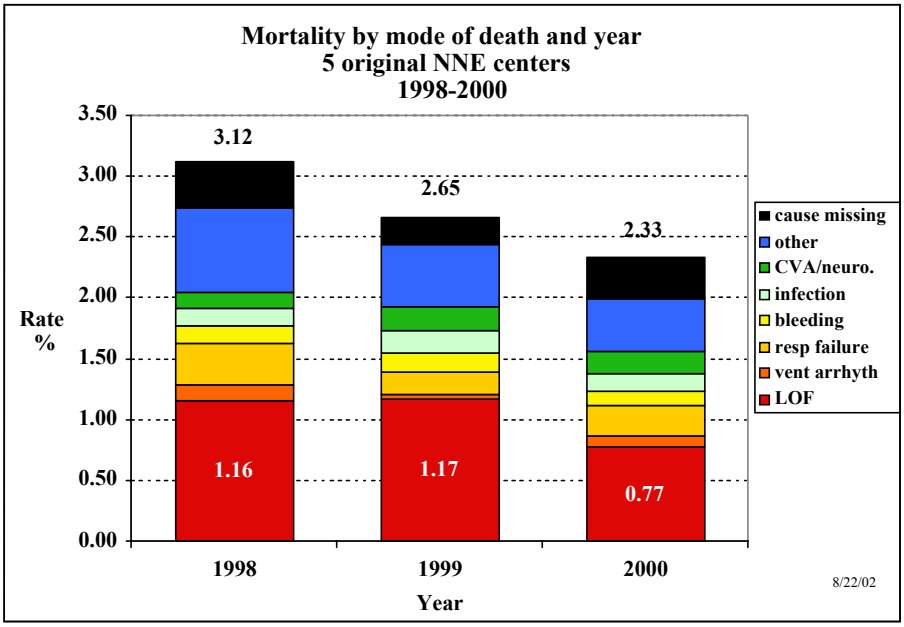
A Regional Intervention to Reduce CABG Mortality from Low Output Heart Failure

Status: Three –year grant funded by the American Heart Association's Patient Care and Outcomes Research Grant program. Completed in 2001, preliminary data available **Contact:** Cathy S. Ross

Background: Carefully conducted outcome studies have shown differences in mortality rates associated with isolated CABG surgery. Studies by our group suggest that low-output cardiac failure is the dominant causes of in-hospital death (67%) among isolated CABG patients. Our aim for this project was to implement a focused intervention study aimed at reducing the rate of fatal low output heart failure associated with isolated CABG surgery. Participating centers were Catholic Medical Center, Dartmouth-Hitchcock Medical Center, Eastern Maine Medical Center, Fletcher Allen Health Care and Maine Medical Center.

Methods: We developed an organized approach for patients at low, medium and high risk for low output heart failure. Each of the participating centers implemented our prediction equation to sort patients into these groups. Process care strategies for each of the risk categories were developed using evidence in the literature and the NNECDSG. Preoperative interventions included aspirin, treatment of unstable angina, and use of IABP in high-risk patients. Intra-operative interventions included: pre-induction beta-blockade (target heart rate ≤80), use of internal mammary artery (IMA) avoidance of nadir hematocrits <21% during CPB, avoidance of PA catheter in low risk patients, reducing the use of inotropes at separation from CPB in low risk patients, and using glucose-insulin-potassium (GIK) and/or IABP in high risk patients. Post-operative interventions included: development of protocols to recognize and treat low output heart failure early, and improving handoffs between the OR and the ICU. Tight control of blood glucose among diabetic patients was implemented by most participating medical centers.

Results: Data on the key interventions such as pre-operative use of aspirin, use of an internal mammary artery, use of pre-induction beta-blockade increased and number of patients with a low hematocrit (<21%) on cardiopulmonary bypass pump decreased. During the grant period the overall mortality decreased from 3.12% to 2.33% and the death rate from low output decreased from 1.16% to 0.77%. Mode of Death was not available for all patients; this data will be updated when data collection is complete.



Conclusion: Preliminary data shows that this intervention was associated with a decrease of mortality from low output heart failure. This project may provide a reproducible model for regional quality improvement efforts in cardiac surgery.