What is the most effective surgical hand antisepsis for preventing surgical site infections? A systematic review

Z. Kubilay1, B. Zayed1, D. Pittet2, J. Solomkin3, B. Allegranzi1

1 WHO Infection Prevention and Control Global Unit, Service Delivery Safety, Geneva, Switzerland
2Infection Control Programme and WHO Collaborating Centre on Patient Safety, University Hospitals of Geneva, Geneva, Switzerland
3University of Cincinnati College of Medicine, Cincinnati, USA

Introduction

- Surgical hand antisepsis (SHA) immediately before donning sterile gloves is a cornerstone for the prevention of surgical site infections (SSIs).
- SHA products are meant to eliminate or significantly reduce the resident flora at the beginning of an operation and ideally, maintain the microbial release from the hands below baseline until the end of the procedure.
- SHA is usually performed by scrubbing hands with an antiseptic soap for 2-5 minutes.
- We conducted a systematic review to evaluate the evidence for using alcohol-based handrubs instead of scrubbing with soap for SHA.

Objectives

- To evaluate the effectiveness of surgical handrubbing with alcohol-based solutions (ABHR) compared to handscrubbing with either antimicrobial or plain soap in reducing SSI.
- To determine acceptable alcohol concentration and acceptable application time.
- To assess the cost effectiveness of using ABHR compared to handscrubbing.
- To describe the methods, products, technique and duration of SHA with SSI as the primary outcome.
- To compare the results of RCTs and observational studies.
- To summarize the evidence for the new World Health Organization (WHO) guidelines for SSI prevention

Methods

- Databases searched: PubMed, EMBASE, CINAHL, Cochrane Central Register of Controlled Trials (CENTRAL), WHO Global Health Library
- Time limit: 1990-2014
- Language: English, Spanish, French
- Review: Two independent reviewers screened the titles and abstracts of retrieved references, extracted data in a predefined evidence table and critically appraised the retrieved studies.
- Quality assessment: using the Cochrane Collaboration tool to assess the risk of bias of randomized control trials (RCTs) and the Newcastle Ottawa Quality Assessment Scale for cohort studies.

Results and Conclusions

- Of 1744 titles identified by the search, 64 papers were included, with either SSI or participants' hand microbial colonization as an outcome (see Flowchart below).
- Six trials compared ABHR to handscrubbing with an antimicrobial soap containing either 4% povidone iodine or 4% chlorhexidine gluconate showed no significant difference in SSI.
- The same result was found in a cluster randomized cross over trial comparing ABHR to handscrubbing with plain soap.
- Fifty eight studies were conducted either in laboratory or hospital settings and evaluated SSI as the primary outcome.
- Of these studies, 17 compared ABHR vs. handscrubbing. Eight were RCTs and showed heterogeneous results, at variable times of the sampling (i.e. immediate effect, sustainable effect).
- Most of the studies conducted in hospital settings showed no significant difference, whereas two RCTs in the laboratory setting showed that handrubbing was more effective than handscrubbing.
- Moderate quality of evidence from three RCTs showed equivalence of ABHR and handscrubbing in preventing SSI.
- However, the overall evidence remains extremely limited; well designed RCTs comparing efficacy of products, technique and duration of SHA with SSI as the primary outcome are warranted.
- Surgical teams preference for ABHR is attributable to higher tolerability and acceptability generally due to less time needed to prepare and fewer skin reactions.

Conclusions

References:


© World Health Organization 2016

Contact Information

Benedetta Allegranzi
World Health Organization
20 Avenue Appia
1211 Geneva, Switzerland
Tel: +41227912689
allegranzib@who.int