Cost-Effectiveness of Penicillin Allergy Skin Testing in Methicillin-Sensitive Staphylococcus aureus (MSSA) Bacteremia

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Background

- **Staphylococcus aureus** is a leading cause of bacteremia that is associated with high mortality rates and represents a significant burden to the healthcare system.2
- Beta-lactams remain the gold standard for treatment of methicillin-sensitive staphylococcus aureus (MSSA) bacteremia due to superior outcomes compared to vancomycin3
- Approximately 9 in 10 patients receiving penicillin skin testing (PST) will be de-labeled of a penicillin allergy and able to receive a beta-lactam antibiotic4
- It is estimated only 1% of the general population is truly allergic to penicillin and that less than 10% of patients with penicillin allergy histories who received PST are found to be at risk for an acute allergy5

Aims

- Primary aim is to evaluate the cost-effectiveness of penicillin allergy confirmation during acute care admission for methicillin-sensitive staphylococcus aureus (MSSA) bacteremia through a PST service.

Methods

- A decision tree analysis was used to compare a PST intervention in patients with a registered penicillin allergy during an inpatient admission for MSSA bacteremia versus standard of care (No PST) (Figure 1 & Figure 2)
- The model was created from the health sector perspective with a 1-year time horizon
- Patients with a penicillin allergy label were expected to receive vancomycin while patients with no penicillin allergy were expected to receive cefazolin
- Potential inpatient, outpatient, and adverse reaction costs were considered in all arms of the model (Table 1)
- The effects were measured in quality adjusted life years (QALY) and were calculated for patients who were cured, hospitalized, experienced severe adverse events, or died from MSSA infection (Table 1)

Results

- **Penicillin Allergy Skin Test **
  - Standard of Care: 0.66, 15,219 DOMINATED*
  - Penicillin Allergy Skin Test: 0.73, 12,559

Conclusions

- Penicillin allergy confirmation through PST services was cost-effective for patients with a reported penicillin allergy admitted for MSSA bacteremia
- Sensitivity analyses could add to the certainty that PST services are cost-effective compared to standard of care
- Additional research to determine potential benefits of PST services beyond one year and in other disease states could further improve the cost-effectiveness of this intervention

References


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