Optimisation of perioperative procedural factors to reduce the risk of surgical site infection in patients undergoing surgery: a systematic review

P. Calò , F. Catena, D. Corsaro, L. Costantini, F. Falez, B. Moretti, V. Parrinello, E. Romanini, A. Spinarelli, G. Vaccaro, F. Venneri.

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Research questions

1. In patients undergoing surgery, what is the relationship between the features of surgical procedure sets [disposable vs. reusable] and the frequency of surgical site infections (SSI)?
2. During surgical procedures, how do the time frames of perioperative processes and operating theatre traffic vary in relation to the features of the procedure sets used (single use vs reusable)?
3. What is the impact of streamlining and optimising surgical procedure sets and their direct and indirect costs?

Based on the research questions, the panel looked for outcomes specific to reduction in SSI, procedure times, theatre flow traffic and costs associated with the interventions.

Methods

The researchers:

- Followed a documented (PRISMA) guideline for successfully executing a systematic review.
- Utilised a sufficient number of databases(5) given the research questions and defined their search strategy.
- Included their research flow diagram and provided transparent reporting of what articles they excluded and why.

Results

- Previous reviews on the subject (4)
- Primary studies (32)

Before reporting their own results, they reported on similar systematic reviews of the past so as to allow the reader to compare findings.

Key findings

Surgical Site Infections (SSI):

- 3 studies (colorectal, neuro-surgery, orthopedics) demonstrated evidence of surgical sets impacting SSI rates.

Surgical procedure set rationaliation and processing:

- 29 quality improvement projects were identified that looked at creating optimised surgical procedure sets for specific procedures. Since they are all Quality Improvement Programs (QIP), results are only relevant to the facilities where they are performed.
- However, collectively these QIPs demonstrate that customised surgical procedure sets could improve efficiency, improve satisfaction and sustainability, dependent on the facility (reduced waste and processing of unnecessary instruments).
- Customisation broadly reduced the size of the set and number of instruments, in some cases up to 70%.
- Dependent on location and service, perioperative preparation times and instrument processing times were significantly decreased. In one study a 25% reduction in OR cleaning time was found, while in another a 15% reduction in circulating nurse time (decreased instrument retrieval).

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