

# Validating Artificial Intelligence-Guided RV/LV Analysis in Detecting and Predicting the Outcome of Pulmonary Embolisms

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## Purpose

Pulmonary embolisms (PE) are potentially life-threatening manifestations of venous thromboembolic events (VTE). In cases of suspected PE, it is essential to rapidly triage patients and determine the severity of VTE and what resources may be required to optimize outcomes. This retrospective study was conducted using Imbio's FDA-cleared automated right ventricle/left ventricle (RV/LV) analysis software to assess its predictive ability and to evaluate the success of Endovascular Thrombectomy (ET) using pre- and post-procedural chest CT pulmonary angiograms (CTPA), respectively.

## Response to Pulmonary Embolisms

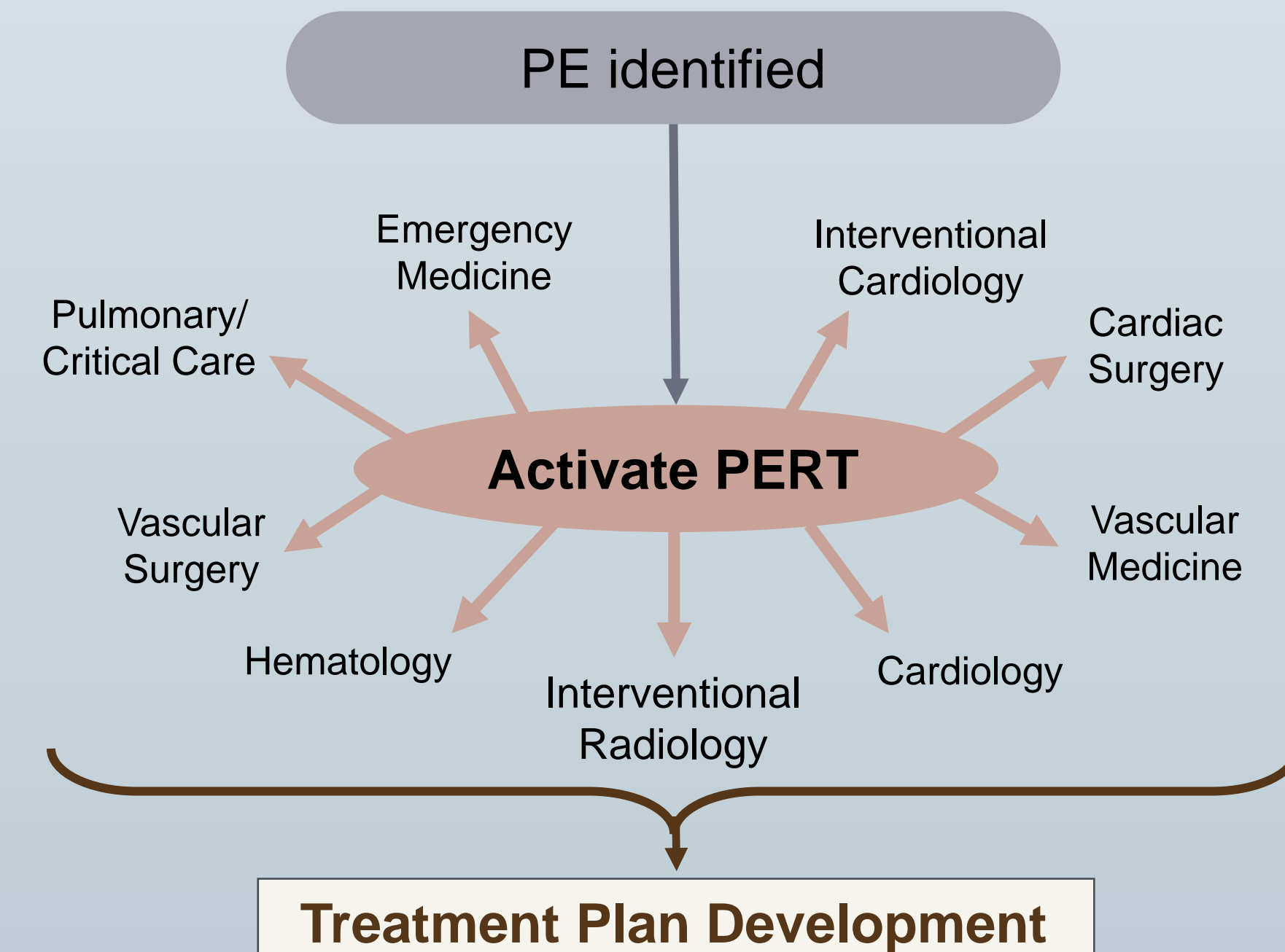
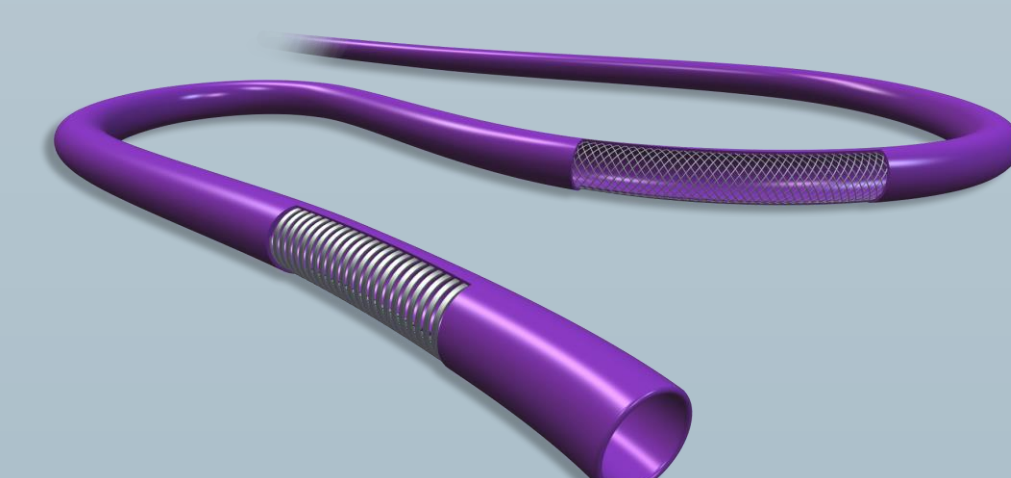
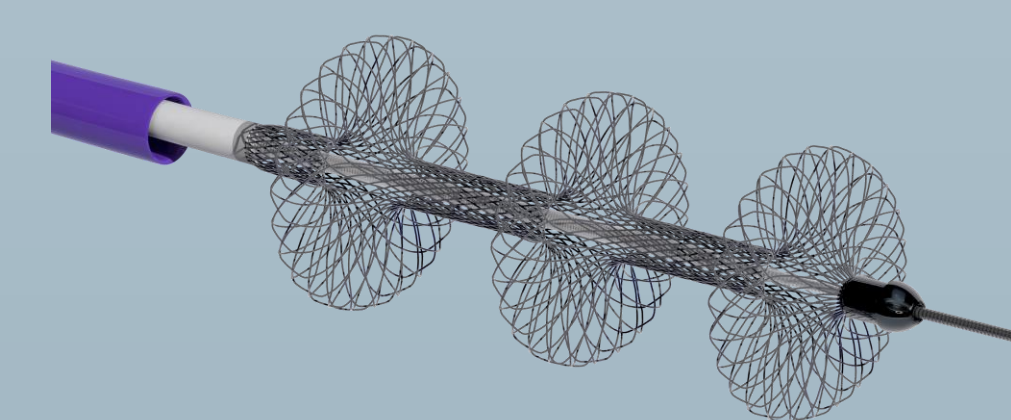


Figure 1. Current Pulmonary Embolism Response Team (PERT) Strategy derived from Rosovsky et al. (2019).

## Inari FlowTrieve® Endovascular Thrombectomy



**Triever Aspiration Catheter**  
Large lumen catheter used as guide for FlowTrieve Catheter or to perform suction thrombectomy.



**FlowTrieve Catheter**  
Composed of 3 self-expanding nitinol mesh disks for mechanical clot capture and retrieval

Figure 2. Inari FlowTrieve® system components. All patients in this study underwent an endovascular thrombectomy using the Inari Flowtriever® system.

## Methods

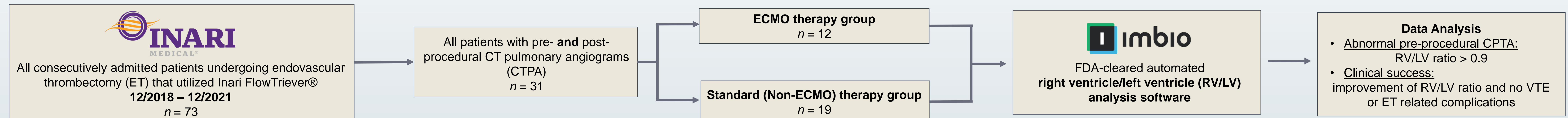


Figure 3. Study flow chart. Inclusion criteria were cases that utilized Inari FlowTrieve for ET and presence of pre- and post-procedural CTPA. Imbio's RV/LV software was then utilized to measure ventricular dilation. Extracorporeal membrane oxygenation, ECMO.

## Imbio RV/LV CTPA Analysis

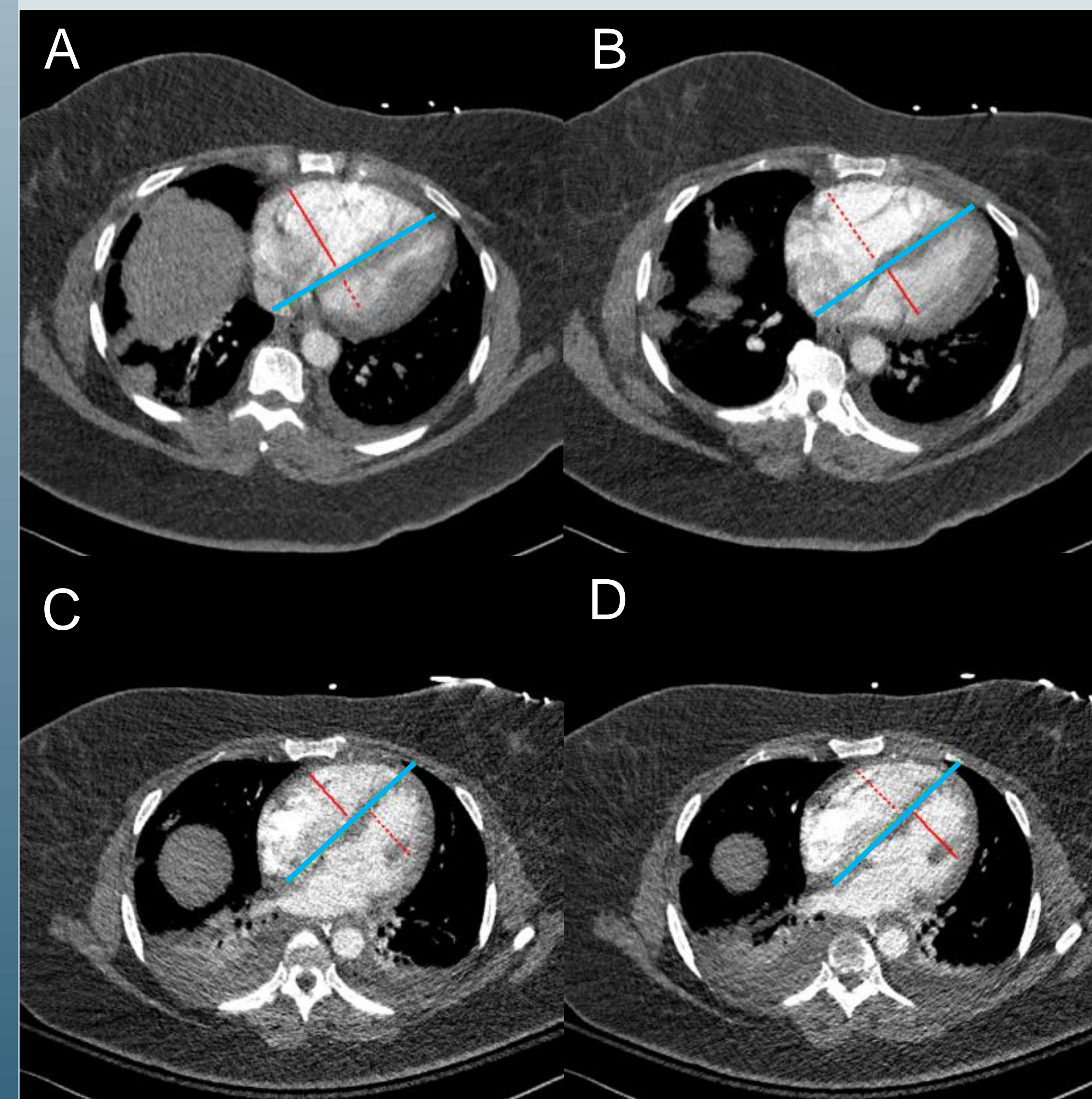


Figure 4. Right ventricle/left ventricle (RV/LV) analysis of CT pulmonary angiograms assessed with artificial intelligence. Blue solid line indicates detected interventricular septum, red solid line indicates largest ventricular diameter and red dotted line indicates measurement contiguous to largest ventricular diameter

Images correlate to largest pre-procedural (A) right ventricle and (B) left ventricle diameter measurement and largest post-procedural (C) right ventricle and (D) left ventricle diameter measurement

## Improvement of RV/LV Ratio seen with Flowtriever® ET with and without ECMO

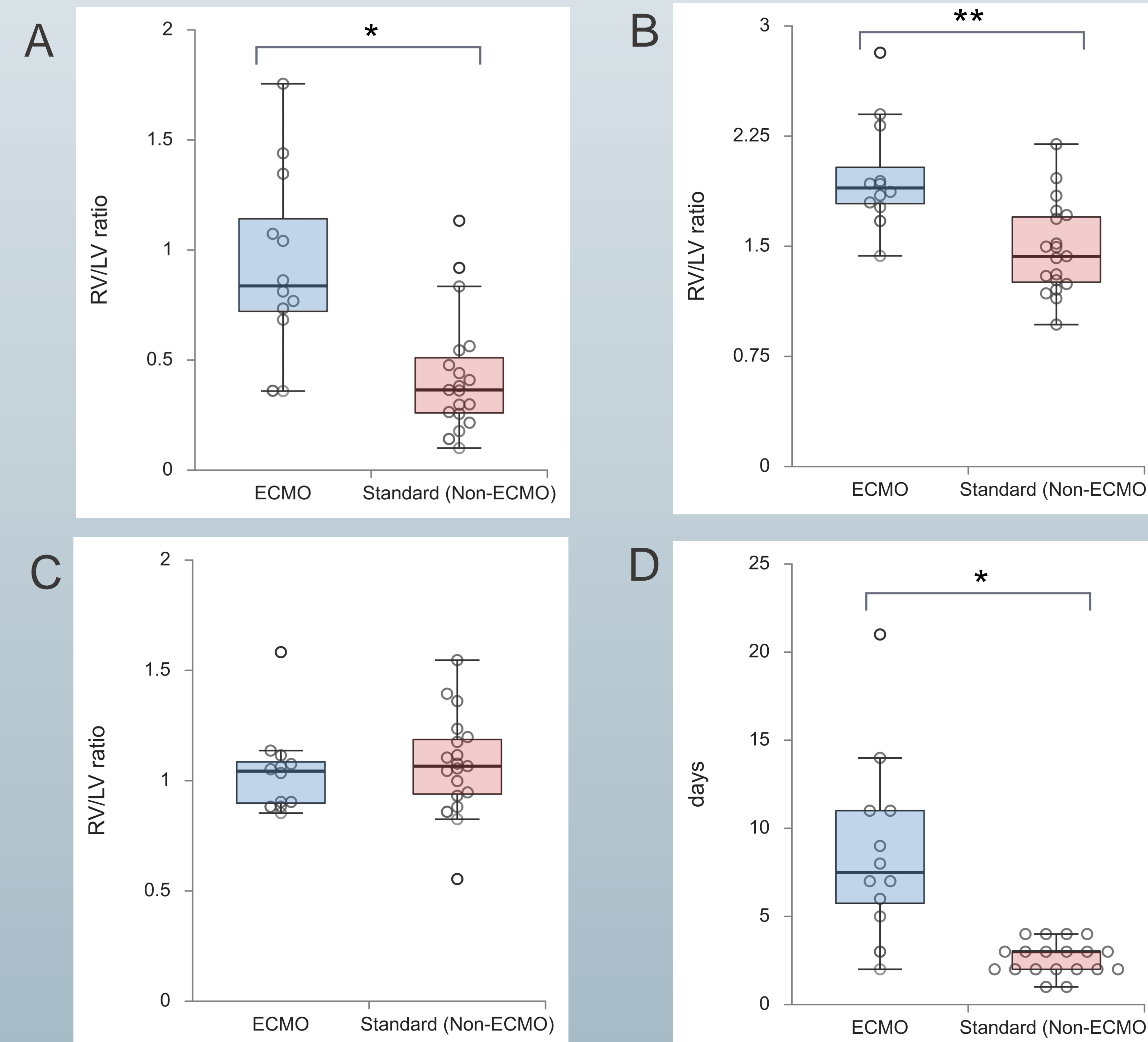


Figure 5. Average change in pre- vs post-procedural RV/LV ratios was higher in patients who were placed on ECMO (A). Average pre-procedural RV/LV ratios were significantly higher in patients who were placed on ECMO (B), while average post-procedural RV/LV ratios were not significantly different (C). (D) illustrates the number of days elapsed after the procedure the post-procedural CPTA was taken. Mann–Whitney-U for continuous variables were applied to test for differences between the ECMO and non-ECMO therapy groups. \* $p < 0.005$  \*\* $p < 0.001$

## Conclusions and Future Directions

- ET using Inari FlowTrieve offers effective therapy for patients with moderate to severe PE
- Even patients with low to intermediate RV strain may also benefit from ECMO support during ET
- Our study demonstrates the benefits to using artificial intelligence RV/LV analyses to assist in triaging VTE and deciding which resources to utilize to assist in triage and optimize outcomes in VTE patients of varying levels of risk

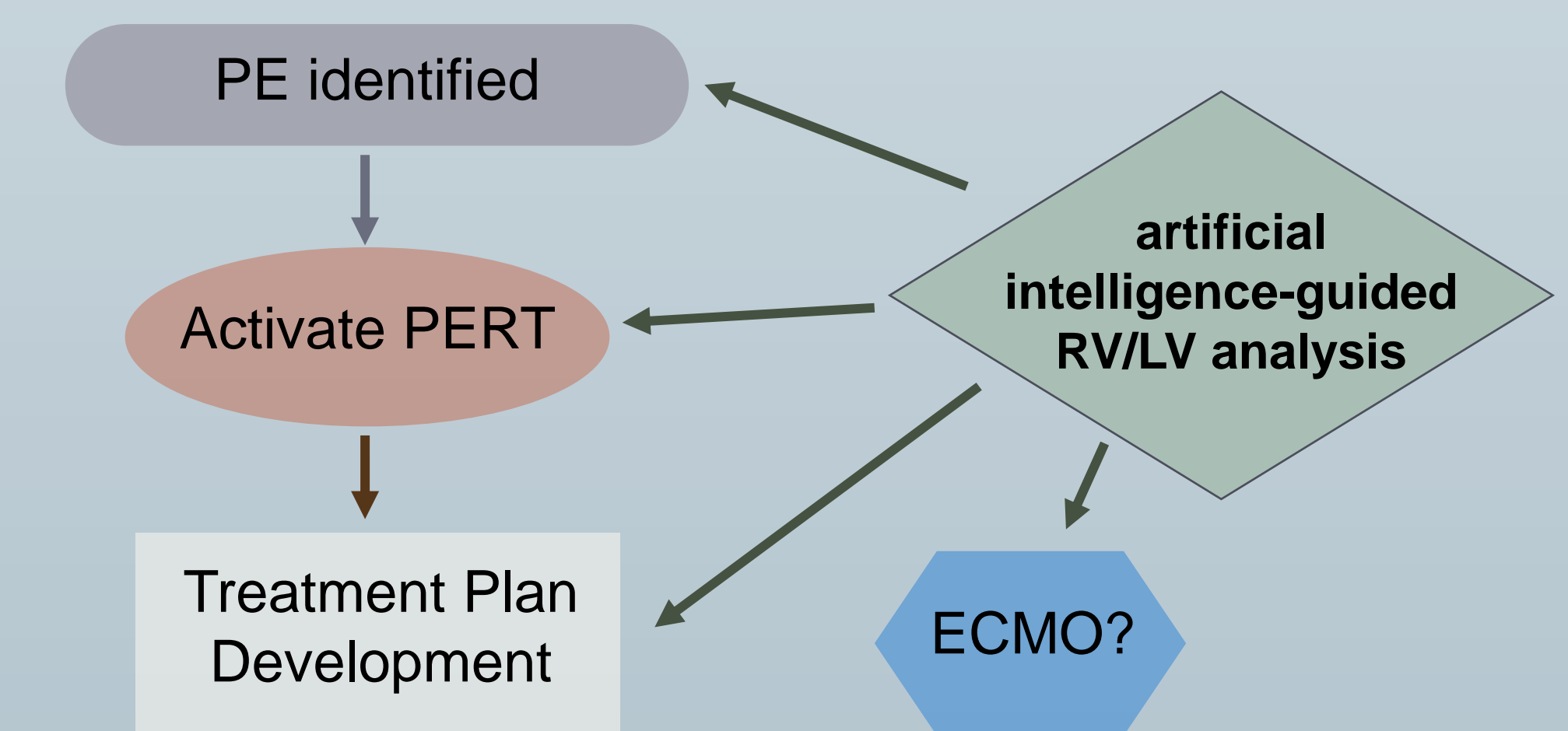


Figure 6. Working model of integrating artificial intelligence-guided RV/LV analysis in PERT workflow.

## References and Acknowledgements

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