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# Quantifying the incremental cost of complications associated with mitral valve surgery in the United States

## INTRODUCTION

- ▶ This study evaluated the impact of post-operative complications on clinical outcomes (e.g. mortality, discharge disposition) and net increase in resource requirements (i.e. hospitalization costs, length of stay) in a national cohort of patients undergoing mitral valve surgery.

## METHODS

- ▶ Isolated mitral valve procedure claims between January 1, 2006 and December 31, 2007 were extracted from the Nationwide Inpatient Sample (NIS) using ICD-9-CM codes.
- ▶ Cost and length of stay for eight major post-operative complications were obtained from the NIS database: Pneumonia, acute renal failure, septicemia, acute myocardial infarction, stroke, cardiac tamponade, gastrointestinal bleeding, and venous thromboembolism.

## RESULTS

- ▶ From a total of 6,297 cases, 1,323 complications occurred in 1,089 patients.
- ▶ The median cost of hospitalization was found to be \$35,446.
- ▶ The three most common complications were pneumonia, sepsis, and renal failure requiring dialysis. Pneumonia, the most common complication, resulted in the second largest increase in hospital costs (\$29,692) and length of stay (10.2 days).
- ▶ The most costly complication was found to be cardiac tamponade, which added an incremental hospitalization cost of **\$56,547**, and resulted in the largest increase in hospital stay (19.3 additional days).
- ▶ A stepwise multiplicative association was also found between the number of complications and both total hospitalization costs and length of hospital stay.
- ▶ Findings also indicated a significant association between discharge location (e.g. home, skilled nursing facility, intermediate care facility) and post-operative complications, suggesting that complications have additional long-term economic implications after hospital discharge.

## DISCUSSION AND CONCLUSIONS

- ▶ Understanding the impact of complications on patient outcomes and healthcare costs is important for improving the quality of healthcare delivery and reducing costs.
- ▶ This study is believed to help support quality improvement initiatives, increase cost-effectiveness, and improve patient outcomes by understanding the impact of complications.

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