The Team Approach to PE Management: The National PERT Consortium

Learning Objectives
- Understand the team approach and how a PERT operates
- Understand the goals of the PERT Consortium

QUESTION!
The acronym “PERT” stands for:
A. Pulmonary Embolism Recovery Time
B. Pulmonary Embolism Risk Testing
C. Pulmonary Embolism Response Team
D. Psychiatric Emergency Response Team

What is a Pulmonary Embolism Response Team?
- A multidisciplinary team led by a group of physicians and other health-care professionals that has ability to:
  - Rapidly assess and provide comprehensive acute PE management
  - Ideally, offer full range of medical, surgical / endovascular therapies.
  - Ideally, provide long-term follow up for PE patients
  - Ideally, offer enrollment in clinical trials

Why do we need PERTs?
- PE is common
- It can occur suddenly, requiring rapid management decisions
- Risk stratification should be done by PE experts
- The evidence base, and hence guidelines, are weak
- Treatment approaches are multidisciplinary
- Resources vary at different institutions
- Opinions of clinicians vary, based on above
If there are 80,000 PE deaths per year in the U.S. …*
then an average of one American dies of PE every 6 minutes…
And one person, somewhere in the world, dies of PE...
...every 15 seconds.

*40,000 deaths in U.S. from breast cancer each year…

Patients who die from acute PE are most commonly not diagnosed, or even suspected until they are already dead.*


Jury Awards $40 Million To Family Of College Student Who Died After Detroit Hospital ER Visit
Aug. 30, 2017. The Detroit Medical Center had “a mind-boggling” defense in the case, says attorney for Terrea Holly’s family.

DETROIT, MI —The 26-year-old went to the Detroit Receiving Hospital Emergency Room on Oct. 17, 2013, with shortness of breath and the ER staff said she had a virus and sent her home. The next day, she was brought back to the hospital unconscious and died from massive PE.


Massive PE [High risk]  
Low-risk 55% 30-day mortality 1%

Intermediate-risk 40% 30-day mortality = 9%

Low mortality rate

Submassive PE [Moderate / Intermediate risk]

Minor PE [Low risk] Good prognosis

1.1% risk of 30-day mortality in “low” risk group (sPESI = 0), with 1.5% having recurrent VTE or non-fatal bleeding.


• What is the mortality in the low-risk group?

1,100 low-risk patients die
30-day mortality = 1% of 100,000 low-risk patients

200,000 PE present each year in U.S. x 50% = 100,000 low-risk patients

• What is the mortality in the intermediate-risk group?

8,800 intermediate-risk PE patients die
30-day mortality = 11% of 80,000 intermediate-risk patients

200,000 PE present each year in U.S. x 40% = 80,000 intermediate-risk patients


Not aggressive enough? AC failure? Noncompliance?

Comorbidities?

Respiratory rate? EXTensive residual DVT? AC failure? Noncompliance?

PE burden?

Heart rate 110 or 130?  Leg clot?

Severity of hypoxemia? Not aggressive enough? AC failure? Noncompliance?

Comorbidities?

A Multidisciplinary Pulmonary Embolism Response Team


30-month Experience With a Novel Approach to Delivery of Care to Patients With Submassive and Massive PE

- In 30 months, there were 394 unique PERT activations, 314 (80%) for confirmed PE.
- PERT activations increased by 16% every 6 months.
- Most confirmed PEs were submassive (n = 143, 46%) or massive (n = 80, 26%).
- The PERT treated a “relatively large proportion” of PE with systemic lysis or CDT (n = 35, 11%).
- Most common treatment was anticoagulation alone (n = 215, 69%).
- Hemorrhagic complications were rare, especially among patients treated with catheter-directed thrombolysis.
- The all-cause 30-day mortality of PERT patients with confirmed PE was 12%.

Sudden onset dyspnea
Shock requiring pressors
Cholecystectomy 2 months prior

Intermediate-risk PE 3 days after lumbar fusion (anterior approach)

- Anticoagulation? Or is IVCF needed?
- Should catheter-directed therapy be considered?
Institutional PERT:

- Monthly multidisciplinary PERT meetings
- Meetings with other specialties (Ob/gyn, neurosurgery, ICU teams, etc.)
- Call schedule
- Research trials
- Specialist fellows / trainees involved
- PERT quarterly conferences?
- Logistics
  - Are cardiac cath / IR labs accessible?
  - PERT / ED / ICU teams trained in bedside echo?
  - Radiology reading expertise available when needed?
  - Transfers?
  - Long-term follow up?

Our Executive Committee:
- Geographic diversity
- Multidisciplinary
- Clinical / administrative / research
- 501(c)3 experience
  - Pulmonary / critical care
  - Interventional radiology
  - Internal medicine
  - Interventional cardiology

Our Board:
- Geographic diversity
- Multidisciplinary
- Clinical / administrative / research
- 501(c)3 experience
  - Hematology
  - Interventional cardiology
  - Cardiothoracic surgery
  - Vascular surgery
  - Vascular medicine
  - Pharmacology
  - Emergency medicine

The State of the MGH-founded Consortium

Progress and Accomplishments to Date

Our Executive Committee:
- Geographic diversity
- Multidisciplinary
- Clinical / administrative / research
- 501(c)3 experience
  - Pulmonary / critical care
  - Interventional radiology
  - Internal medicine
  - Interventional cardiology

Our Board:
- Geographic diversity
- Multidisciplinary
- Clinical / administrative / research
- 501(c)3 experience
  - Pulmonary / critical care
  - Interventional cardiology
  - Cardiothoracic surgery
  - Vascular surgery
  - Vascular medicine
  - Pharmacology
  - Emergency medicine

Our Executive Committee:
- Geographic diversity
- Multidisciplinary
- Clinical / administrative / research
- 501(c)3 experience
  - Pulmonary / critical care
  - Interventional radiology
  - Internal medicine
  - Interventional cardiology

Our Board:
- Geographic diversity
- Multidisciplinary
- Clinical / administrative / research
- 501(c)3 experience
  - Pulmonary / critical care
  - Interventional cardiology
  - Cardiothoracic surgery
  - Vascular surgery
  - Vascular medicine
  - Pharmacology
  - Emergency medicine

Our Executive Committee:
- Geographic diversity
- Multidisciplinary
- Clinical / administrative / research
- 501(c)3 experience
  - Pulmonary / critical care
  - Interventional radiology
  - Internal medicine
  - Interventional cardiology

Our Board:
- Geographic diversity
- Multidisciplinary
- Clinical / administrative / research
- 501(c)3 experience
  - Pulmonary / critical care
  - Interventional cardiology
  - Cardiothoracic surgery
  - Vascular surgery
  - Vascular medicine
  - Pharmacology
  - Emergency medicine
The State of the Consortium
Progress and Accomplishments to Date

- Database moved to BCRI!
- Trademarking!
- Committee initiatives!
- Public Awareness!
- Corporate Sponsorship!
FOUNDING MEMBERS

Albert Northwestern Hospital – Allina Health
Baylor Scott & White Health
Baylor Scott & White Health
Berkeley Medical Group
Cedars-Sinai Medical Center
Christiana Care Health System
Cleveland Clinic
Dartmouth Medical Center
Duke University Medical Center
Edward-Elmhurst Health Hospital
Emory University Hospital Midtown
Giacco Vascular Institute- Galeria Health
Gidley Memorial Hospital
Ikein School of Medicine at Mount Sinai
Inova Health
Johns Hopkins Medical Center (JHMC)
Johns Hopkins Hospital
Lakeview Hospital and Medical Center
Lancaster General Hospital
Massachusetts General Hospital
Mayo Clinic
Medical University of South Carolina
Memorial Heart & Vascular Institute
Memorial Hermann - Texas Medical Center
New York - Presbyterian/Columbia University Medical Center
Newcastle Wellness Hospital
Northwestern Medicine – Bluhm
Cardiovascular Institute
NYU Langone Medical Center
Ohio Heart and Vascular
Ohio State University Medical Center
Oklahoma State University Medical Center
Peninsula Heart and Vascular Institute
SM Health Saint Louis University Hospital
Tidelands Health
University of Kentucky Medical Center
University of Pittsburgh Medical Center
University of Toledo Medical Center
Yale New Haven Hospital

COMMITTEE FILES

CURRENT VERSIONS

- AC Preparation for VTE Therapy with FVIII INR and FIBIN Protocol
- Allina Health Treatment VTE algorithm
- Baptist Health Louisville Clinic
- Baptist Health Louisville Treatment Algorithm

UPCOMING EVENTS
The State of the Consortium

Goals / Work in Progress

• Alignment with other Nonprofits!
  • North American Thrombosis Forum (NATF)
  • AC Forum
  • National Blood Clot Alliance (“Stop the Clot”)

Conclusions: The PERT Concept

• Multidisciplinary PE response teams are increasing and evolving
• At many medical centers, this concept has facilitated PE management
• It has fostered education and patient management harmony
• The precise organizational structures of individual PERTs vary
• The evidence base for acute PE therapy remains inadequate
• PERTs facilitate PE research and quality assurance (database!)

JOIN THE PERT CONSORTIUM!!!

Not all that embolizes is thrombus!!

40 year-old woman drove from SF to LA for an elective surgical procedure the same day....

During the procedure she arrested...

Sent to the ED...

Hypotensive...

Oh pressors...

Not all that embolizes is thrombus!!
"You can do anything you set your mind to, man."
- Eminem - Lose yourself

THANK YOU!
Vic Tapson, MD, FCCP, FRCP
Cedars-Sinai Medical Center
Los Angeles, CA USA
victor.tapson@cshs.org