American Heart Association®

Target: Pulmonary Embolism

Learn more at **heart.org/TargetPE**

Building Pulmonary Embolism Response Systems

August 20, 2026 | 3-4PM CT / 4-5PM ET

Webinar Will Begin Shortly...

Your American Heart Association Host

Alexa Cohen, MHA

Program Consultant,
Implementation Science
alexa.cohen@heart.org

American Heart Association.
Target: Pulmonary Embolism

Initiative Overview

Goal: To improve PE care by closing gaps, strengthening systems, and advancing evidence-based, equitable, and patient-centered care

Impact: Improving patient outcomes and advancing a more consistent and evidence-based approach to PE care nationwide

Prevalence: PE is potentially life-threatening and contributes to up to 100,000 deaths per year in the U.S. PE is a form of venous thromboembolism (VTE) in which a blood clot, usually arising from a deep vein thrombosis (DVT), travels to the pulmonary arteries.

Need: PE-related mortality increased between 2008 and 2018, underscoring its persistent and growing impact as a leading cause of cardiovascular morbidity and mortality.

Areas of Opportunity: PE continues to be underdiagnosed, undertreated, and inconsistently managed across health systems.

Scan the QR code to learn more, see a map of participating sites, and stay informed about national education events!

Heart.org/TargetPE

Initiative Aims To:

- Build network of 20 diverse, multidisciplinary team members focused on creating a PE system of care.
- Address current gaps in the PE patient journey.
- Disseminate models for quality standards of care for the identification and management of PE care.
- Inform and guide clinical practice for PE patient care based on insights.

CDC (2025). Data and Statistics on Venous Thromboembolism. U.S. Centers for Disease Control and Prevention. https://www.cdc.gov/blood-clots/data-research/facts-stats/index.html
Martin K, Molsberry R, Cuttica M, et al. "Time Trends in Pulmonary Embolism Mortality Rates in the United States, 1999 to 2018." JAHA. 2020 Aug 17; 9(17). https://doi.org/10.1161/JAHA.120.016784.

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Heart.org/TargetPE

Participating Sites

Disclaimer

The recommendations and opinions presented by our guest speakers may not represent the official position of the American Heart Association. The materials are for educational purposes only, and do not constitute an endorsement or instruction by the Heart Association. The American Heart Association does not endorse any product or device.

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Housekeeping

Audio: All attendees are muted

Video: Only panelists will be on camera

Technical Help: If you experience issues, try leaving and rejoining the session or checking your internet connection

CC Closed Captions: Are available and can be engaged by clicking on the CC icon at the bottom of your screen

Recording: This session is being recorded and will be shared afterward

Q&A: Use the Q&A panel for questions anytime

Stay until the next session!

"Resources" icon located at the bottom of your screen (looks like three pieces of paper). Choose **"Documents"** and click on the arrow to download the resource

Connect with us!

alexa.cohen@heart.org

Agenda

Topics
Introduction to Target: Pulmonary Embolism
Hub-and-Spoke PE Response System *(Model Share by Corewell Health)*
Dedicated PERT Pagers for Rapid Activation *(Model Share by Inova Fairfax Hospital)*
Q&A Discussion
Closing Remarks

Wael Berjaoui, MD

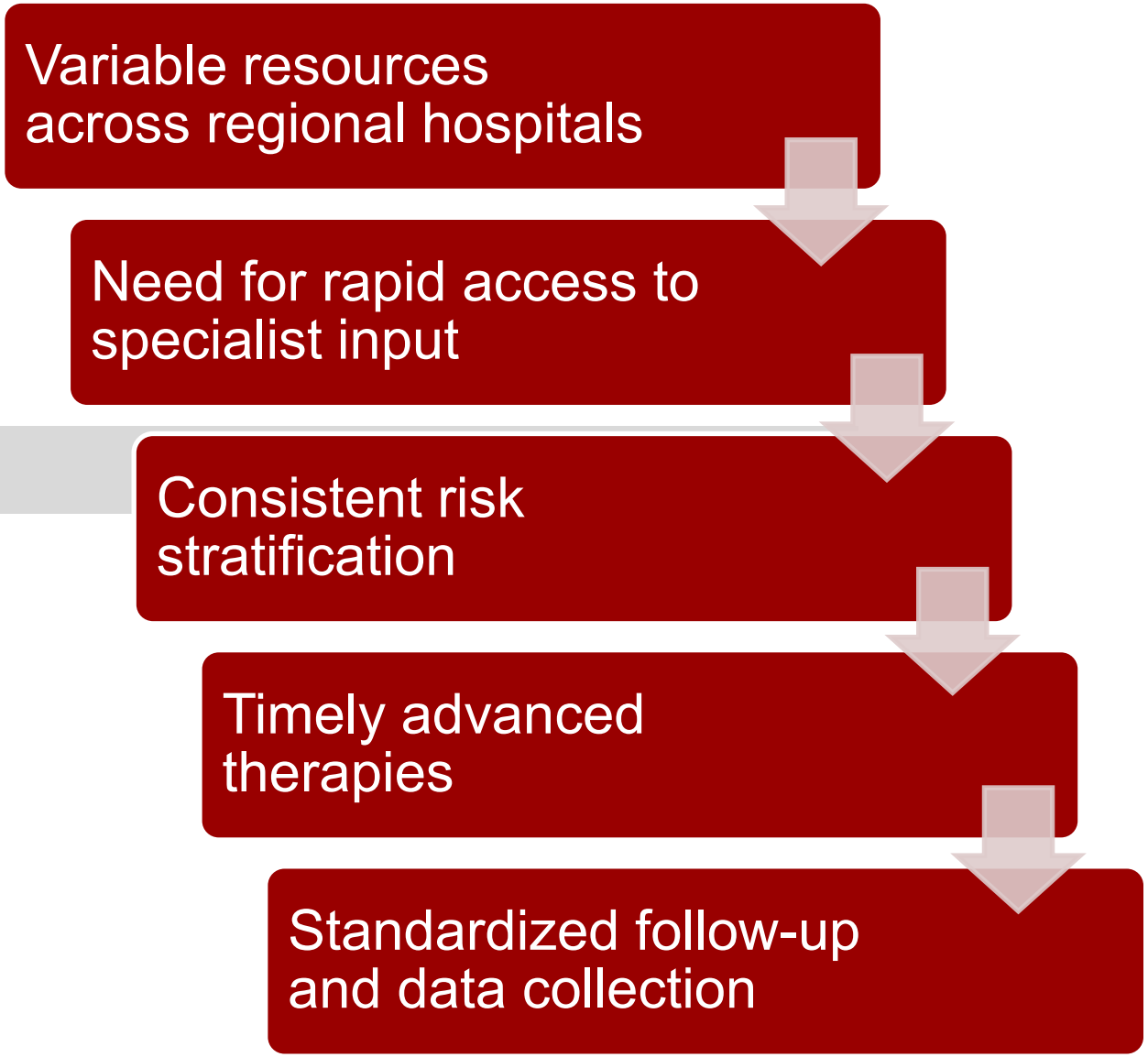
Pulmonologist & Critical Care Specialist
Corewell Health – Grand Rapids, MI

Section Chief, Division of Pulmonology & Critical Care;
PERT Executive Committee

No Disclosures

Corewell Health West's Hub and Spoke Model

Wael Berjaoui, MD – Corewell Health West



The Challenges

- Providing timely, evidence-based PE care across a large hospital system with several smaller regional hospitals.
- Working with a large number of physicians across multiple specialties that are on call for PERT activation.
- Creating a culture that views VTE management more than PERT activation and more of a longitudinal process over at least 3-12 months.
- Streamlining decision making that allow incorporation of new guidelines and treatment options.
- Encouraging standard documentation that ensures transparency and standardization of decision making and provides a template for data collection.

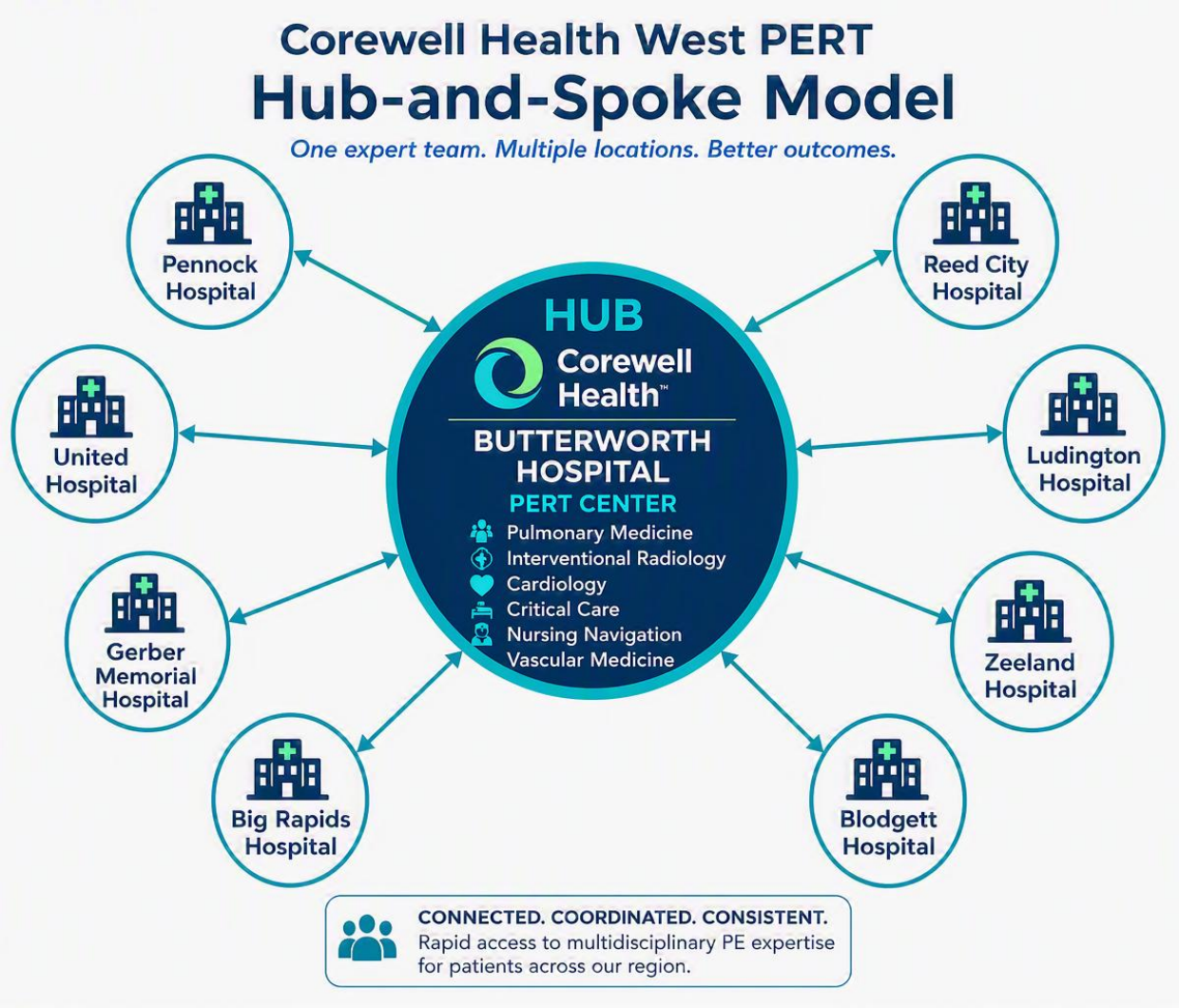
Corewell Health West's Pulmonary Embolism Response Team (PERT)

Objectives:

- Improve timely and accurate recognition and treatment of acute PE
- Ensure rapid multidisciplinary decision-making
- Standardized care across the health care system
- Provide access to advanced therapies regardless of hospital location

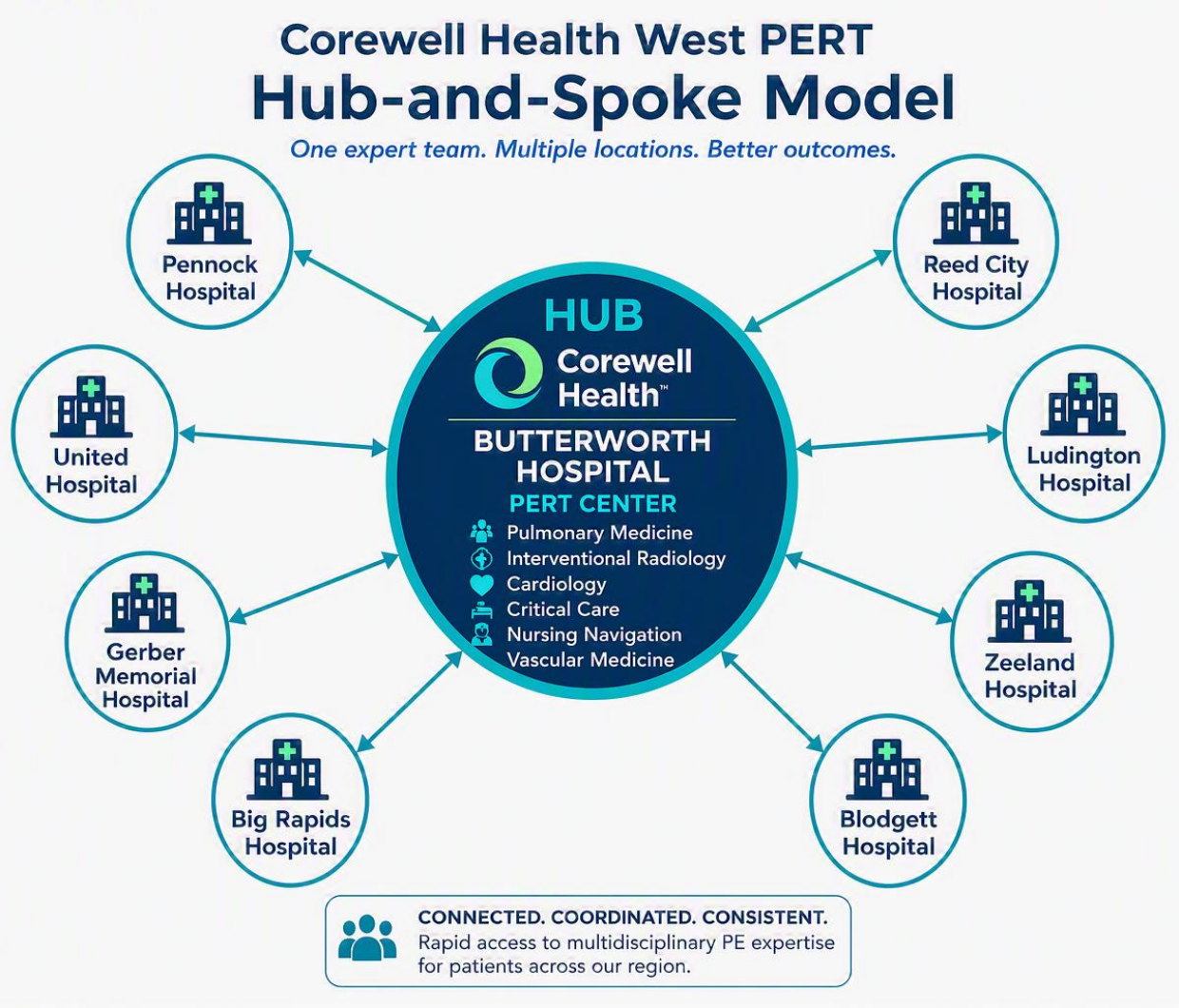
Corewell Health West's Hub and Spoke Model

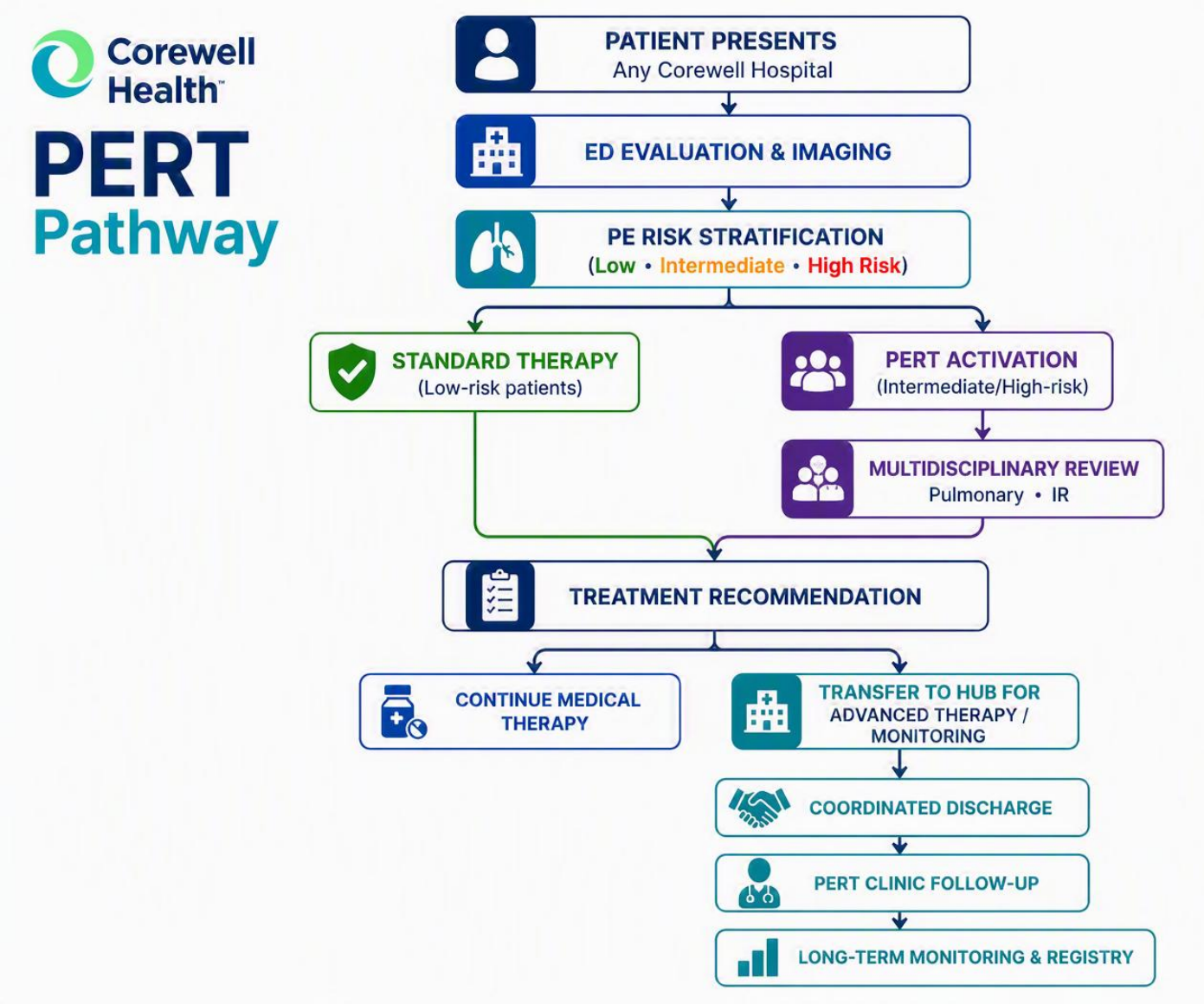
- **The Hub Provides:**
  - Access to 24/7 multidisciplinary PERT
  - 24/7 Interventional Radiology
  - 24/7 in house Pulmonary Critical Care
  - 24/7 Cardiac imaging (Echo)
  - Cardiothoracic Surgery
  - Advanced mechanical support (ECMO)



Corewell Health West's Hub and Spoke Model

- **The Spoke's – *Regional Corewell Hospitals***
  - Initial stabilization
  - Risk stratification
  - Early anticoagulation/ Thrombolytic tx
  - Immediate access to PERT
  - Transfer when indicated
  - Local management when appropriate





Why it Works

- **Standardization**
  - Shared clinical pathways
  - Set activation criteria
  - Evidence-based care
  - Consistent documentation
- **Expertise**
  - One multidisciplinary team
  - Rapid specialist consultation
  - Advanced therapies available
  - Shared decision making
- **Access**
  - Community hospitals supported
  - Appropriate transfers
  - Avoid unnecessary transfers
  - Same treatment options for all patients

PERT Progress Note

PE Classification:
irpeclassification

PE Classification Definitions
Low risk = No RV dysfunction or elevated cardiac biomarkers
Intermediate-low risk = RV dysfunction OR elevated cardiac biomarkers
Intermediate-high risk = RV dysfunction AND elevated cardiac biomarkers
High risk = Hypotension and presence of RV dysfunction and elevated cardiac biomarkers

Biomarkers elevated:
YES/NO

Right heart strain present on CT:
YES/NO

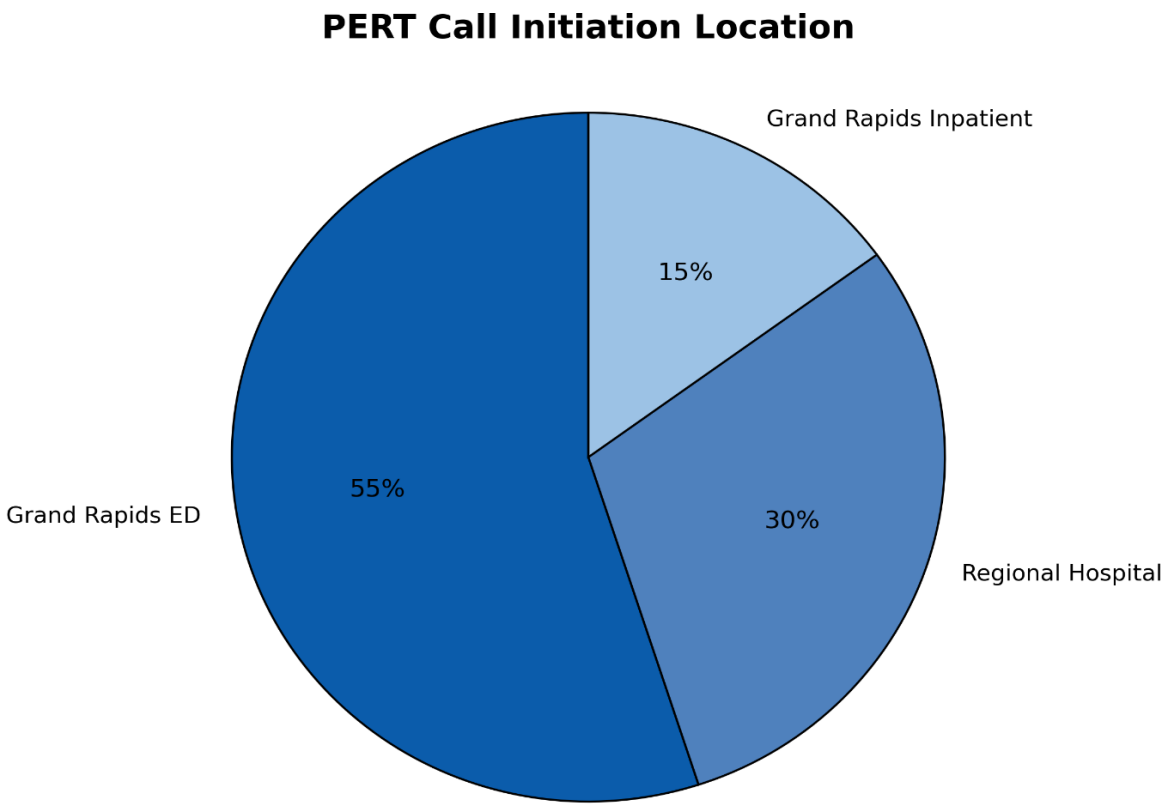
Prognostic scoring: (Optional if further risk stratification is desired)
pescoringsystems

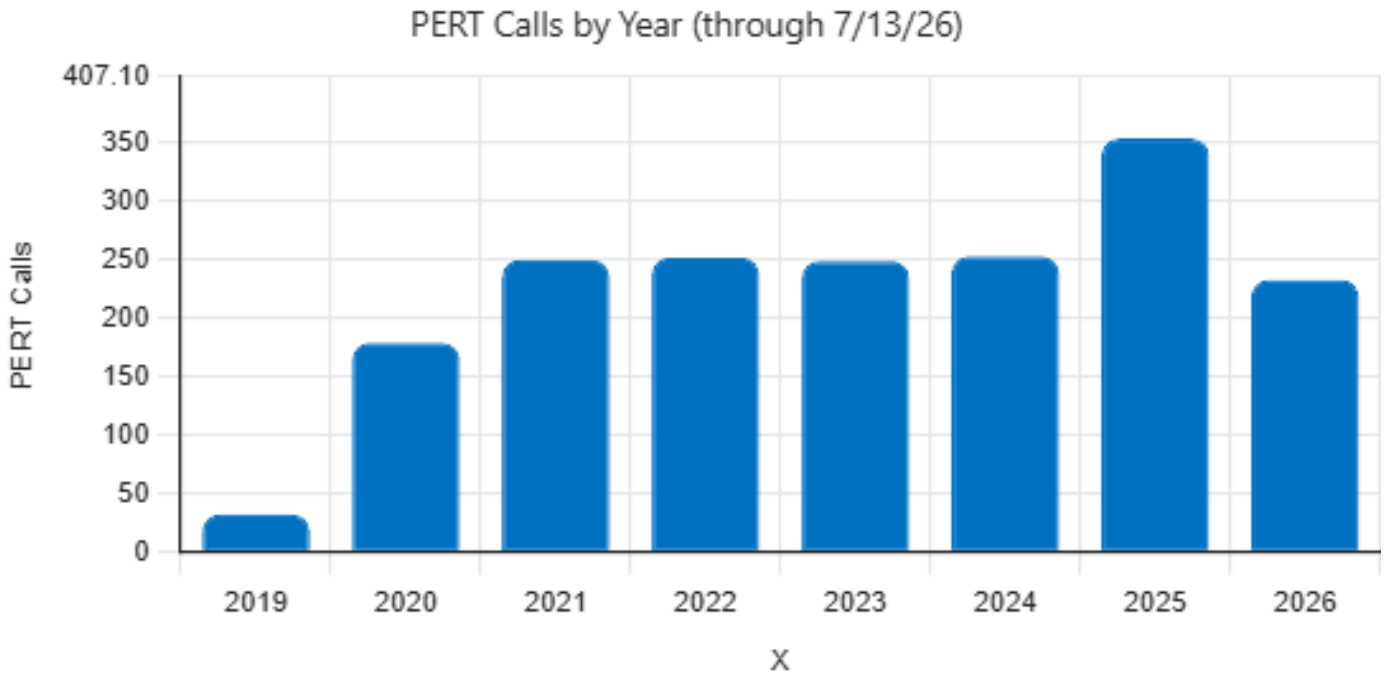
Recommendations:
irperecommendations

- **Prognostic Scoring:** BOVA, PESI and PE prognosis score
- Send an EPIC message to outpatient pulmonary team to arrange for f/u
- Use documentation as part of score card incentive
- Nurse navigator (education, communication with different specialties, follow with patient after dc)

Institutional Algorithm, Not Guideline-Observed (may not be reflective of 2026 AHA/ACC acute PE risk stratification)

PERT Numbers





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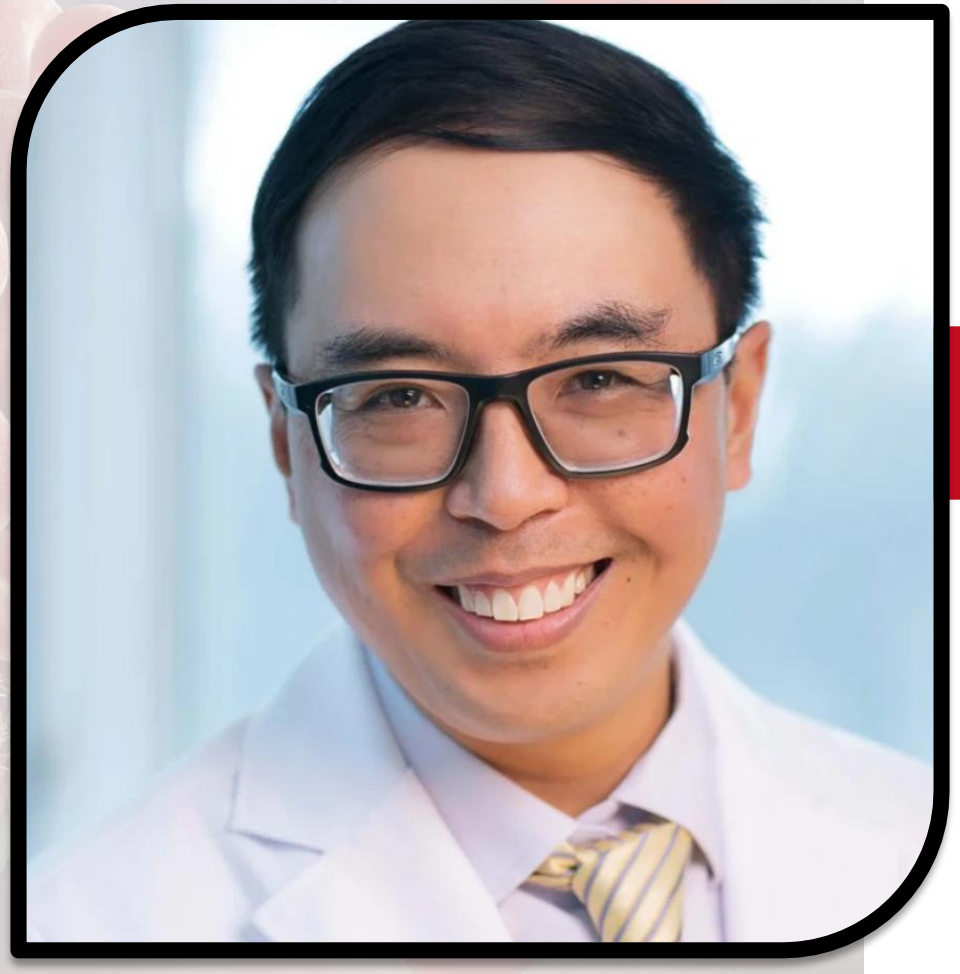


Mark Granada, MD

Pulmonologist & Critical Care Specialist

Inova Fairfax Hospital – Fairfax, VA

Pulmonary Embolism Response Team (PERT) Director
Assistant Professor, University of Virginia School of Medicine

Insmed (Speaker)

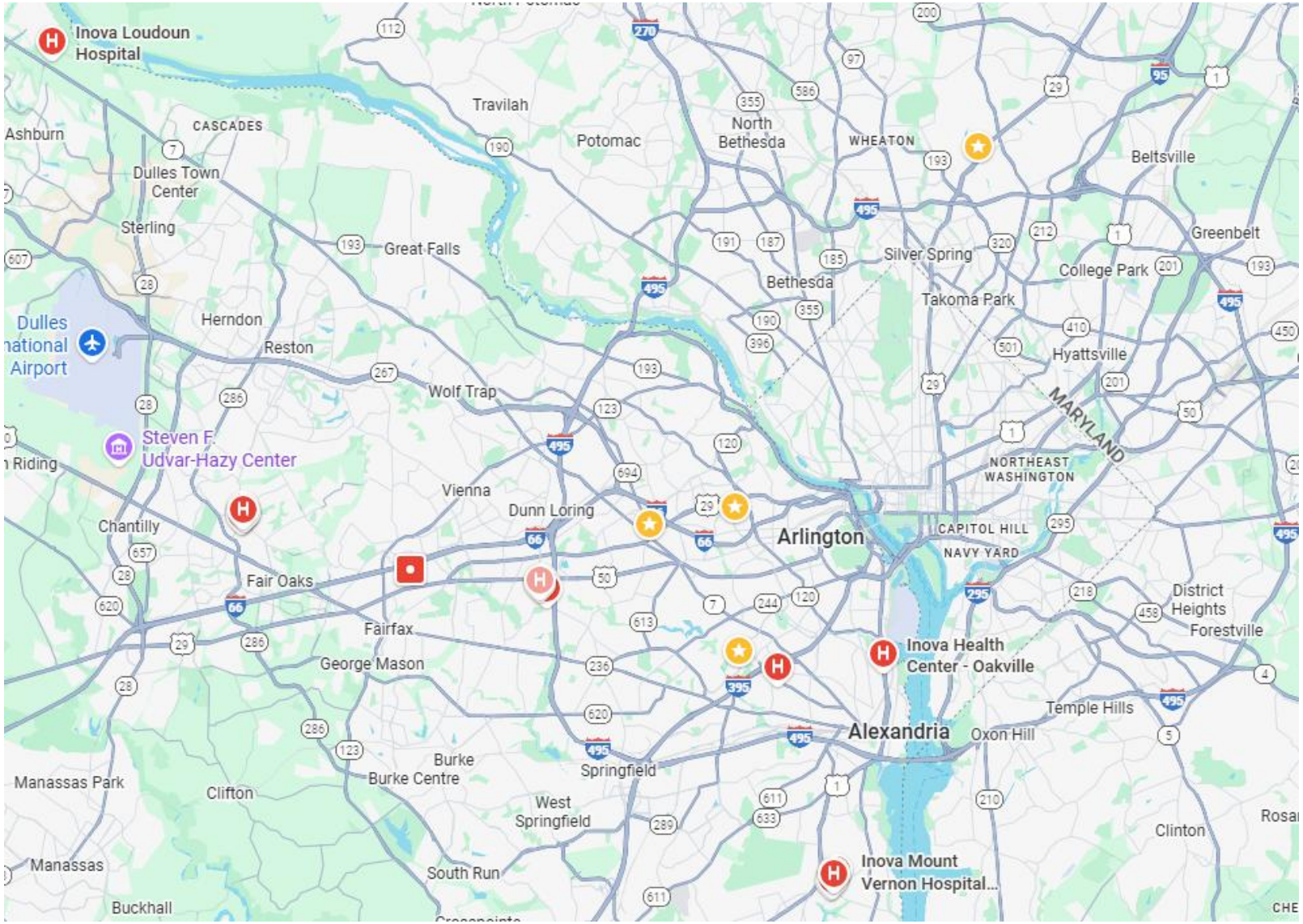
Inova Fairfax PERT

AHA Target: PE
PERT Activation

Mark Granada, MD

Inova Hospitals

- Fairfax (928 beds)
- Alexandria (302 beds)
- Mount Vernon (225 beds)
- Loudoun (211 beds)
- Fair Oaks (174 beds)
- Regional UC/ED/Health Centers
- 1840 total hospital beds
- 102,529 hospital admissions in 2024
- 527,967 ER visits in 2024
- Becker's Hospital Review: Inova Fairfax ED #3 busiest in 2024 with 176,921 visits



Inova PERT 1st year

PERT Team created in 2016

Utilized Inova Fairfax Transfer Center Line – 703-776-8000 (ext. 1 for PERT activation)

Team: Emergency Medicine, Pulmonology, Intensivist, Interventional radiology

Operated only out of the largest Inova hospital - Inova Fairfax

Inova PERT 1st year

Outside of Inova Fairfax, private groups provided staffing in non Fairfax ICUs

Multiple private pulmonary groups operated at all Inova Hospitals

In 2016, Inova Alexandria was the only non Inova Fairfax hospital that performed advanced catheter directed intervention, but IR teams were part of separate radiology groups

Given resources at the time and the need to integrate multiple separate entities, simplest activation was the best: telephone activation and conference call meetings

Growing Pains

- Once PERT activation requested, operator would call answering service for private pulmonology and interventional radiology groups
- The answering service would then page the on call doctor to call the PERT operator for a new PERT activation
- After hours, this led to long delays between paging the on call provider and having the on call provider call the operator back
- Some members would be on hold for 15 minutes or more, and then would have to leave the call – starting the cycle of page and call back over

After multiple tweaks, PERT operators were given updated on call schedules with direct cell phone #s of providers, bypassing practice answering services

Delays still existed in convening conference call: missed phone calls, caller ID from hospital sometimes ignored as an unrecognized number by provider

With time, providers adjusted and lag times improved

Growing Pains.. and then Growth!

- **PERT History**
  - 2016: 56 activations
  - 2019: 118 activations
  - 2020: 204 activations
  - 2021: 281 activations
  - 2022: 256 activations
  - 2023: 463 activations

- **Growth featuring PERT Activation # through**
  - Direct outreach to non Inova Emergency Departments
  - PERT articles featured in local circulating press
  - Inova Newsletters
  - Inova PERT Website

Pulmonary Embolism Response Team (PERT) Program

Recognized leaders in PE care

Refer A Patient

Meet Our Team

Inpatient Support Programs →

About the Pulmonary Embolism Response Team (PERT)

About the Pulmonary Embolism Response Team (PERT)

In response to the clinical complexities of caring for patients with acute pulmonary embolism (PE), in 2016, Inova established a 24/7 Pulmonary Embolism Response Team (PERT) to promply diagnose and develop treatment plans for PE patients. This group of physicians and advanced practice providers includes specialists with a broad spectrum of expertise from multiple disciplines, including pulmonary medicine, critical care, interventional radiology, cardiology, emergency medicine, and cardiothoracic surgery.

Recognized Leaders in PE Care

The PERT group is recognized for its leadership and privileged to participate in many clinical trials that study innovative designs to advance care for patients with this condition further.

Our Approach

We review diagnostic tests such as computed tomography angiograms, echocardiograms, and laboratory data to determine the appropriate therapy in response to the severity of the condition. While anticoagulation remains the gold standard treatment for patients with PE, select patients with intermediate and high-risk PEs may require catheter-based or surgical thrombectomy. These patients typically have acute right heart failure; thus, they will require clot extraction (thrombectomy) to relieve the obstruction. Our results with these procedures have been excellent, with greater than 85% survival to discharge for patients undergoing catheter-directed thrombectomy.

For Physicians

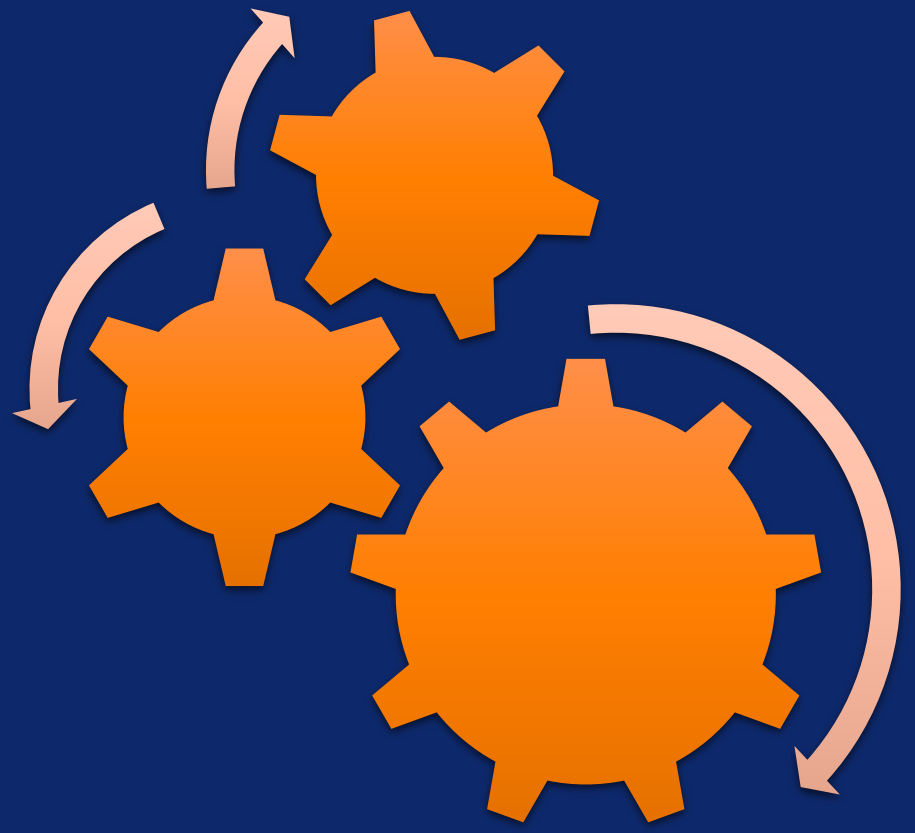
Refer a patient around the clock

Inova's Pulmonary Embolism Response Team is accessible 24/7 at Inova Fairfax, Loudoun and Alexandria hospitals to evaluate and care for high-risk PE patients who require advanced treatment.

Call 703-776-8000, extension 1.

Evolution of Inova PERT

- **Developments**
  - Private Interventional Radiology groups merged – creating one group responsible for all 5 Inova Hospitals
  - Private Pulmonology group at Inova Fairfax became Inova Pulmonology – covers 3 out of 5 Inova Hospitals
  - Inova intensivist team grew from staffing Inova Fairfax to staffing 4 out of 5 hospitals
  - **Result: More consistent coverage across hospital system, but still with gaps**



Inova Hospitals Differ in Terms of Local Capabilities

- **Inova Fairfax (928 beds)**
  - ECMO
  - 24/7 echo
  - Inova ICU
  - Inova pulmonary
  - Fairfax Radiology IR
- **Inova Alexandria (302 beds)**
  - No ECMO
  - 8-5 echo
  - Inova ICU
  - *Private practice pulmonary*
  - Fairfax Radiology IR
- **Inova Loudoun (211 beds)**
  - No ECMO
  - 8-5 echo
  - *Private practice ICU*
  - *Private practice pulmonary*
  - Fairfax Radiology IR
- **Inova Fair Oaks (174 beds)**
  - No ECMO
  - 8-5 echo
  - Inova ICU
  - Inova pulmonary
  - *Fairfax Radiology IR - no IR capability for catheter directed intervention for PE*

Inova PERT 2026

PERT Team Members

Director	Pulmonary	Interventional Radiology	MCCS / Intensivist
• **Mark Granada MD** (Pulmonary)	• **Rabih Halabi MD** (Inova System Division Chief of Pulmonary) • **Eric Libre MD** (Fairfax Pulmonary Section chief) • **Varin Bird PA** (Inpatient PERT PA)	• **Jonathan Keung MD** (IR Chief)	• **Adi Kasarabada MD** (System Division Chief of MCCS) • **Christopher King MD** (Chief of Cardiovascular Critical Care) • **Lindsay Clevenger PA** (Head of APP, critical care and pulmonary)

PERT Team Members

Emergency Department	Radiology	Echocardiography Lab	Cardiothoracic Surgery	Cardiac Anesthesia	Hospitalist
• **Glenn Druckenbrod MD** (Chief of Fairfax ED)	• **Daniel Overdeck MD** (Chief of Body Radiology)	• **Joan Zhao MD** (Medical Director of Echocardiography)	• **Liam Ryan MD**	• **Kia Sedghi MD** (Chief of Cardiac Anesthesia) • **Devon Flaherty MD**	• **Rachel Park MD**

Activation of PERT team occurs through central operator
703-776-8000, option 1

Upon request of PERT team activation, a conference call is created with:

Requesting service	Interventional radiologist on call	Pulmonologist on call	Intensivist on call

Depending on initial discussion, PERT call may add additional members to call including:

Cardiology	Cardiothoracic surgery	ECMO team

Patients are transferred to Inova Fairfax based on complexity of case, potential need for ECMO or cardiothoracic surgery, etc. Otherwise, CD intervention can be done at initiating hospital if locally available (Inova Mt Vernon, Loudoun, Alexandria)

PERT Process

All decisions of PERT team are made by consensus – there is no dedicated team leader (though pulmonary team responsible for PERT Consult note)

After the initial conference call, an Epic Chat is created by the call center to include all parties involved on the call. New team members can be added as shifts change to keep the Chat providers up to date during hospital course

As more clinical data becomes available, the PERT team has the option to communicate via:

Epic Chat (often with straightforward cases)

Reconvene a PERT conference call organized by the call center

Discharge Plan

Schedule pulmonary follow up for 1-2 weeks post discharge

- Plan for continued follow up to include 3-6 month and 12 month post discharge visits
- At 3-6 month visit
  - Check 6 minute walk
  - Document SGRQ

Schedule echocardiogram 3 months post discharge

- For patients with initially severe RV dysfunction, schedule cardiology follow up at 3 months post discharge to review echo
- If RV dysfunction persists at 3-6 months, order dual energy CT scan (preferred) or V/Q scan to evaluate for chronic PE at 6-12 months post discharge

Referral to Inova CTEPH clinic with persistent RV dysfunction and chronic PE after 6-12 months

Telephone Activation & Conference Call: *Why it Works for Inova*

After years of use, call activation via PERT phone # is well known internally and externally

Time to PERT activation request to telephone conference call has dramatically improved and is consistent and reliably quick (within 10 minutes on average)

Telephone conference call offers direct communication with all parties to achieve initial consensus opinion on case

Limitations

No pre call vetting of activations: requires all specialties to be on every call to discuss all cases, including low risk cases or cases that would not be candidates for intervention if vetted pre-call by designated provider

Unlike mobile apps, requires provider to be logged in to hospital EMR via computer or phone to view images, labs, etc

Lack of clinical resources (no fellow to triage) and an “open” system make use of more advanced platforms (ex, Teams Meeting) more difficult

Thank You!

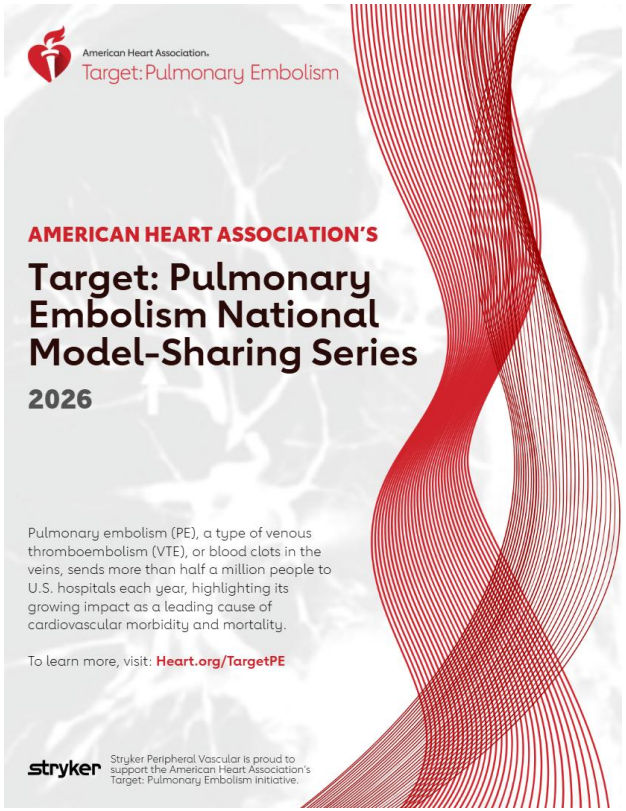
Email: mark.granada@inova.org
Cell: 703-627-4521

Q & A

Questions from the Audience for Dr. Berjaoui or Dr. Granada?

New Resource Available!

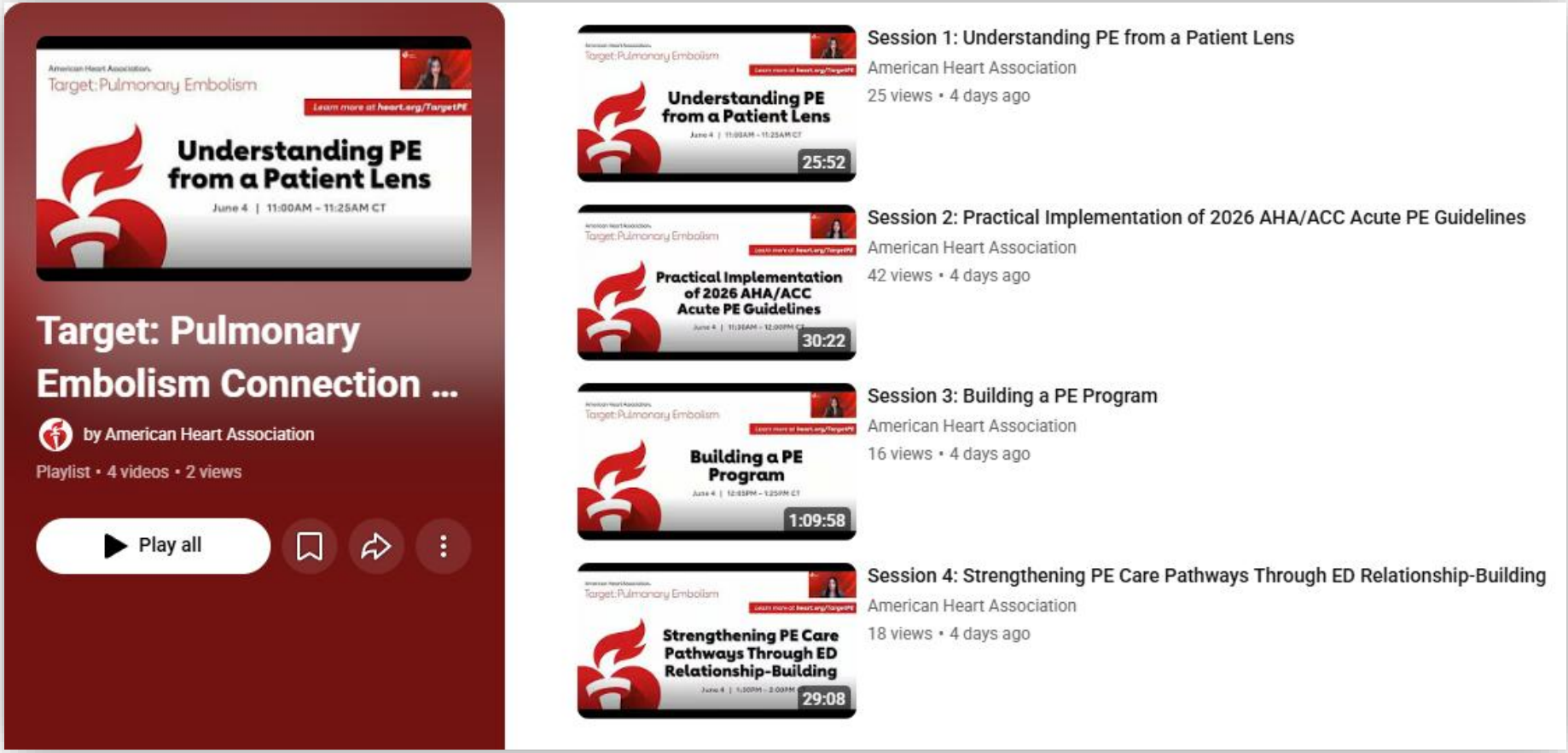
Target: PE Year-1 National Model Sharing Toolkit



Scan to See Target: PE's Toolkit!

In Case You Missed It...

Target: PE Virtual Connection Forum



Watch Target: PE's Virtual Connection Forum from June 4 on YouTube!

Connect With Us at Upcoming Conferences!

PERT

Sep 30-Oct 3, 2026
Boston, MA

VIVA VEINS

Oct 3-7, 2026
Las Vegas, NV

ACEP

(American College of Emergency Physicians)

Oct 5-8, 2026
Chicago, IL

TCT

(Transcatheter Cardiovascular Therapeutics)

Oct 31 – Nov 3, 2026
San Diego, CA

American Heart Association Scientific Sessions

Nov 5-8, 2026
Chicago, IL

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Target: Pulmonary Embolism

Thank You!

For any questions, please reach out to **Alexa Cohen** (alexa.cohen@heart.org)

Visit our website, **Heart.org/TargetPE**, to keep up to date with the Target: PE initiative!

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Target: Pulmonary Embolism

Resources

Target: PE Initiative

- Initiative Landing Page
- News Release
- Healthcare Network (HCN)
- Patient Education Website

National Education

- National Education Toolkit
- Webinar (March 2026) - YouTube Link
- Virtual Connection Forum (June 2026)

2026 AHA/ACC Acute PE Guidelines

- 2026 AHA/ACC Acute PE Guidelines
- Guideline Hub Website
- News Release: First AHA/ACC Acute Pulmonary Embolism Guideline Prompt Diagnosis and Treatment are Key
- Top Things to Know: 2026 Guideline for the Evaluation and Management of Acute Pulmonary Embolism in Adults
- Acute Pulmonary Embolism Guideline Slide Set (PPTX)
- Acute Pulmonary Embolism Pocket Guide
- Top Take-Home Messages for the Emergency Physician (PDF)
- Key Patient Messages for Acute Pulmonary Embolism (PDF)
- Patient Resource: What is a Pulmonary Embolism Infographic (PDF)
- Patient Resource: Que es una Embolia Pulmonar Infographic Spanish (PDF)

American Heart Association.
Target: Pulmonary Embolism

Check out the press release!

Improving care for life-threatening blood clots

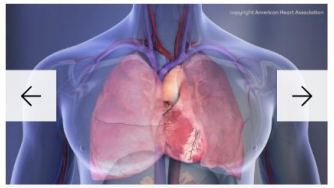
New American Heart Association effort will bring together diverse hospitals to create scalable models for timely, effective pulmonary embolism treatment

DALLAS, October 31, 2025 — Pulmonary embolism (PE), a type of blood clot in the lungs, sends more than half a million people to U.S. hospitals each year — and kills about one in five high-risk patients, according to the American Heart Association 2025 statistical update. PE is the third leading cause of cardiovascular death in the U.S.[1] While progress has been made in PE care, pulmonary embolism remains underdiagnosed, undertreated and inconsistently managed.

To address these gaps in care, the American Heart Association, devoted to changing the future to a world of healthier lives for all, is launching a three-year quality improvement initiative, supported by Inari, now part of Stryker, to better understand barriers and advance best practices for pulmonary embolism diagnosis, treatment and follow-up care.

The Pulmonary Embolism Quality Improvement Initiative will convene a 20-site national learning collaborative representing urban, rural and under-resourced communities. These diverse care teams will share data, insights and experiences through an "all teach, all learn"

Related Images



Heart and lungs illustration

Human Chest Cavity illustration: Right lung, left lung, heart

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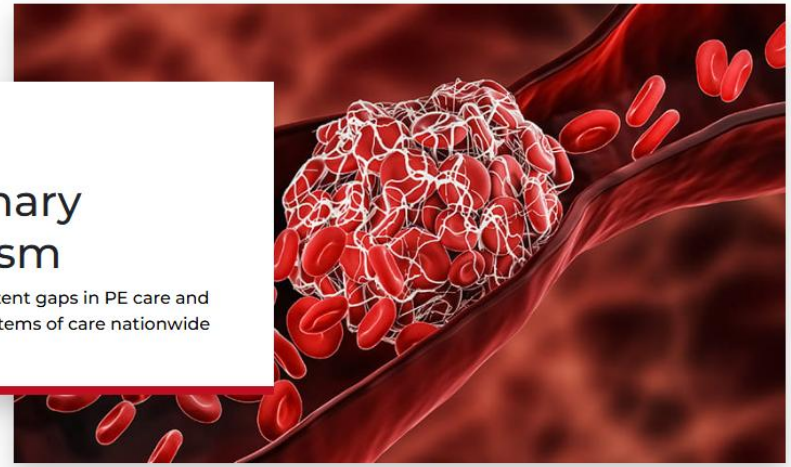

Target: Pulmonary Embolism

Addressing persistent gaps in PE care and strengthening systems of care nationwide

Pulmonary embolism (PE) is a type of venous thromboembolism (VTE), or blood clots in the veins. PE occurs when a blood clot breaks free, usually from a deep vein in the legs, and becomes lodged in the lungs. VTE is a potentially life-threatening condition that contributes to up to 100,000 deaths each year in the United States[1].

American Heart Association.
Target: Pulmonary Embolism

Recent data show that PE-related mortality increased between 2008 and 2018, underscoring its persistent and growing impact as a leading cause of cardiovascular morbidity and mortality[2].

Despite its high clinical burden, PE continues to be underdiagnosed, undertreated and inconsistently managed across health systems[4]. Significant variability exists in how hospitals identify, risk-stratify, treat and monitor patients with PE, which results in preventable complications, poor outcomes and persistent disparities in care.

These ongoing gaps in practice underscore the urgent need to implement robust, evidence-based systems that ensure timely diagnosis, effective treatment and comprehensive follow-up for all people affected by PE.

Check out our website to stay up to date with the latest PE information!

Heart.org/TargetPE