

924. Clinical Decision Rule to Guide Use of Echocardiography in the Management of *Staphylococcus aureus* Bacteremia

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Session: 113. Infective Endocarditis: Epidemiology, Diagnosis, and Management
Friday, October 10, 2014: 12:30 PM

Background. Infective endocarditis (IE) is a serious complication of *Staphylococcus aureus* bacteremia (SAB) that is associated with high morbidity and mortality. There is limited evidence-based guidance on defining which patients with SAB should be screened with echocardiography.

Methods. Risk factors associated with IE in SAB patients were analyzed to identify independent predictors of endocarditis. Clinical data were retrospectively reviewed with follow-up (at least 3-month) data of all adults hospitalized at our institution with SAB from 2006 to 2011. IE was defined using modified Duke's Criteria.

Results. Of the 757 patients who were screened, 678 individuals with SAB (24% community-onset, 56% healthcare-associated and 20% nosocomial) met study criteria and were included in the analysis. A total of 85 patients (13%) were diagnosed with definite IE within the 12 weeks of initial presentation. Community onset of SAB, presence of implantable cardiac device, and sustained bacteremia (≥ 72 hours) were identified as independent predictors of SAB from multivariable logistic regression. Two decision rules (Day 1 [admission day] and Day 5 [when results of day 3 blood cultures are known]) were derived based on the presence of these risk factors, weighted in magnitude by the corresponding regression coefficients, and

summed together to define an individual's risk score (table). A score of <2 for Day 1 Rule had a sensitivity of 95.3% and negative predictive value (NPV) of 96.5% whereas a score of <2 for Day 5 Rule had a sensitivity of 98.8% and negative predictive value (NPV) of 98.5%.

Test Performance Characteristics of IE Clinical Risk Scores

| Risk Score | Sensitivity | Specificity | PPV | NPV |
|--------------------------------------|-------------|-------------|-------|-------|
| Day 1 Score \geq | | | | |
| High Risk 5 | 9.4% | 99.5% | 72.7% | 88.5% |
| ↑ 4 [^] | 21.2% | 95.6% | 40.9% | 89.4% |
| 3 | 35.3% | 92.4% | 40.0% | 90.9% |
| 2* | 64.7% | 70.2% | 23.7% | 93.3% |
| ↓ 1 | 95.3% | 18.4% | 14.3% | 96.5% |
| Low Risk 0 | 100% | 0.0% | 12.5% | - |
| Day 5 Score \geq | | | | |
| High Risk 7 | 7.2% | 99.7% | 75.0% | 88.2% |
| ↑ 6 | 19.3% | 97.9% | 57.1% | 89.4% |
| 5 | 30.1% | 96.7% | 56.8% | 90.6% |
| 4 | 54.2% | 83.1% | 31.5% | 92.7% |
| 3* | 86.7% | 59.2% | 23.4% | 96.9% |
| 2~ | 94.0% | 41.1% | 18.6% | 97.9% |
| ↓ 1 | 98.8% | 11.4% | 13.8% | 98.5% |
| Low Risk 0 | 100% | 0.0% | 12.5% | - |

Conclusion. We propose clinical decision rules that can accurately classify patients presenting with SAB into a low-risk group that can be managed without cardiac imaging. Larger prospective studies are needed to validate the classification performance of these decision rules.

Disclosures. All authors: No reported disclosures.