

# Comparison of In-hospital Outcomes of Early Versus Late Surgical Intervention in Patients with Infective Endocarditis in The United States: An Analysis of National Inpatient Sample Database

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## Background

Infective endocarditis (IE) remains a serious illness with high morbidity and mortality. The management of IE includes antimicrobial therapy, and in some cases, surgical intervention. However, the timing for surgical intervention remains controversial. We examined the National Inpatient Sample (NIS) database to assess the in-hospital mortality, length of stay (LOS), and hospital cost of early versus late surgery in patients with IE.

## METHODS

We searched the NIS database for eligible patients with primary diagnosis of IE who underwent cardiac surgery between 2006 to 2016.

Inclusions criteria	Exclusion criteria
Age > 18 years	Hemorrhagic stroke
IE who underwent one of the following surgeries	Prior cardiac surgery
<ul style="list-style-type: none"><li>Aortic valve replacement or repair</li></ul>	Fungal endocarditis
<ul style="list-style-type: none"><li>Mitral valve replacement or repair</li></ul>	Patient with cardiovascular electronic implantable devices, such as:
<ul style="list-style-type: none"><li>Tricuspid valve replacement or repair</li></ul>	<ul style="list-style-type: none"><li>ICD/CRT</li></ul>
<ul style="list-style-type: none"><li>Pulmonic valve replacement or repair</li></ul>	<ul style="list-style-type: none"><li>Heart prosthesis</li></ul>

We [investigated](#) the timing of surgery for IE, hospital mortality, LOS and hospital cost. We used the date of any cardiac valve surgery from the date of admission and used 7 days as cutoff between early and late surgery.

## Results

From 2006 to 2016, an estimated 15,292 hospitalizations had a primary diagnosis of IE that included at least one valve surgery, of which 9,101 (59.5%) had the first surgery within [7](#) days of admission. The in-hospital mortality rate when valve surgery was conducted early (i.e.,  $\leq 7$  days) was 5.58% compared to 5.63% when valve surgery was conducted late ( $p = .950$ ). Median LOS was significantly shorter when valve surgery was conducted early compared to late

(12.9 days vs. 26.2 days, respectively,  $p < .001$ ), which corresponded to lower hospital costs when valve surgery was conducted early compared to late (\$62,180 vs. \$89,025, respectively,  $p < .001$ ).

### **Conclusions**

In the United States from 2006 to 2016, early surgical intervention for IE associated with significantly shorter LOS and lower hospital cost. However, the in-hospital mortality was similar between early and late surgical intervention for IE.

### **References**

- 1- Delahaye F. Indications and optimal timing for surgery in infective endocarditis. *Heart* 2004;90:618–620.
- 2- Narayanan MA, Haddad TM, Kalil AC, et al. Early versus late surgical intervention or medical management for infective endocarditis: a systematic review and meta-analysis. *Heart* 2016;102:950–957.