D Burke 1; R Dwyer 2
1Beaumont Hospital, Intensive Care Unit, Dublin, Ireland, 2Beaumont Hospital, Beaumont Hospital, Dublin, Ireland

Introduction:
Outcomes in Intensive Care Units have been reported to be better in higher-volume Units(1,2). We compared outcomes for high-risk patients between low and higher volume units.

Methods:
Audit data from Irish ICUs is analysed and reported by the Intensive Care National Audit & Research Centre (ICNARC) in London. ICNARC report risk-adjusted mortality rates in all patients and in low-risk patients (predicted mortality rate <20%) for each Unit, using the ICNARCH-2015 model to predict the risk of death. We used this data to calculate the proportion of high-risk patients(predicted mortality >20%) in each Unit, the mortality rate for high-risk patients, the risk-adjusted mortality rate and we compared the overall risk-adjusted mortality between low and high volume units.

Results:
The median number of annual new-patient admissions among 18 participating Units was 390; units below this were defined as low-volume and those above as high-volume Units. The proportion of all admissions to each Unit who were high-risk ranged from 8% to 54%(mean 34%). Unit mortality rates for high-risk patients ranged from 33% to 69%. The ratio of observed to expected mortality(Standardised Mortality Ratio - SMR) for high risk admissions in each Unit ranged from 0.87 to 1.34(mean 1.07). In Fig. 1 Units are ordered 1 to 18 on the x axis according to increasing volume of admissions i.e. Unit 1 was smallest and Unit 18 largest. There was no definite relationship between volume of patients admitted to a Unit and SMR in high risk admissions. Larger units had more variability in SMR. The overall SMR for all high-risk patients in all low-volume Units was 1.07 versus 1.03 for all patients in all high-volume Units.

Conclusion:
There was no difference in mortality for high-risk patients between high-volume and low-volume Units.

References:
1 Pronovost et al. Organizational Characteristics of Intensive Care Units Related to Outcomes of Abdominal Aortic Surgery. JAMA. 1999
2 Kahn et al. Hospital Volume and the Outcomes of Mechanical Ventilation. NEJM 2006

Image:
Fig. 1: Risk Adjusted Mortality for High Risk Admissions