

# Outcomes and resource utilization in the management of parapneumonic effusions in patients with Infective Endocarditis: When should we operate?

## OBJECTIVE

The number of patients with combined diagnoses of parapneumonic effusions and infective endocarditis has increased during the opioid epidemic. There is no consensus as to the longitudinal merit of formal decortication in the treatment of these patients and the concomitant existence of drug use and septic emboli increase the complexity of the clinical management. A combination of cardiothoracic procedures, radiology-guided interventions, critical care, and prolonged antibiotic therapy is frequently necessary, and the sum represents a significant burden of resource utilization. We sought to compare surgical drainage and non-surgical approaches to managing the effusions.

## METHODS

A regional version of the TriNetX database was queried to evaluate adult patients diagnosed with infective endocarditis and pleural effusion(s) between 2010 and 2021. TriNetX is a global federated, health collaborative clinical research platform that provides real-time electronic medical records from over 400 million patients from 30 countries. The aggregated data include demographics, diagnoses, procedures, medications, laboratory testing, vital signs, and genomic information. As a surrogate for outcomes and resource utilization, we evaluated length of stay (LOS), complications, readmissions, and subsequent emergency department (ED) visits. Kaplan-Meier plots generalized linear models, and a propensity -scored, causal modeling approach were used to compare surgical versus non-surgical management. Subgroup analysis was also used to evaluate effect of age over 65 and history of substance use disorder. We present the results as estimated means (EM) and odds ratio (OR) along with 95% confidence intervals (CI).

## RESULTS

The sample comprised 6,536 patients, 6,158 in the non-surgical group and 378 in the surgical one. Patients undergoing surgical drainage had fewer cardiovascular (OR: 0.794; 0.641, 0.984;  $p = 0.035$ ), pulmonary (OR: 0.151; 0.117, 0.195,  $p < 0.001$ ) and overall complications (OR: 0.161; 0.123, 0.21;  $p < 0.001$ ) during the index hospitalization. They, nevertheless, had higher rates of readmissions (OR 1.6; 95% CI: 1.29, 1.99;  $p < 0.001$ ), ED visits (EM 0.38; 95% CI: 0.229, 0.531;  $p = 0.042$ ), cardiovascular complications (OR 1.64; 95% CI: 1.3, 2.08;  $p < 0.001$ ), infection rates (OR: 4.5; 95% CI: 2.02, 10;  $p < 0.001$ ) and pulmonary complications (OR 2.47; 95% CI: 2, 3.06;  $p < 0.001$ ) at 30 days. At one year after discharge, readmissions ( $p < 0.001$ ), cardiovascular complications ( $p < 0.001$ ), pulmonary complications ( $p < 0.001$ ) and infections rates ( $p = 0.005$ ) remained higher in the surgery group. There was no difference in LOS ( $p = 0.613$ ) or mortality ( $p = 0.111$ ). (Figure 1)

## CONCLUSION

Surgical drainage is associated with lower complication rates at the index hospitalization but with higher readmission and long-term complication rates but no difference in mortality. This may suggest early short-term benefit but greater long-term resource burden. Understanding these associations may help guide decision-making and resource utilization in the context of an ongoing opioid epidemic with increasing

incidence of septic pulmonary sequalae.

---

J. W. Hayanga (1), Jahnavi Kakuturu (1), Ghulam Abbas (1), Alper Toker (1), Jason Lamb (2), Fatima Asad (1), Chris Cook (1), (1) WVU Heart and Vascular Institute, Morgantown, WV, (2) WVU Heart and Vascular Institute, Pittsburgh, PA

---

## **Additional Resources**

- [https://files.aievolution.com/prd/aat2101/abstracts/abs\\_1703/1012PleuralEffusionFigure.docx](https://files.aievolution.com/prd/aat2101/abstracts/abs_1703/1012PleuralEffusionFigure.docx)