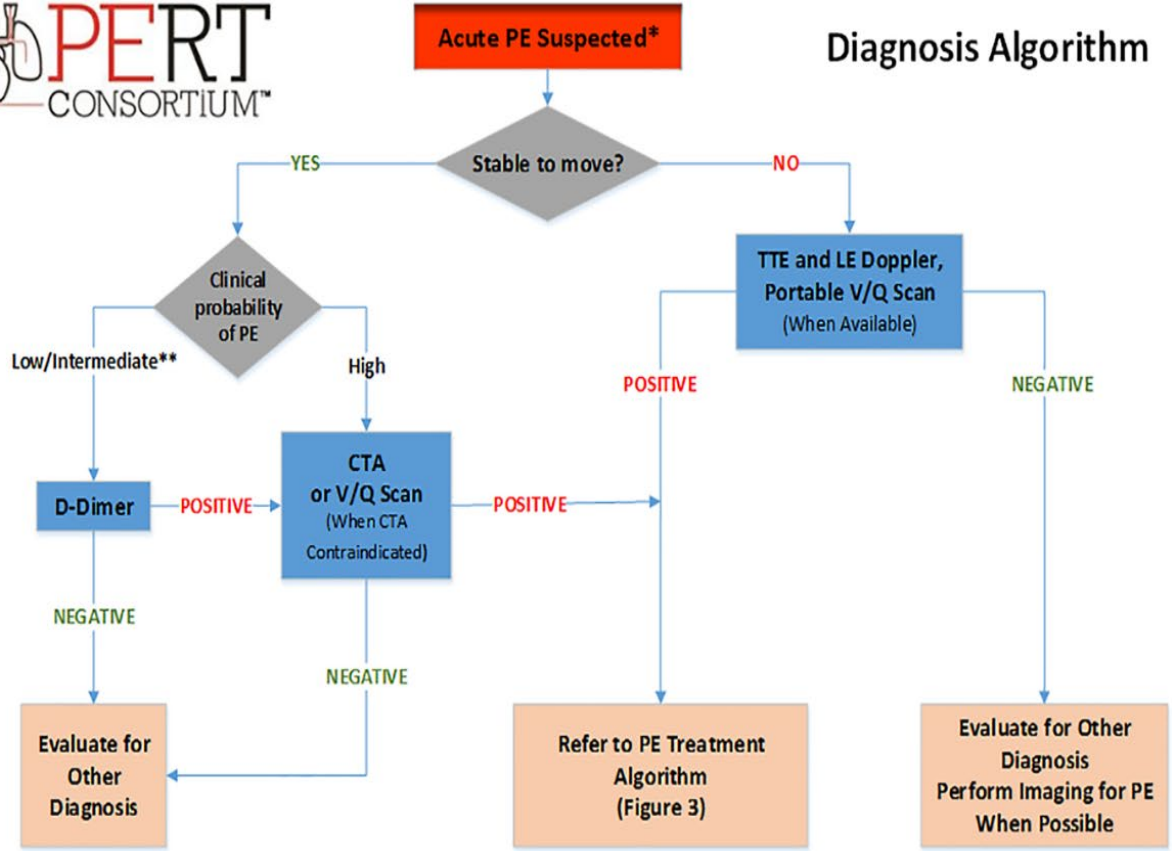
Collect and analyze outcomes

PERT Algorithms: Pert Consortium



Acute PE Suspected*

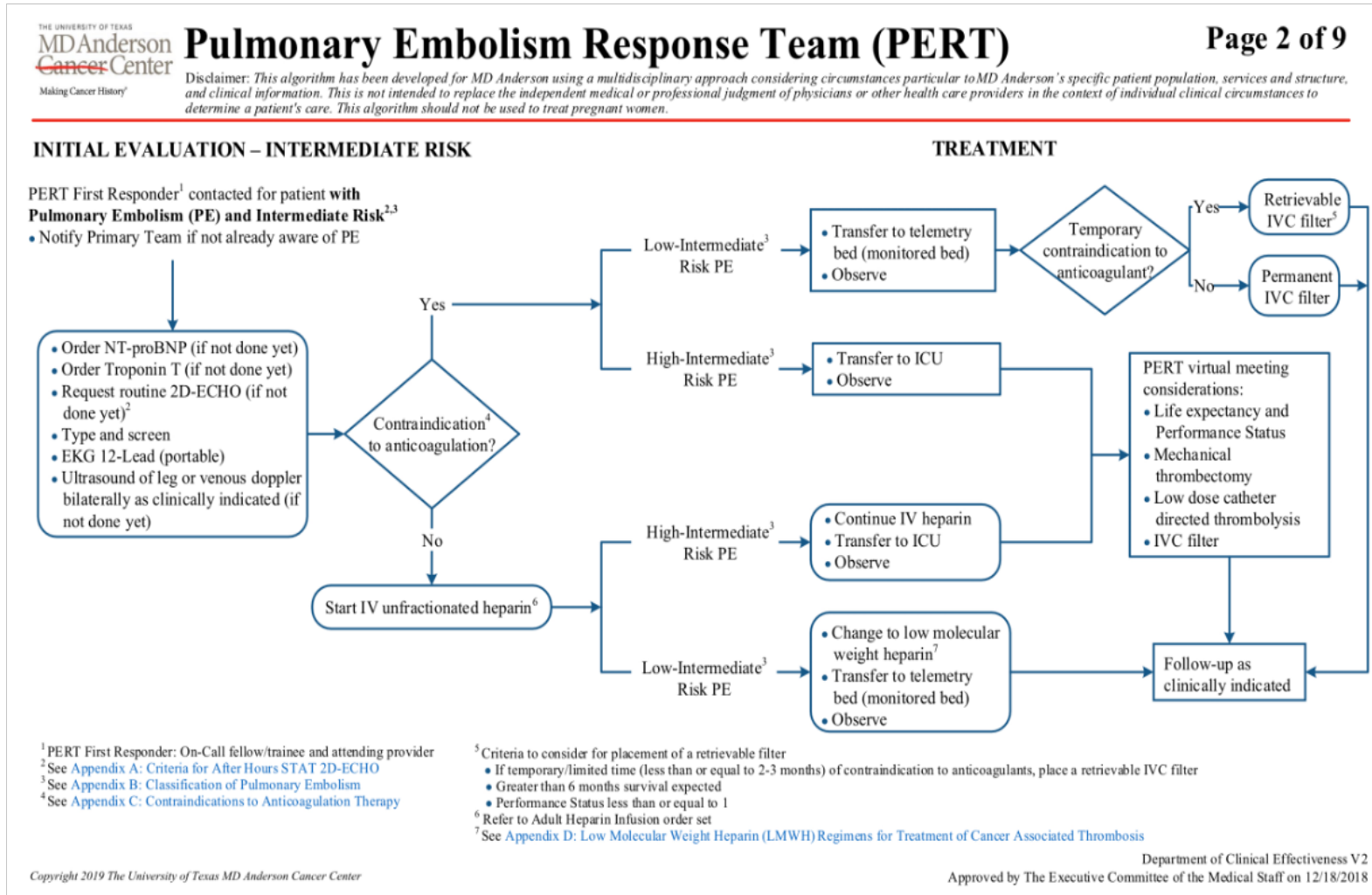
Diagnosis Algorithm



*Anticoagulation should be initiated even prior to the confirmed diagnosis when suspicion is high and bleeding risk is low, especially if testing might be delayed

**For patients with low pre-test probability of PE, the PERC Rule may be used to identify patients for whom no testing is indicated

Legend:
 PE: Pulmonary embolism
 TTE: Transthoracic echocardiogram
 LE: Lower extremity
 CTA: Computed tomography angiography
 V/Q Scan: Ventilation/perfusion scintigraphy
 PERC: Pulmonary embolism rule-out criteria



¹PERT First Responder: On-Call fellow/trainee and attending provider
²See Appendix A: Criteria for After Hours STAT 2D-ECHO
³See Appendix B: Classification of Pulmonary Embolism
⁴See Appendix C: Contraindications to Anticoagulation Therapy
⁵Criteria to consider for placement of a retrievable filter

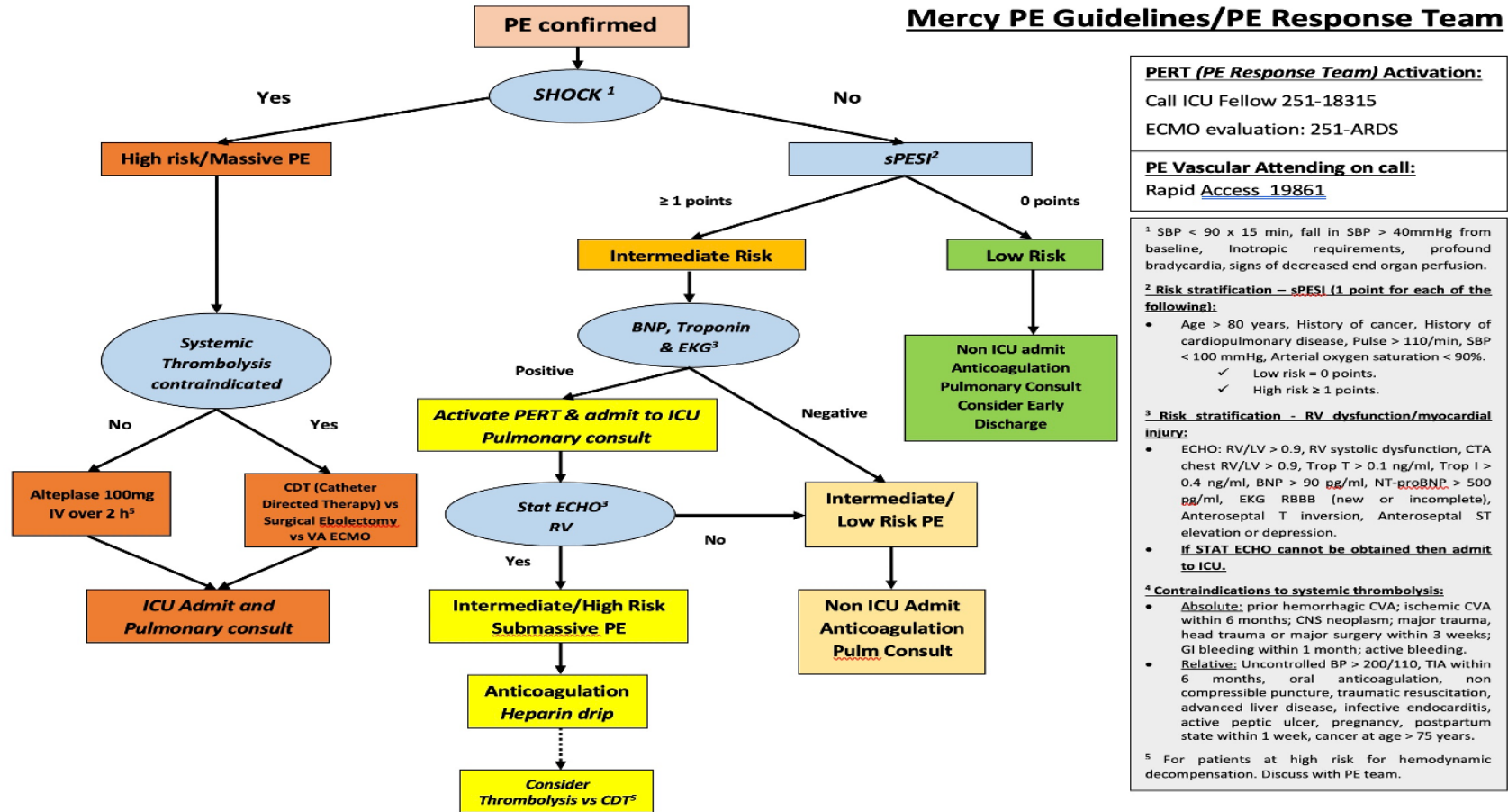
- If temporary/limited time (less than or equal to 2-3 months) of contraindication to anticoagulants, place a retrievable IVC filter
- Greater than 6 months survival expected
- Performance Status less than or equal to 1

⁶Refer to Adult Heparin Infusion order set
⁷See Appendix D: Low Molecular Weight Heparin (LMWH) Regimens for Treatment of Cancer Associated Thrombosis

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Department of Clinical Effectiveness V2
Approved by The Executive Committee of the Medical Staff on 12/18/2018

PERT Algorithms: Mercy St. Louis

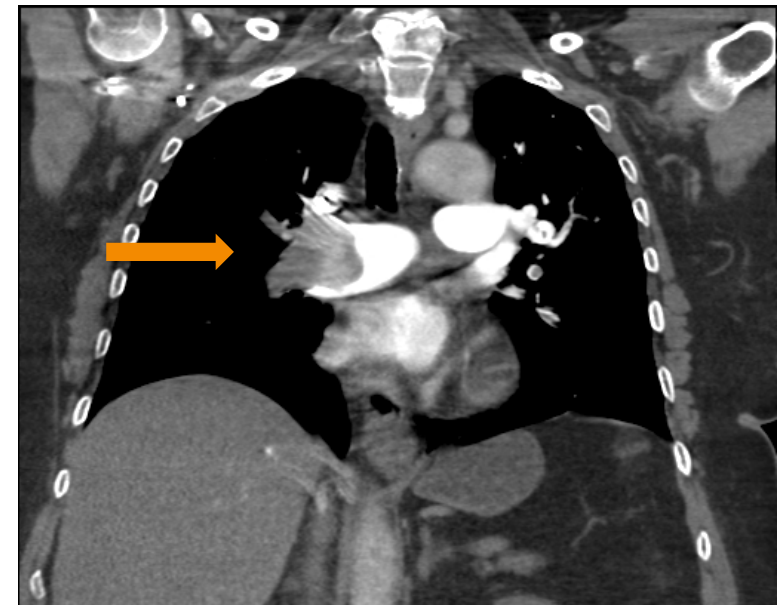
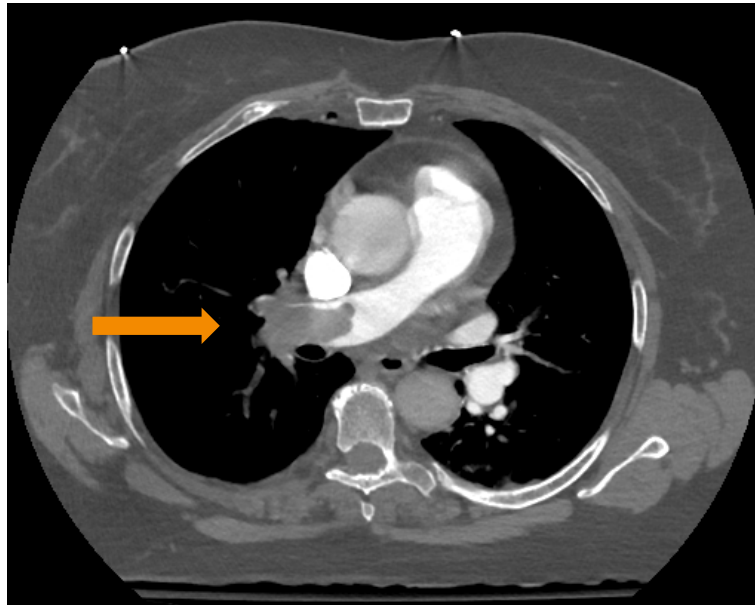


Case Study



69-year-old female patient with a past medical history significant only for hypertension and hyperlipidemia who presented with 2 days of progressively worsening shortness of breath

CTA





69-year-old female patient with a past medical history significant only for hypertension and hyperlipidemia who presented with 2 days of progressively worsening shortness of breath

PRE-PROCEDURE

HR-105; BP-98/88; SpO₂-89% on 12L NRB; Right PA Pressure-42/15 mmHg (Mean-26 mmHg)



Case Study



69-year-old female patient with a past medical history significant only for hypertension and hyperlipidemia who presented with 2 days of progressively worsening shortness of breath

PRE-PROCEDURE

HR-105; BP-98/88; SpO₂-89% on 12L
NRB; Right PA Pressure-42/15 mmHg
(Mean-26 mmHg)

POST-PROCEDURE

HR-91; BP-128/94; SpO₂-97% on 3L
NC; Right PA Pressure-28/10 mm Hg
(Mean 17 mmHg)

References

1. CDC 2020. Data and Statistics on Venous Thromboembolism: <https://www.cdc.gov/ncbddd/dvt/data.html>
2. ACC. Management of PE: <https://www.acc.org/latest-in-cardiology/articles/2020/01/27/07/42/management-of-pe>
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Thank you...

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