Introduction:
The objective was to establish a baseline, a cross-sectional health economic survey of recent Hospital-Acquired and Ventilator-Associated Pneumonia (HAP and VAP). Both HAP and VAP cause considerable health care costs, as well as significantly impacting patient outcomes. The UK-based INHALE research programme is exploring the use of rapid molecular diagnostics to improve the treatment of HAP/VAP patients by more swiftly identifying causative pathogens and their antibiotic resistances. Resulting changes to patient management and antibiotic use potentially have substantial resource implications, quantifying these is important.

Methods:
Patients, or their representatives, from 4 UK ICUs were approached for involvement if they were either i) starting a course of antibiotics or ii) having a change of antibiotics for the treatment of HAP or VAP. We collected information to allow estimates of: cost of ICU stay [length of stay (LOS) and related health resource group (HRG)]; acquisition cost (from the British National Formulary) of antibiotics used in the 21-days after recruitment; and quality of life (EuroQoL EQ-5D-5L) in those alive at 21-days.

Results:
N=143 patients were recruited. They had considerable ICU-associated LOS and hospital costs: their mean stay was 22 days and mean costs were GBP £43,100. Both LOS and costs were heavily right-skewed (most values are low but the remainder take large values). Compared with HAP, VAP caused greater LOS and ICU costs. Antibiotics themselves formed only a tiny fraction of total costs (mean 21-day cost was £321). A total of 43 people completed the EQ-5D-5L: a wide range of utilities resulted, ranging from 0.8 to -0.4 (with negatives indicating states valued worse than death).

Conclusion:
HAP, and particularly VAP, are associated with significant hospital costs. Interventions that could improve the care of individuals with HAP/VAP and reduce their LOS would significantly free up scarce ICU resources, allowing other patients to be treated.