Introduction:
The aims of the project were to use the Medication based Disease Burden Index (MDBI) and drug counts to quantify comorbidity at ICU admission and assess how levels of comorbidity change during a stay in ICU and to assess how comorbidity affects long term survival after a stay in ICU. Pharmacy data offers an alternative method of quantifying comorbidity and the MDBI is one method of doing this that can predict mortality.

Methods:
Data was collected from patients admitted to Glasgow Royal Infirmary ICU between 01/01/14 to 31/12/15. Ethical approval was sought. This data was used to produce an MDBI score and a drug count before and after an ICU stay. Information on long term mortality was also collected. T tests were used to determine the difference in comorbidity levels pre and post ICU. Kaplan Meier curves were used to establish if comorbidity affects long term mortality. Logistic regression was used to determine which method of measuring comorbidity was better at predicting mortality.

Results:
A paired t test was performed on 437 patients that showed comorbidity increases after a stay in ICU, as measured by the MDBI and drug counts. Kaplan Meier curves demonstrated that as comorbidity increases, long term survival decreases. Survival time was calculated as time from ICU discharge date to the date of death or end of study (31/01/17). The hazard ratio for the high MDBI group was 1.89 when compared to the zero MDBI group. The hazard ratio for the high drug count group was 1.81 when compared to the zero drug count group. Cox proportional hazard models were performed and results remained significant after adjusting for age. Logistic regression showed that the MDBI was better at predicting long term mortality than drug counts.

Conclusion:
This study increases the ever-growing evidence that the MDBI is a useful predictive tool for quantifying comorbidity and predicting long term mortality. Further research is required to replicate its use in other populations, and potentially other specialities.