

Estimates of the preventable proportion of intubator associated pneumonia: results of the Italian network SPIN-UTI

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In Europe, Intensive Care Unit (ICU)-acquired pneumonia occur in 7.0% of the patients staying more than 2 days in ICUs and 91% of cases are associated with invasive device. In the first three surveys (2006 - 2011) of the "Italian Nosocomial Infections Surveillance in ICUs network" (SPIN-UTI of the GISIO, SItI), the most frequently detected infection type was pneumonia and an increase in the Intubator Associated Pneumonia (IAP) rate was shown (Agodi et al., 2013). The proportion of IAP which is preventable is object of debate, IAP prevention is a major patient safety issue.

Objectives The objective of the present study was to estimate the preventable proportion of IAP in ICUs participating in the fourth edition of the SPIN-UTI project.

Reference

- Agodi A, Auxilia F, Barchitta M, Brusaferrero S, D'Alessandro D, Grillo OC, Montagna MT, Pasquarella C, Righi E, Tardivo S, Torregrossa V, Mura I, GISIO-SItI. Trends, risk factors and outcomes of health care associated infections within the Italian network SPIN-UTI. J Hosp Infect 2013; 84: 52-58.

Methods

Patient-based surveillance data were collected by the SPIN-UTI network, from October 2012 to July 2013, according to the ECDC HAIICU protocol for patient-based surveillance of ICU-acquired infections. Pneumonia was defined using a combination of clinical, radiological and microbiological criteria and was considered as IAP if invasive device was recorded on the day of the infection or one or two days before. In order to compute the preventable proportion of IAP, a reference ICU was defined as the top 10th (or 25th) percentile ranked ICU for the IAP incidence distribution. The expected number of IAP and the IAP incidences, that would be realized if ICUs with higher IAP incidences had the same infection incidence as the reference ICU, were estimated using standardization. The preventable proportion of IAP was calculated as observed cases minus expected case divided by observed cases.

Results

During the study period 3009 patients from 26 ICUs were enrolled. Overall, the percentage of patients who experienced IAP was 13.5 per 100 enrolled patients, IAP incidence was 16.6 per 100 intubated patients and IAP rate was 19.2 per 1000 intubator-days. ICUs reporting no IAP were excluded and thus, 1772 intubated patients from 23 ICUs were included in the final analysis. The 10th and the 25th percentile of IAP incidence distribution were 3.7 and 5.9 per 100 intubated patients, respectively. Using the 10th percentile, the preventable proportion of IAP was 0.82 (CI95%: 0.78-0.86) and using the 25th percentile was 0.77 (CI95%: 0.73-0.82).

Conclusion

The ECDC reported that approximately 20–30% of healthcare-associated infections are considered to be preventable by intensive hygiene and control programmes. In the present study, using patient-based surveillance data it has been estimated that, if the IAP rates of ICUs with higher infection rates could be reduced to that of the 10th or 25th percentile-ranked ICU, then about 82% or 77% of IAP cases could have been avoided. Implementation of preventive measures has become imperative, to ensure control and to reduce the incidence of IAP.

Preventable proportion of IAP:
using the 10th percentile, 82%
using the 25th percentile, 77%

Participating ICUs in the fourth edition of the SPIN-UTI project

