

**P2369 A hospital perspective decision model to determine the clinical and economical effectiveness of the new Accelerate PHENO BC Kit**

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**Background:** Severe infections require early optimization of antibiotic therapy. Since 2016, pathogen identification (ID) and antibiotic susceptibility testing (AST) results with minimum inhibitory concentrations (MIC) direct from positive blood cultures (PBC) are available in approximately seven hours using the Accelerate Pheno™ system. The aim of this study was to develop a hospital model to calculate the clinical/economic effects of the new system.

**Materials/methods:** We conducted a literature search for initially inadequate antibiotic therapy (IIAT) and de-escalation of antibiotic therapy (DEAT) rates for sepsis and bloodstream infections (BSI). We then developed a model applicable to individual hospitals using data from either the literature search or results from internal case reviews.

We undertook a case review in a single tertiary hospital to validate the model. Sepsis and BSI cases were identified by ICD-10 coding and a representative sample was drawn for chart review by two independent reviewers. Criteria were IIAT or DEAT (yes/no) and the number of days potentially saved if results were available after 24 hours.

**Results:** The analysis of 14 studies (n=6,408 patients) showed an average weighted rate of 27.3% IIAT. Based on eight studies (n=2,988), an average weighted length of stay (LOS) savings of 4.7 days was determined with adequate initial therapy compared to IIAT. In the theoretical model, an average of €1,539/case could have been saved, with a possible 3.7-day reduction in LOS. An average of 40% of patients could have had DEAT, providing a 1.2-day reduction in LOS.

From 146 sepsis and BSI episodes with ICU stay, we drew a representative sample of 75 cases for chart review, 68% of which had a PBC. From those cases, 61% would have profited from early ID/AST. Of these, 60% had IIAT and 40% had DEAT. Overall, shortening ICU-LOS by 2 days was feasible using the Accelerate Pheno™ system for patients with positive blood cultures.

**Conclusions:** By focusing on IIAT and DEAT in sepsis/BSI, hospitals can evaluate clinical/economic benefits of early ID/AST through chart reviews. Currently, a proof-of-concept study is underway in the hospital.