**Extra LVAD Information**

We identified 2200 patients greater than 18 years of age in the NationwideInpatient Sample between 1998 and 2011 who underwent LVAD implantation and for which hospital day of procedure was listed (Table 1). The mean age of all patients was 53.4 years (SD = 13.7, range = 18-92 years). The mean day of LVAD implantation was 9.4days (SD = 12.5 days) into the hospitalization. Patients who underwent LVAD implantation on the first or second day of hospitalization had increased mortality (33.4% vs. 24.3%, p = 0.001). The overall in-hospital mortality rate was 26.8%, with an age-associated relationship to mortality (R2 = 0.632, 3.4% increase in mortality per decade of life, p = 0.001). More male patients received LVAD implantations than female patients [n = 1659 (75.4%) vs. n = 541 (24.6%)], and in-hospital mortality rates were higher among females than males (32.0% vs 24.7%, p = 0.001). Whites patients comprised the largest proportion of LVAD recipients (57.9%), followed by Black patients as the second largest racial group(16.0%), and in-hospital mortality rates were significantly lower in Black patients (18.1% vs. 28.4%, p < 0.001).

Most LVAD implantations were performed in large (87.8%), urban (99.1%), teaching hospitals (92.4%). Mortality rates were higher in patients who received LVAD implantations in small (n = 38, 50.0%, p < 0.001), rural (n = 19, 52.9%, p < 0.001), and non-teaching hospitals (n = 165, 37.6%, p < 0.001). There was an increase in the number of LVAD implantations from 1998 to 2011 (r^2 =0.6924, trend p-value <0.001). Overall in-hospital mortality remained stable between 1998 and 2006 (r^ 2 = 0.1403, trend p-value = 0.9042) and linearly decreased between 2007 and 2011 (r^2 = 0.7648, trend p value = 0.033) (Figure 1).

**Comorbidities and Complications**

The most common comorbidities observed in patients were diabetes (17.8%), disorders of lipid metabolism (14.1%), hypertension (13.7%), history of or current use of tobacco (6.5%) , and BMI ≥ 30 kg/m2 (4.4%). Respiratory failure, cardiac dysrhythmias, right heart failure, and renal failure are among the most frequent in-hospital complications immediately following LVAD implantation (Table 2).Of the 2200 patients, 2130 received one LVAD, 67 received two LVADs, and 3 received three LVADs during the same admission. Repeat LVAD surgeries suggest significant surgical complications, with significant excess mortality in patients who received two LVADs (56.7%) and three LVADs (100.0%).

The use of invasive hemodynamic monitoring is controversial but can provide additional information on the clinical status of end-stage heart failure patients and help optimize volume status and cardiac output. Our data suggests that patient who underwent invasive hemodynamic monitoring had increased hospital survival compared to patients who did not have invasive hemodynamic monitoring (80.1% vs 71.9%, p<0.001). This difference in survival is robust despite patients with invasive hemodynamic monitoring having longer time to LVAD implantation (13.4 days vs. 8.5 days, p < 0.001) and longer hospital stays (45.4 days vs. 39.3 days, p = 0.003). On subset analysis, it appears that patients who had invasive hemodynamic monitoring the longest had the greatest mortality benefit compared to patients without invasive hemodynamic monitoring (Supplementary Figure C). Patients who underwent LVAD implantation within 48 hours of admission had worse survival (66.6% vs. 75.7%, p = 0.001), suggesting urgent or emergent surgery in the setting of acute decompensation leads to worse surgical outcomes. Consistent with our data on invasive hemodynamic support, this suggests optimal medical management of volume status and clinical status prior to surgery could lead to improved survival.  [BD1]