Financial Implications of MRSA Screening in Hospitals

3632

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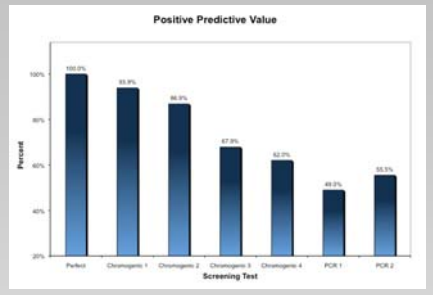
Background

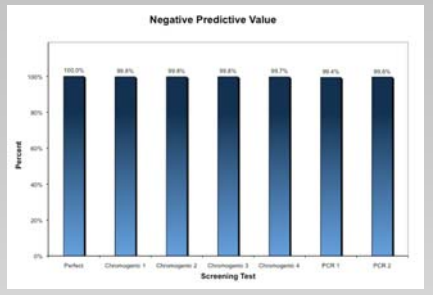
Patients are increasingly being admitted to hospitals colonized with Methicillin-resistant *Staphylococcus aureus (*MRSA). Many hospitals are evaluating methods to screen patients for MRSA upon admission. We sought to evaluate the economic implications of MRSA screening using different culture and polymerase chain reaction (PCR) methods.

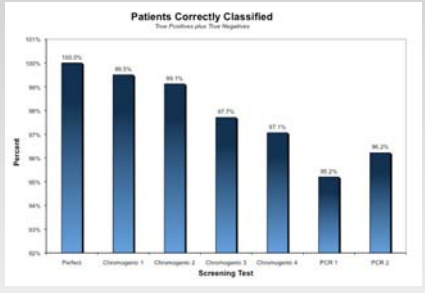
Methods

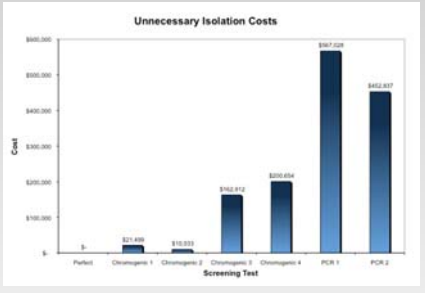
We used decision analysis to model MRSA screening using four chromogenic media (CM) and two PCR approaches with FDA clearance for detection of MRSA colonization from nasal specimens. The model estimated the cost and outcome implications of alternative methods of screening for MRSA in the hospital setting and took into account whether hospitals were prepared to act immediately upon screening results. Outcomes included correct classification, unnecessary isolation costs, and total costs. Sensitivity analysis tested main model parameters as well as a range of potential hospital populations.

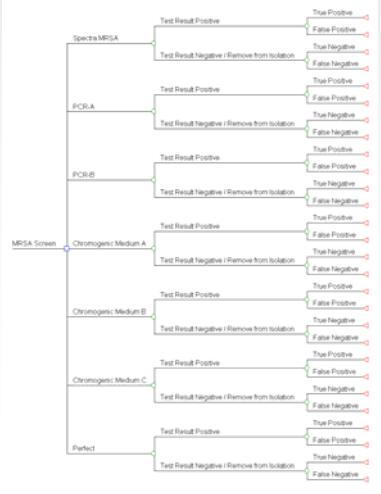
Baseline analysis assumed:
1) 4.6% colonization rate,
2) Only patients with a positive screen were isolated,
3) 18 hours passed before action was taken on screening results, and
4) No patients were decolonized
5) Cohort of 10,000 patients











Results

The CM approach was associated with the highest combined rates of correct classification (95.5%, 95.1%, 97.7%, and 97.1% for CM versus 96.2% and 95.2% for PCR) and positive predictive value (PPV) (93.9%, 86.9%, 67.9%, and 62.0% for CM and 49.0% and 55.5% for PCR).

CM was also associated with lower unnecessary isolation costs per patient than PCR ($2.15, $5.02, $16.29, and $20.07 for CM versus $56.70 and $44.72 for PCR).

In sensitivity analyses, PCR fared somewhat better when hospitals were staffed appropriately to allow for immediate action upon receipt of screening results and when all patients were isolated immediately upon admission and removed upon a negative screen, although unnecessary isolation costs remained high.

Conclusions

For hospitals considering a screening strategy for MRSA, a CM approach appears to offer the highest rates of PPV and correct classification leading to a significant reduction in overall unnecessary isolation costs when compared to PCR, under these baseline assumptions. Hospitals also need to weigh other factors such as how long it takes them to react to the MRSA screening results (time to action) and total isolation costs.

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