

Surgical site infections and quality of health care

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Objectives:

The goal of nosocomial infection surveillance is to reduce the number of infections and, in so doing, improve the quality of care. We asked whether surgical site infection (SSI) rates issued from surveillance programmes are indicators for quality of care and whether they can be used to compare hospital departments and health care facilities (HCFs).

Methods:

We examined the methods used to measure SSI rates and determined the limits on the interpretation of these rates in the light of the factors likely to influence them. Particular emphasis was given to SSI rates after cholecystectomy and total hip replacement (THR). We based our assessment on a critical review of the literature and expert opinion. We searched the Medline, Embase, Pascal and Cochrane databases (between 1990 and 2002) for consensus conferences, guidelines, systematic reviews, and clinical trials (in English or French). This search was completed by a search of the content pages of journals published during the last 6 months, references cited in the articles selected, the grey literature, relevant websites, as well as relevant documents issued by the Ministry of Health. Studies were selected according to their level of evidence and design quality (using review checklists). The report was submitted for comment and discussion to a working group of 15 experts and to 49 peer reviewers recruited from the relevant learned societies.

Results:

Among the 770 articles we analyzed, 209 met our selection criteria. The critical appraisal of these articles showed that variations in SSI rates depend on:

- data collection modalities: criteria and diagnostic methods used to define SSI, length of follow-up especially after hospital discharge;
- risk factors for SSI related to patients, surgical procedures, and environmental and/or administrative factors.

These factors, especially those related to data collection, might explain why higher SSI rates were recorded after cholecystectomy in clinical trials (1-25%) than in clinical research studies (2.5-14%) or during surveillance programmes based on voluntary reporting (1-2%). How criteria were defined, and whether superficial incision SSI were included or not, might also explain the wide variations found for SSI rates after THR in clinical studies (1-18%).

When interpreting and comparing infection rates, it is necessary to control the factors influencing data validity and comprehensiveness, and to take risk of infection into account, although some factors cannot easily be accounted for, such as those related to hospital structure, organisation of work and care. The main index reflecting risk of infection is the National Nosocomial Infections Surveillance (NNIS)-derived risk index which stratifies patients by ASA score, surgical wound class and duration of procedure. Its validity and reproducibility are not well established and it is not suited to all types of surgery. SSI rates, even stratified by the NNIS index, cannot therefore be used as indicators of quality of care for external comparisons.

Conclusions:

- To improve the quality of data from surveillance programmes: (1) Standardised and reproducible definitions are needed, (2) Monitoring methods should be comparable, particularly after a hospital discharge, (3) Results should be risk stratified.
- SSI rates issued from surveillance programmes based on voluntary reporting should be used with great caution as indicators to compare quality of care in HCFs. In particular, the external validity of all data collected should be assessed before any comparison.
- Epidemiological data need to be produced on a continuous basis to monitor SSI, perform research, implement initiatives for corrective and preventive action and generally improve quality of care.