

## **Surgical site infection in abdominal trauma patients: risk prediction and performance of the NNIS and SENIC indexes**

**Background:** The National Nosocomial Infections Surveillance (NNIS) and Efficacy of Nosocomial Infection Control (SENIC) indexes are designed to develop control strategies and to reduce morbidity and mortality rates resulting from infections in surgical patients. We sought to assess the application of these indexes in patients undergoing surgery for abdominal trauma and to develop an alternative model to predict surgical site infections (SSIs).

**Methods:** We conducted a prospective cohort study between November 2000 and March 2002. The main outcome measure was SSIs. We evaluated the variables included in the NNIS and SENIC indexes and some preoperative, intraoperative and postoperative variables that could be risk factors related to the development of SSIs. We performed multivariate analyses using a forward logistic regression method. Finally, we assessed infection risk prediction, comparing the estimated probabilities with actual occurrence using the areas under the receiver operating characteristic (ROC) curves.

**Results:** Overall, 614 patients underwent an exploratory laparotomy. Of these, 85 (13.8%) experienced deep incisional and organ/intra-abdominal SSIs. The independent variables associated with this complication were an Abdominal Trauma Index score greater than 24, abdominal contamination and admission to the intensive care unit. We proposed a model for predicting deep incisional and organ/ intra-abdominal SSIs using these variables (alternative model). The areas under the ROC curves were compared using the estimated probabilities for this alternative model and for the NNIS and SENIC scores. The analysis revealed a greater area under the ROC curve for the alternative model. The NNIS and SENIC scores did not perform as well as the alternative model in patients with abdominal trauma.

**Conclusion:** The NNIS and SENIC indexes were inferior to the proposed alternative model for predicting SSIs in patients undergoing surgery for abdominal trauma.