O501

Abstract (oral session)

**A clinical prediction rule of deep sternal wound infections after coronary artery bypass graft surgery: a population-based cohort study, 1993 to 2008**

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Objective: To develop a simple clinical prediction rule to determine the risk of deep sternal wound infection (DSWI) after coronary artery bypass graft (CABG) surgery. Methods: A population-based, cohort study of CABG patients was conducted in Olmsted County (OC), Minnesota, USA during a 16-year period from 1993 to 2008, using Rochester Epidemiology Project (REP). REP is a medical record linkage system that indexes the medical records from all individuals seen by a healthcare provider and residing in OC. We used criteria established by the Centers for Control and Prevention to ascertain the diagnosis of DSWI. Time period specific incidence rates (in-hospital or within 30 days out of hospital) were calculated. A score-based predictive model for DSWI was developed from the logistic regression model using a regression coefficient–based scoring method. To generate a simple integer-based point score for each predictor variable, scores were assigned by dividing beta coefficients by the absolute value of the smallest coefficient in the model and rounding to the nearest integer. The overall risk score was calculated by adding each component together. Discrimination of the model was assessed using the area under the receiver operator curve (AUC). We validated the prediction rule internally using the bootstrap method. Results: 1424 residents of OC underwent CABG surgery, of whom 1189 (84%) had isolated CABG and 235 (16%) had combined CABG and valve surgery. The incidence rate of DSWI 1.5% (95% CI 0.9%, 2.2%). We derived a model that includes 5 predictive variables: Intra-operative cryoprecipitate transfusion [odds ratios (OR) (95% CI); 7.28 (1.64, 32.36), and score coefficient=2], pre-operative statins use [OR=0.31 (0.10, 0.95), coefficient=-1], post operative RBC transfusion [OR=2.57 (1.04, 6.32), coefficient=1], use of skeletonization [OR=3.08 (1.19, 7.98), coefficient=1] and peripheral vascular disease [OR=5.52 (1.99, 15.33), coefficient=2]. AUC of the model=0.80 indicating a strong discriminative ability by the model. Predicted probabilities of DSWI for any possible score are shown in the table (Figure). Conclusion: In this first US population-based surveillance study of CABG patients, we derived a simple model to predict the risk of DSWI. Patients can be educated about this risk and potential interventions can be incorporated into treatment to diminish the proclivity for infection in high-risk patients.

| Scores | Predictive Probability of DSWI % | 95% Confidence Intervals | |
|---|---|---|---|
| | | *Lower%* | *Upper%* |
| -1 | 0.25% | 0.05% | 1.18% |
| 0 | 0.67% | 0.14% | 3.13% |
| 1 | 1.80% | 0.38% | 8.08% |
| 2 | 4.74% | 1.03% | 19.28% |
| 3 | 11.92% | 2.74% | 39.36% |
| 4 | 26.89% | 7.12% | 63.83% |
| 5 | 50.00% | 17.25% | 82.75% |
| 6 | 73.11% | 36.17% | 92.88% |