

## SEX DIFFERENCES IN OUTCOMES OF CARADIOGENIC SHOCK REQUIRING TEMPORARY PERCUTANEOUS MECHANICAL CIRCULATORY SUPPORT

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### ABSTRACT

**INTRODUCTION.** In women, there is evidence for lower use of percutaneous mechanical circulatory support (pMCS) despite its potentially life-saving properties. This study adds data on whether sex differences exists regarding in-hospital mortality, hospital length of stay, costs, as well as in-hospital course and procedures among patients with cardiogenic shock (CGS) requiring pMCS and whether clinical and socio-demographic factors were associated with these differences.

**METHODS.** The National Inpatient Sample (NIS) was used, years 2005 to 2014. Patients admitted with CGS including acute myocardial infarction (AMI) and acute decompensated heart failure (ADHF) were identified by using ICD-9-CM codes.

Student's t-tests

Pearson's chi-squared test temporal trends of pMCS use and in-hospital mortality stratified by sex were performed. For the adjusted analysis we performed a multivariable hierarchical logistic regression analysis incorporating age, race, admission year, primary payer status, socioeconomic stratum, hospital characteristics, comorbidities, and cardiac procedures. Statistical analyses were performed using Stata/IC -14.2.

Clinical variables included demographics, comorbidities, in-hospital course, length of stay and procedures as well as time from admission to device insertion or to pulmonary artery catheter (PAC) insertion. The Charlson Comorbidity Index (CCI) was calculated for each admitted patient by using the ICD-9-CM codes.

**RESULTS.** 77 665 cases of CGS due to AMI or ADHF were identified, of which 23487 required pMCS. Women were older, non-white, insured by Medicare and had higher burden of comorbidities including hypertension, cerebrovascular disease as well as higher CCI. pMCS were inserted in 35 516 women (24.9%) and 77 789 men (33.3%) with intraaortic balloon pump (IABP) being the most common. Women were less likely to receive pVAD or PAC. Transfusions and acute respiratory failure were more common in women. Acute renal failure and anoxic brain injury were more common in men; however, they were more likely to receive a left ventricular assist device. No sex-differences were seen in time to pMCS or PAC insertion or time to PCI.

When compared with men, women had 15% higher in-hospital mortality, 4% lower median hospitalization costs and similar median length of stay. In multivariate analysis, age, receiving pVAD or ECMO, and having diabetes, CKD, cerebrovascular disease, PAD or cardiac arrest or ventricular fibrillation were associated with higher in-hospital mortality among women. Having private insurance, coronary artery disease and higher CCI were associated with lower in-hospital mortality among women.

**CONCLUSION.** Among patients with CGS from AMI or ADHF who require pMCS, women experience 15% higher in-hospital mortality, similar length of stay and 4% lower median costs. Acute renal failure and anoxic brain injury were more common in men; however, they were more likely to receive a left ventricular assist device.