



Costs Associated with MRSA Screening in Hospitals: A Decision Analysis

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Background

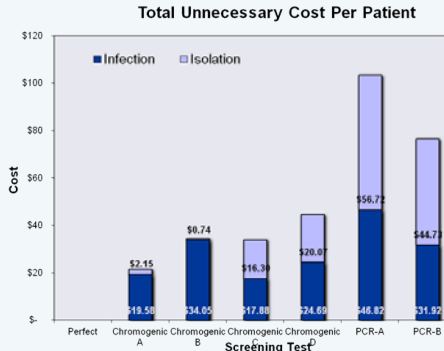
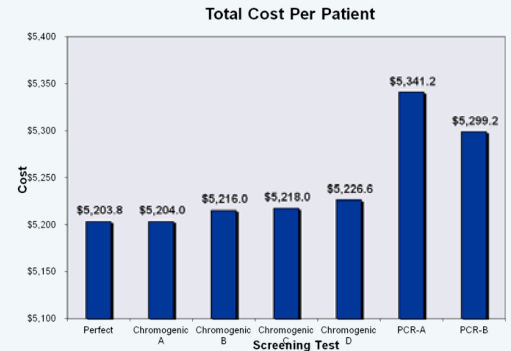
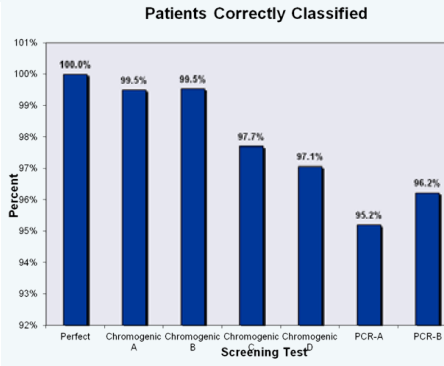
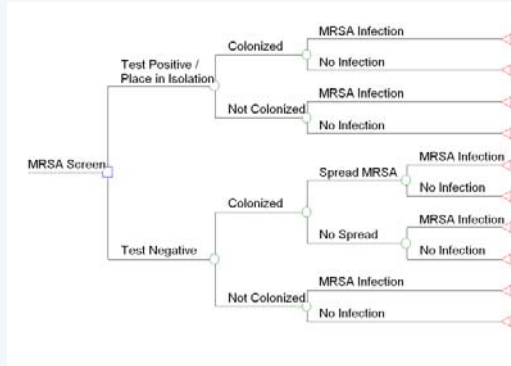
Many hospitals are evaluating methods to screen select patients for MRSA. Although previous work has modeled the financial implications of false positive MRSA screens (i.e. unnecessary isolation), it has not taken into account the spread of MRSA due to false negatives (i.e. MRSA spread). In this study we sought to evaluate the economic implications of MRSA screening using different culture and polymerase chain reaction (PCR) methods using a model that accounts for the cost of both false positives and false negatives.

Methods

Decision analysis was used to model MRSA screening using four chromogenic media (CM) and two PCR approaches. 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. Spread of MRSA was assumed to occur at a rate of 1.5 per unisolated patient. Outcomes included correct classification, unnecessary isolation costs due to false positives, and unnecessary infection costs due to false negatives. 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 positive screens were isolated
- 3) Reproductive rate of 1.5
- 4) 18 hours passed before action was taken on screening results
- 5) No patients were decolonized
- 6) Cohort of 10,000 patients

Results

The CM approach was associated with the highest rates of correct classification (95.5%, 95.54%, 97.71%, and 97.06% for CM versus 96.2% and 95.2% for PCR). CM was also associated with lower unnecessary isolation costs per patient than PCR (\$2.15, \$7.4, \$16.30, and \$20.07 for CM versus \$56.72 and \$44.73 for PCR) and lower unnecessary infection costs per patients than (\$19.6, \$34.1, \$17.9, and \$24.7 for CM and \$46.80 and \$31.90 for PCR). Total unnecessary costs were \$21.73, \$34.79, \$34.17, and \$44.76 for CM and \$103.54 and \$76.65 for PCR.

Conclusions

Taking into consideration the cost imposed by MRSA infections spread from false negative screens and excess isolation costs due to false positive screens, a CM approach appears to offer the lowest cost approach. This is largely driven by reduced costs for unnecessary infections.

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