

INTERVIEW

# How Artificial Intelligence Can Improve Outcomes for Patients With Pulmonary Embolism

*An Interview With Dan Shilo, MD*

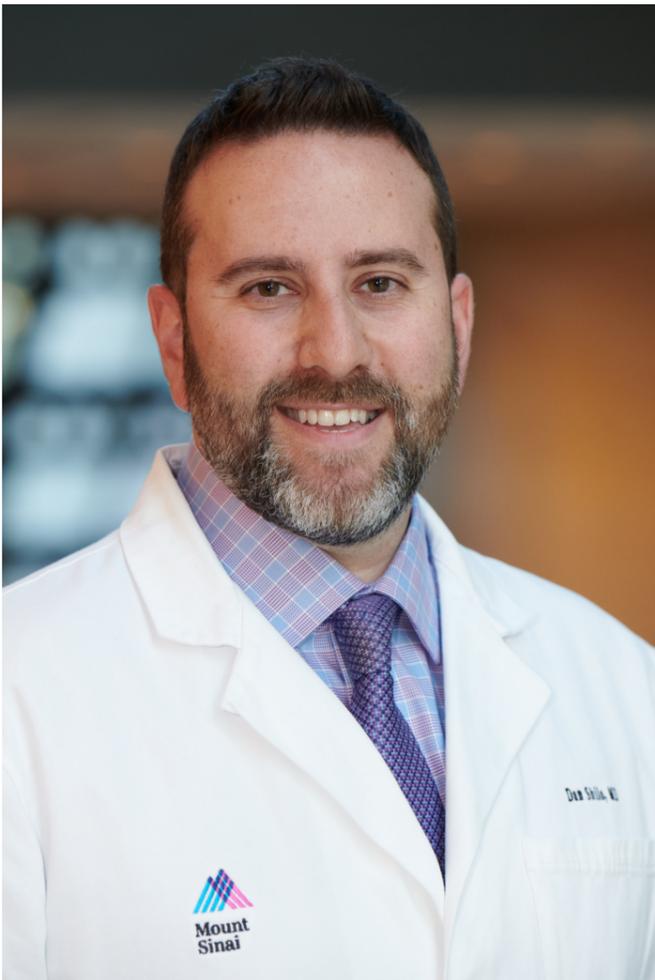
[Dan Shilo, MD](#)

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At this year's SIR Annual Scientific Meeting in Nashville, Tennessee, *Vascular Disease Management* spoke with interventional radiologist Dan Shilo, MD, from Mount Sinai Health System in New York City, to discuss his presentation entitled "AI to Improve PE Outcomes: Present and Future Applications." Dr. Shilo spoke about how he uses artificial intelligence (AI) to treat patients with pulmonary embolism (PE) and how it improves outcomes.

### ***How do you currently use AI in treating patients with PE?***

Currently at Mount Sinai, every chest CT in the system is evaluated in real-time by our AI algorithm for a positive PE, evidence of right heart strain, and central clot burden. When all 3 criteria are met, the relevant PERT (program evaluation and review technique) stakeholders are notified via an app and can immediately evaluate a patient's imaging, trended laboratory data, and current hemodynamics via the product's electronic medical record integration. By expediting this evaluation, we can risk stratify patients before they've even left the scanner and know whether the patient is potentially a candidate for pulmonary artery (PA) reperfusion therapies before the on-call diagnostic radiologist has even gotten to the study on their list. Every potential PE patient gets faster care as a result of our integrated AI algorithms.

### ***What are some of the key limitations or challenges of implementing AI in PE management?***

The current AI platforms being utilized in PE management largely have their origins in the stroke world, so a lot of the technology is oriented toward rapid mobilization and a binary decision regarding catheter intervention vs non-catheter intervention. Speed is important, but one of the limitations and therefore one of the challenges for us—and for any member of a PERT team nationwide—is how we implement these technologies in order to provide optimum longitudinal care, outside of the acute hospital visit—making sure that patients are plugged into the appropriate follow-up algorithms.

### ***How do you envision AI evolving in procedural planning or post-intervention monitoring for patients with PE?***

With the inclusion of AI, risk stratification will not only happen faster, but with increasing complexity, utilizing data points from a patient's imaging, laboratory data, hemodynamic presentation, and medical history that were previously not considered. Tools that were previously only available in the research setting will now be available to operators and PERT team members in real-time.

The evolution in nonprocedural PE care will come from integrating the inpatient and outpatient longitudinal management pathways, and specifically in automating this critical step. Because automated capture from the initial PE diagnosis is already in place, those patients can be flagged and their imaging follow-up also screened. Current clinical trial patients are receiving wearables such as Garmin watches to monitor hemodynamics, and a large percentage of the population is wearing Apple Watches or Fitbit-style devices. Those hemodynamic measurements, in combination with follow-up imaging, ongoing clinical visits where quality of life

scores and persistent PE symptoms are recorded, will allow outpatient care optimization and automated direction into the appropriate pathways. With post-PE syndrome rates approaching 30% to 50% in our patients, this is a critical piece of PE care going forward.

***AI is only as good as the data that it learns from. Where do you see the biggest gaps in the data that we are feeding the systems? What can we do to improve the quality of data?***

It behooves us to have PERT leaders define what it is that we want AI to do and have the data be interpreted in such a manner that those practices can be implemented. In practice, that means integrating data for optimal PA reperfusion therapy decision-making and longitudinal care optimization utilizing the variables I just mentioned.

There has been an incredible focus on the former—we need to advance that into the periprocedural and outpatient setting, and an organized effort by PERT leadership will accomplish that. That, to me, encompasses where we are now and where AI needs to go. ■