



Interventions for Surgical Site Infection Prevention Care Bundles in the Intraoperative Colorectal Surgery - a literature review

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Introduction:

Surgical Site Infections (SSIs) stand as one of the most common Healthcare Associated Infections (HAI), making up over 30% of all HAIs. These infections significantly escalate morbidity, lengthen hospital stays, and elevate readmission rates and healthcare costs [1-3]. Utilizing care bundles, especially during the intraoperative period, has proven to be effective in preventing SSIs across various types of surgery, including colorectal operations. Customized care bundles tailored for colorectal surgery have led to a noticeable reduction in infection rates. Systematic reviews and meta-analyses have validated the effectiveness of these care bundles, demonstrating a significant risk reduction in SSIs when compared with standard care [4, 5], with one study reporting a 40% reduction ($p < 0.001$) [5]. This underscores the importance of intraoperative interventions in minimizing the risk of surgical site infections and improving patient outcomes.

Objectives:

The objective of this review has been expanded to not only identify the specific interventions within each surgical site infection (SSI) prevention care bundle during the intraoperative period in colorectal surgery, but also to evaluate the effectiveness of these interventions in reducing SSI rates. Additionally, the review aims to assess the level of adherence to these interventions and identify barriers to compliance. By doing so, it seeks to provide a comprehensive understanding of how intraoperative care bundles contribute to SSI prevention, to improve patient outcomes, reduce healthcare costs, and enhance the quality of surgical care. This refined objective underscores the necessity for a detailed exploration of intervention strategies, their implementation challenges, and the potential for optimization in colorectal surgery.

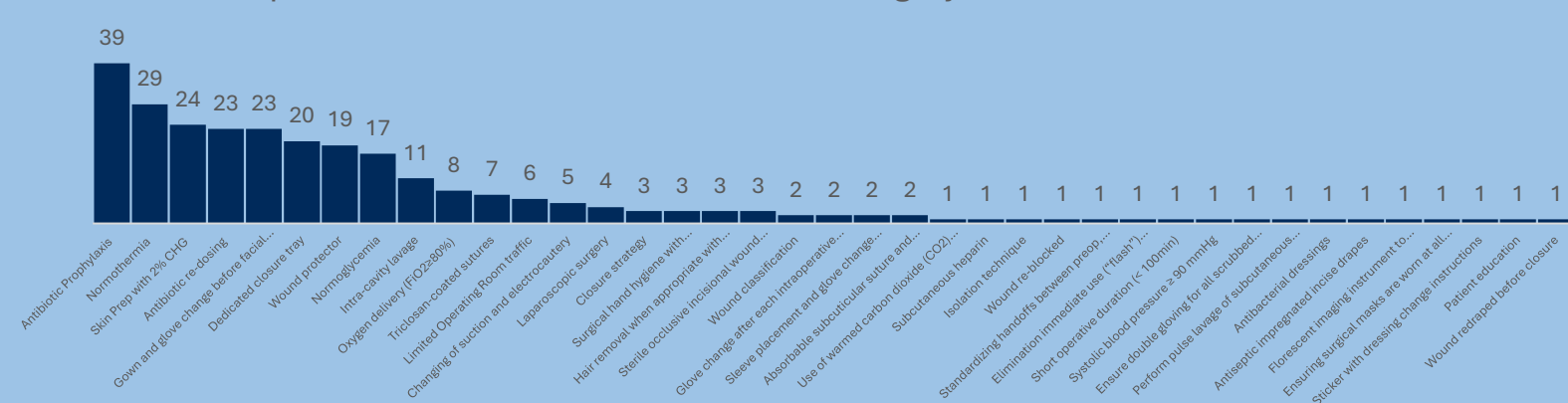
Materials and Methods:

In December 2022, a comprehensive literature review was conducted across several prominent databases, including PUBMED, CINAHL, Web of Science Core Collection, and Scopus. This approach was methodologically structured to systematically identify, evaluate, and synthesize all relevant studies on the topic under investigation. The search was meticulously designed to include a wide range of keywords and phrases related to the research question, ensuring a thorough coverage of the literature. The selection of these databases was strategic, aimed at capturing a broad spectrum of interdisciplinary research to provide a robust analysis of the findings. This methodology underscores the rigorous process of gathering and synthesizing evidence to inform and advance the field of study.

Results:

The literature review's database search culminated in retrieving of 164 studies, with 48 meeting the inclusion criteria for this review. These studies, spanning from 2011 to 2022, focus on surgical site infection (SSI) prevention in colorectal surgery, averaging eleven interventions per study. Key intraoperative interventions identified include tailored antibiotic prophylaxis, maintaining normothermia, chlorhexidine gluconate (CHG) skin preparation, antibiotic re-dosing, and changing gowns/gloves (Graph 1). Despite the adoption of these prevention care bundles, SSI rates in colorectal surgery remain elevated, signalling a pressing need for further investigation into the efficacy and optimization of these bundles to enhance compliance and effectiveness across all operative phases.

Intraoperative Interventions in Colorectal Surgery SSI Prevention Care Bundles



Conclusion:

Customized prevention care bundles have demonstrated efficacy in mitigating surgical site infection (SSI) rates within colorectal surgery, underscoring the critical nature of intraoperative management and the need to understand barriers to adherence. These findings suggest that well-designed and executed interventions can significantly reduce SSI rates, yielding substantial cost savings and enhancing the quality of care. Furthermore, aligning interventions with their specific perioperative phases could bolster compliance with SSI prevention care bundles. The persistent high rates of SSIs, despite these measures, highlight an urgent need for more comprehensive research in this area. Expanding the body of evidence on the effectiveness of prevention strategies and their implementation can facilitate the development of more refined, effective care bundles. This endeavour is crucial for advancing patient outcomes, optimizing surgical practices, and fostering a deeper understanding of factors influencing compliance and effectiveness in infection prevention.

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