# Pulmonary embolism risk scoring could guide treatment, ease burden on EDs

March 31 2015, by Dama Ewbank

Greg Fermann, MD, an associate professor in UC's Department of Emergency Medicine, was recently named the department's executive vice chairman.

An analysis led by University of Cincinnati (UC) emergency medicine researchers shows that a simplified severity scoring tool for pulmonary embolism could be used in emergency departments to guide treatment decisions and, ultimately, ease the burden placed on emergency departments and hospitals.

The analysis appears in the March 2015 edition of *Academic Emergency*

*Medicine*, the official journal for the Society for Academic Emergency Medicine.

Pulmonary embolism (PE) is a blockage in one of the arteries leading to the lungs. It is life-threatening and most often caused by a deep vein thrombosis (DVT)—e.g., a blood clot in the leg or pelvis—that travels to the lungs. The Centers for Disease Control and Prevention estimates as many as 900,000 people (1 to 2 per 1,000) could be affected by PE/DVT each year in the United States.

"Patients with symptoms of pulmonary embolism who enter emergency departments in the United States are overwhelmingly admitted to the hospital," says Gregory Fermann, MD, professor and executive vice chairman of UC College of Medicine's Department of Emergency Medicine. "Outside the U.S., patients with pulmonary embolism are much more likely to be treated and released directly from the emergency department."

Fermann and team set out to determine if the widely accepted prognostic tool called the simplified Pulmonary Embolism Severity Index (PESI) could be used to stratify patients according to risk and guide treatment decisions. The simplified PESI score allows risk stratification using physiological criteria.

To do this, the team analyzed results from the international EINSTEIN-PE study, a multi-site, open-label randomized phase III trial comparing treatments for PE. They were able to determine simplified PESI scores for more than 4,800 of the patients enrolled in EINSTEIN-PE.

PESI scores of 0, 1 and ≥2 were given based on specific criteria related to age, health history, pulse, blood pressure and oxygen levels.

With scores in hand, Fermann and team were able to show that patients

with PESI scores of 0 or 1 were less likely to experience fatal PE or other adverse outcomes within their first 7, 14, and 30 days post treatment. Patients with PESI scores of ≥2 had more frequent adverse outcomes.

They also showed major bleeding to be lower in the group of EINSTEIN-PE study patients who were given rivaroxaban, noting it was particularly lower in the rivaroxaban patients with simplified PESI scores of 1 or ≥2. Rivaroxaban (marketed under the brand name Xarelto) is an oral anti-coagulant (blood-thinning) medication developed together by Janssen and Bayer HealthCare.

"The results of this analysis provide further support that risk stratification of PE patients may allow a cohort of low-risk patients to be treated in a clinical decision unit or by a closely monitored outpatient strategy, rather than an inpatient setting," says Fermann. "But while physiological criteria such as the PESI score are important, the decision to admit or discharge a patient is also based on sociobehavioral factors, like the patient's ability to go to a primary care provider or to get their medicine."

Provided by University of Cincinnati