PERT Activations Per Annum

This chart shows all activations of the PERT program from its inception in October 2012 through December 2014 (FY13—early FY15). This encompasses 351 total activations over 26 months. Utilization of PERT has consistently exceeded expectations, confirming an underlying need for such a rapid response service to treat patients with pulmonary embolism.

Source: Massachusetts General Hospital PERT program.
Pulmonary Embolism Rapid Response Team (PERT)

Pulmonary emboli (PE) are the most common reason for in-hospital deaths in the U.S., occurring at a rate of more than 100,000 per year. Yet optimal treatment has not been systematically studied. Up to 30 percent of PE have high-risk features: hemodynamic instability, right ventricular dysfunction, or evidence of myocardial necrosis. About 10 percent of PE are fatal within an hour of the onset of symptoms; untreated cases have a 30 percent mortality rate.1 A major hindrance in improving outcomes is that patients may present in many hospital departments, and treatment decisions are determined by clinical expertise and medical or surgical resources in that department, without a unified, evidence-based approach. In October 2012, Massachusetts General Hospital initiated a multidisciplinary rapid response program called PERT, for Pulmonary Embolism Response Team, a collaboration focused on improving the care of patients with massive or submassive pulmonary embolism. This initiative will also collect data on outcomes in order to enhance knowledge about PE and to better inform therapeutic decisions in the future.

PROMOTING AN EVIDENCE-BASED APPROACH

Treatment decisions for PE include both existing therapies and novel approaches. Open surgery to remove the clot is one of many treatment alternatives; others include anticoagulation, systemic intravenous thrombolysis, locally delivered thrombolytics, thrombo-aspiration, and mechanical thrombectomy. Each of these strategies has the potential to improve patient outcomes.2 Comparative data regarding which therapy is best for a given patient with PE, however, is sparse, and existing guidelines provide only general advice.

To address the need to streamline complex treatment decisions about individual patients while incorporating expertise from multiple disciplines, a Mass General team coalesced to create PERT. This initiative, which involves more than seven departments that share a common interest in PE, has been led by Kenneth Rosenfield, MD, section head for Vascular Medicine and Intervention; Michael Jaff, DO, director of the MGH Fireman Vascular Center, an expert in deep vein thrombosis and lead author of the AHA guidelines document on the subject of PE; Thoralf Sundt, MD, chief of cardiac surgery and co-director of the MGH Corrigan Minehan Heart Center; Richard Channick, MD, director of the Pulmonary Hypertension Program and an expert in chronic PE; Christopher Kabrhel, MD, MPH, director of the Center for Vascular Emergencies in the Department of Emergency Medicine; and Rachel Rosovsky, MD, an expert in clotting disorders.

PERT incorporates treatment perspectives from specialists in cardiology, cardiothoracic surgery, echocardiography, emergency medicine, hematology, pulmonary/critical care, radiology, and vascular medicine and intervention. After two years, PERT team members report a more coordinated institutional approach to this highly prevalent, life-threatening disease, with treatment tailored to the individual patient, based on degree of hemodynamic and cardiopulmonary instability as well as other parameters.

Longer term, PERT is enabling the systematic evaluation of multiple approaches and techniques that will promote scientific learning and evidence-based research. To advance the science of PE care, PERT is developing treatment protocols and is maintaining a robust registry of patients, with a database of treatments and outcomes. The program has begun a multidisciplinary follow-up clinic to collect long-term patient outcomes and is planning further studies.

PERT ACTIVATION AND OUTREACH

PERT is activated by a single phone call from any referring physician within Mass General. Following a “rapid response” consultation, an online meeting of the multidisciplinary team is convened. Team members discuss the case and treatment options while reviewing radiographic images, lab results and clinical notes in real time. Referring physicians often participate in the discussion. After reaching consensus regarding the best response, the PERT system activates appropriate hospital resources to rapidly implement an integrated care plan.

Finally, in response to the interest that PERT has generated among physicians around the country, the Mass General team is forming a collaborative national network of Pulmonary Embolism Response teams. That consortium, to be launched at a spring 2015 meeting at MGH, will provide further opportunities to evaluate new treatment algorithms and ideas arising from PERT’s coordinated multidisciplinary program. PERT leaders are committed to advancing the field more rapidly to benefit patients.


Source: Massachusetts General Hospital PERT program.

PERT Activations, October 2012 Launch–December 2014

The most common treatment after PERT activation by consensus was anticoagulation alone (60.7%). Other procedures were also provided. Long-term outcome data will enable increasingly informed decision-making.

293 INTERVENTIONS:
60.7% Anticoagulation only
20.8% IVC filters
8.7% Catheter-direct thrombolysis
4.0% Surgery
2.7% IV Iysis
2.3% ECMO
0.7% Vortex

MALE: 56.1%  FEMALE: 43.9%
AGE RANGE: 10–98 yrs., median 62 yrs.
SURVIVAL TO DISCHARGE: 85.3%