

# Outcomes of Cardiac Valvular Surgery in Patients with Substance Use Disorder



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## INTRODUCTION

Infective endocarditis (IE) requiring surgical intervention is a high-risk complication of systemic bacteremia. Although there are many risk factors for IE, a history of intravenous substance use disorder makes up a significant portion of patients who acquire IE.<sup>1</sup> There has been a significant increase in incidence of patients hospitalized for substance use disorder-related infective endocarditis (SUD-IE) in recent years largely due to the opioid epidemic.<sup>2</sup> Despite this increase, long-term outcomes and mortality in these patients are not well known. Previous studies have shown inconsistent findings on survival rates and perioperative complications.<sup>3-5</sup> The purpose of this study was to evaluate differences in outcomes of valvular surgery between patients with and without SUD-IE.

## METHODS

Patients from a rural tertiary medical center who underwent non-elective isolated valve surgery from 2000-2021 were included (Figure 1). Data were obtained from the Society of Thoracic Surgeons database and patient medical records. Patients were considered to have SUD-IE if they had documented illicit drug use at the time of endocarditis diagnosis. Survival analysis was performed using Kaplan-Meier method. Multivariable logistic and Cox hazard models were used to adjust for age, sex, race, and history of prior valve surgery.

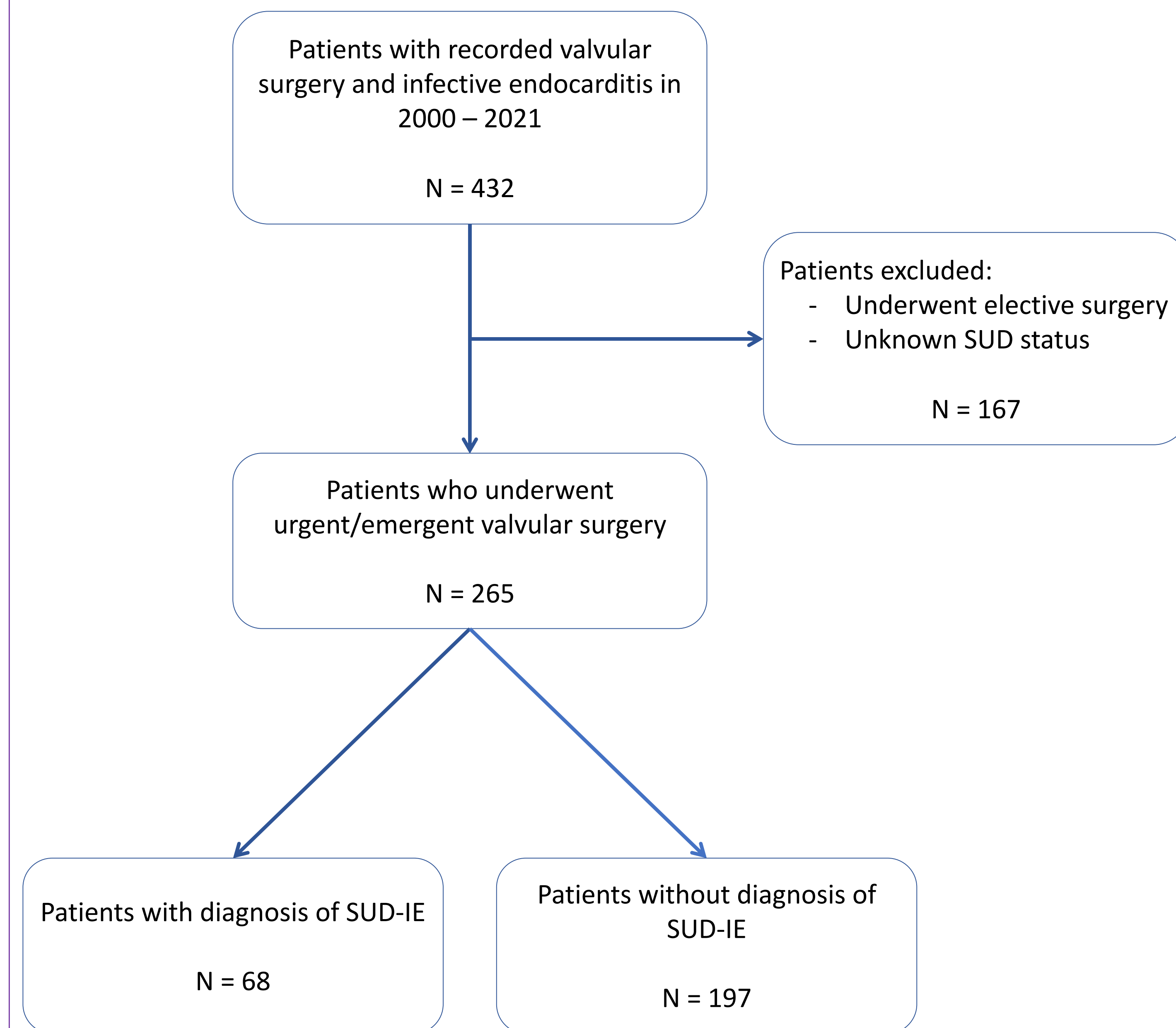


Figure 1. Flowchart of patients included and excluded in the study.

## RESULTS

265 patients met inclusion criteria, and 68 (26%) had SUD-IE. The SUD-IE group was younger (median age 41 vs 60,  $p < 0.001$ ), with more female (40% vs 33%) and White (75% vs 56%) patients. Non-SUD patients suffered from more preoperative comorbidities than SUD patients (Figure 2). There were no significant differences in postoperative complications or in-hospital death (Figure 3). The SUD-IE group had a longer median length-of-stay (25 days vs 20 days,  $p = 0.02$ ) and higher 30-day readmission rates (29% vs 12%,  $p < 0.01$ ). Reasons for readmission were similar between groups. Median follow-up was greater than 5 years in both groups. There was no difference in 5-year survival between groups (HR 1.05 [95% CI 0.64-1.74];  $p = 0.69$ ) (Figure 4).

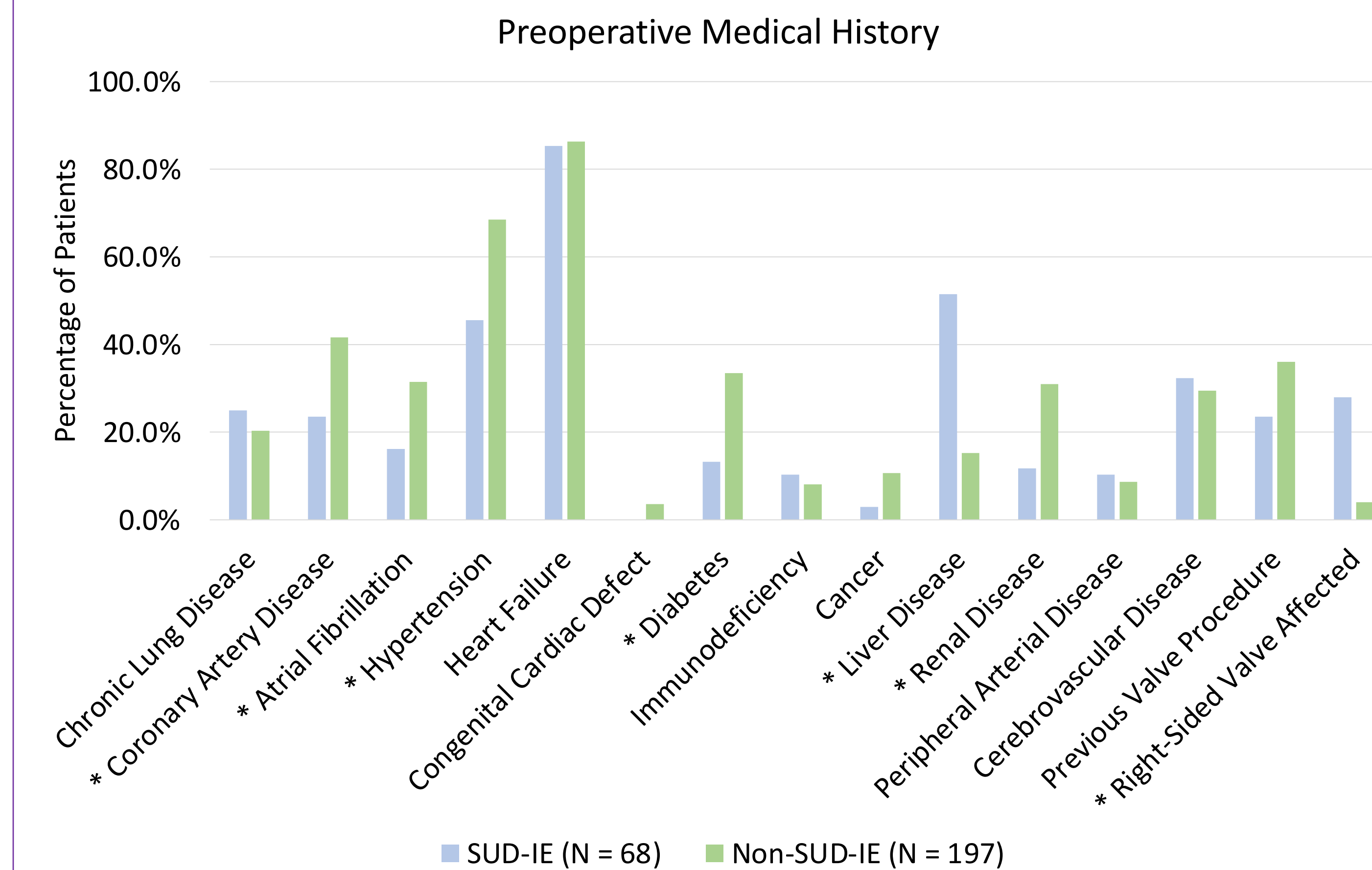


Figure 2. Preoperative diagnoses of patients who underwent valvular surgery for infective endocarditis with or without a history of SUD. (\*) Denotes statistical significance,  $p < 0.05$ .

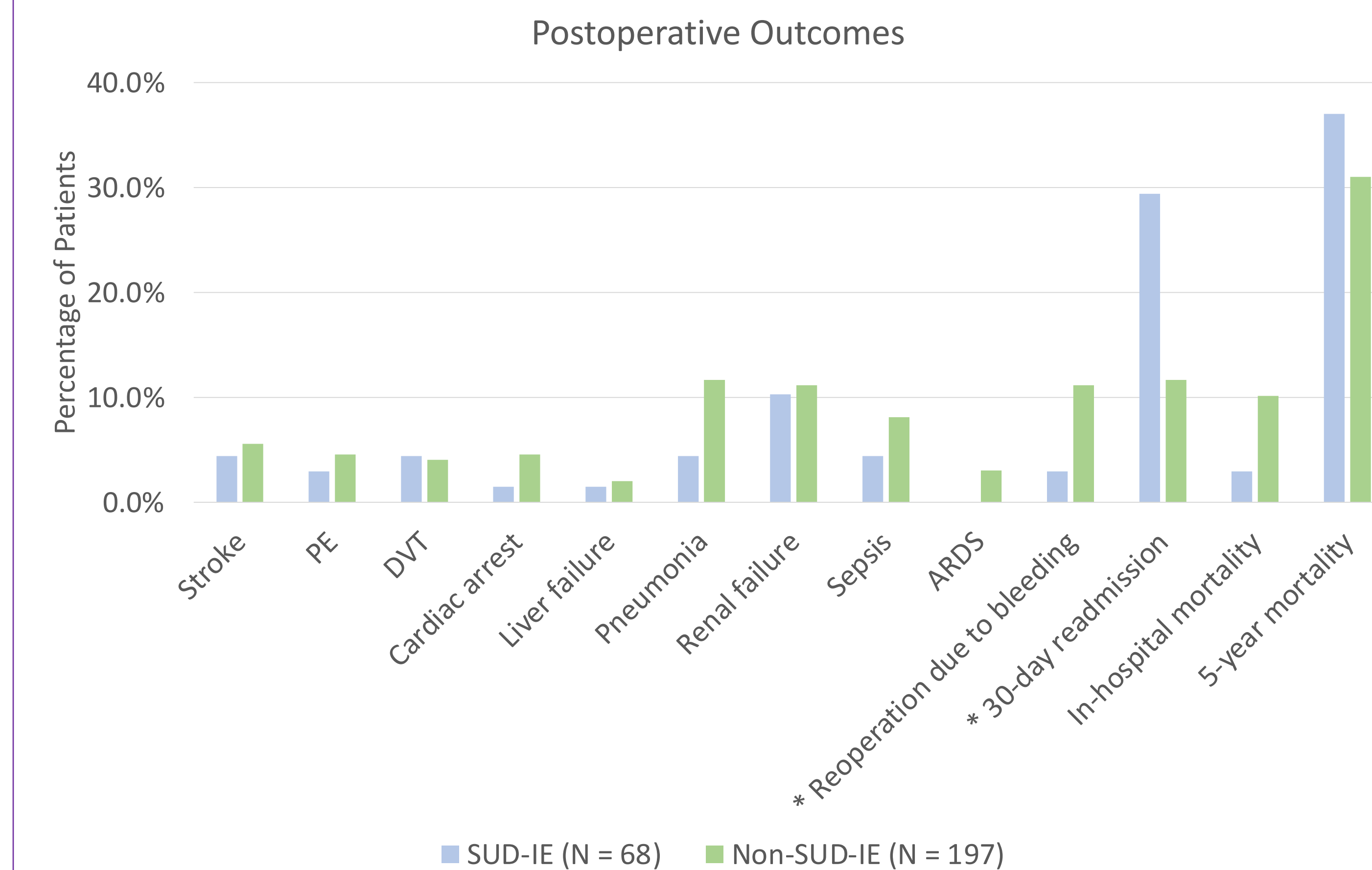


Figure 3. Postoperative outcomes and long-term mortality of patients who underwent valvular surgery for infective endocarditis with or without history of SUD. 5-year mortality estimated using Kaplan-Meier estimate analysis. (\*) Denotes statistical significance,  $p < 0.05$ .

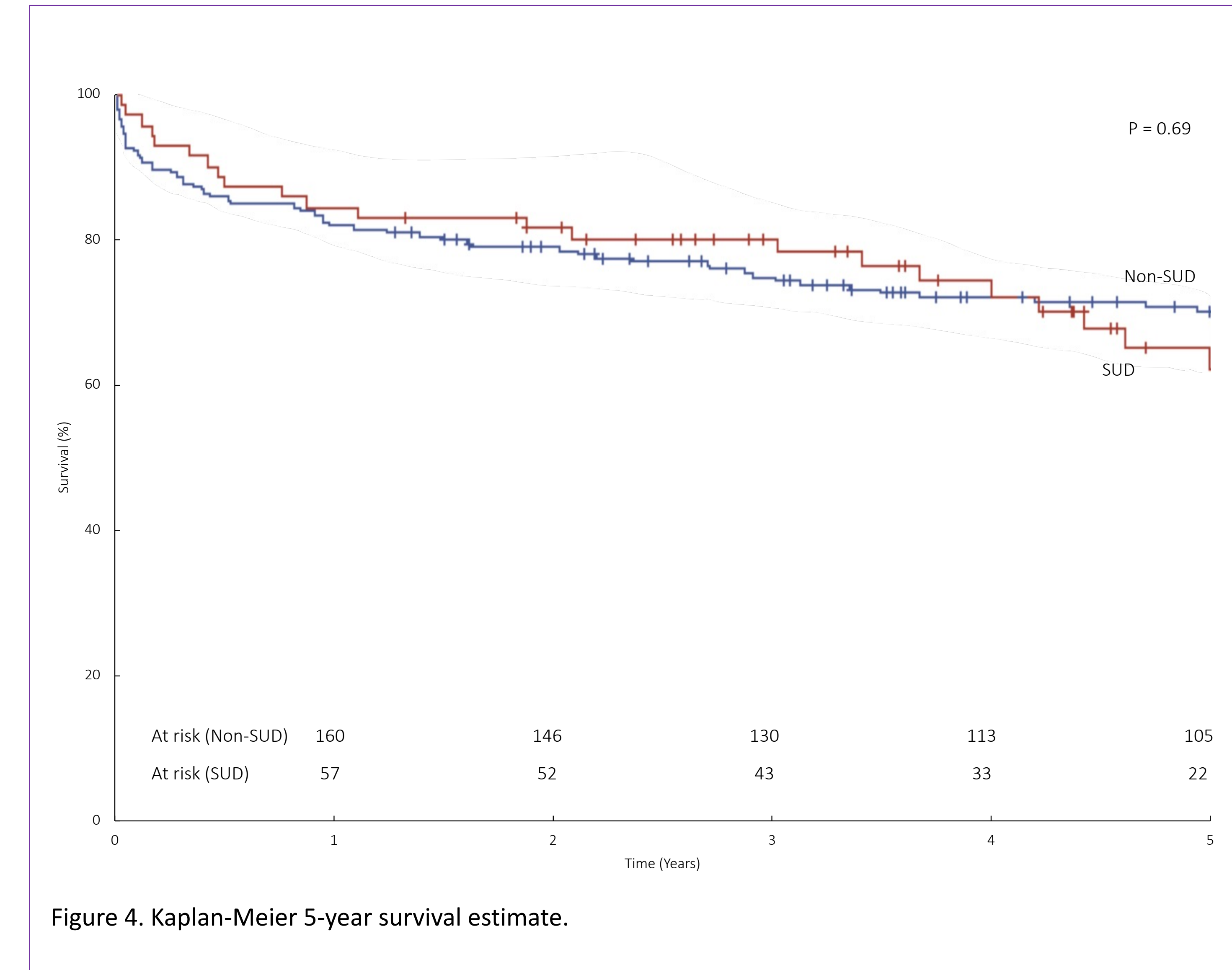


Figure 4. Kaplan-Meier 5-year survival estimate.

## DISCUSSION

Patients who undergo valvular surgery for endocarditis have similar postoperative outcomes and long-term survival regardless of SUD-IE status. Significantly more SUD patients had a previous diagnosis of liver disease, consistent with the increased prevalence of Hepatitis C Virus in this population.<sup>6</sup> In addition, the higher proportion of right valve involvement further supports SUD being a risk factor for right-sided IE. SUD-IE patients have a longer length-of-stay and higher readmission rates, thus may place a larger burden on healthcare systems in the short term. Further investigation is needed to determine the effect of socioeconomic factors, such as access to addiction care and continued drug use, on readmission rates.

## REFERENCES

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