TITLE: Alcohol and Non-Alcohol-Based Hand Sanitizers: Clinical-Effectiveness and Safety

DATE: 18 August 2009

RESEARCH QUESTIONS:

1. What is the safety of alcohol-based hand sanitizers when ingested?

2. What is the clinical-effectiveness of non-liquid preparations of alcohol-based hand sanitizers?

3. What is the clinical-effectiveness of non-alcohol-based hand sanitizers?

METHODS:

A limited literature search was conducted on key health technology assessment resources, including PubMed, the Cochrane Library (Issue 3, 2009), University of York Centre for Reviews and Dissemination (CRD) databases, ECRI, EuroScan, international health technology agencies, and a focused Internet search. The search was limited to English language articles published between 2004 and August 2009. Filters were applied to limit the retrieval to health technology assessments, systematic reviews, meta-analyses, randomized controlled trials, clinical controlled trials, and observational studies containing safety data. Internet links are provided, where available.

The summary of findings was prepared from the abstracts of the relevant information. Please note that data contained in abstracts may not always be an accurate reflection of the data contained within the full article.

RESULTS:

The literature search identified one systematic review that compared the clinical-effectiveness of a non-alcohol-based hand sanitizer (benzalkonium chloride) to other hand hygiene products; one meta-analysis that included alcohol wipes in its clinical-effectiveness comparison; and one

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controlled clinical trial that compared alcohol handwipes to other hand hygiene products. No health technology assessments or randomized controlled trials were identified. No evidence-based studies were identified on the safety of alcohol-based hand sanitizers if ingested. Additional articles of potential interest are included in the appendix.

HTIS reports are organized so that the higher quality evidence is presented first. Therefore, health technology assessment reports, systematic reviews, and meta-analyses are presented first. These are followed by randomized controlled trials, controlled clinical trials, and observational studies.

OVERALL SUMMARY OF FINDINGS:

The meta-analysis by Aiello et al. (2008)\(^1\) included two studies on the clinical-effectiveness of a benzalkonium chloride-based hand sanitizer. They found that its use reduced illness rates by 42\% for gastrointestinal illness, 40\% for respiratory illness, and 41\% for combined illnesses. The systematic review by Larmer et al. (2008)\(^2\) compared various hand hygiene sanitizers with tap water or tap water plus non-antibacterial soap. They found that alcohol wipes containing 30\% ethanol were no more effective than plain soap. The controlled clinical trial by Sickbert-Bennett et al. (2005)\(^3\) tested 14 hand hygiene agents against two different organisms. They found that alcohol-based handwipes were significantly inferior to the other agents, including alcohol-based handrubs, tap water alone, and tap water plus non-antibacterial soap, in reducing levels of the organisms on human skin.

In conclusion, there is a paucity of evidence-based studies relating to the clinical-effectiveness of non-alcohol-based hand hygiene sanitizers and alcohol-based handwipes. However, the available evidence suggests that handwipes are inferior to other hand sanitizers, but benzalkonium chloride-based hand sanitizers are clinically effective in reducing gastrointestinal and respiratory illness rates. No evidence-based studies were found regarding the safety of alcohol-based hand sanitizer ingestion.
REFERENCES SUMMARIZED:

Health technology assessments
No literature identified

Systematic reviews and meta-analyses

   Full text available: [http://fhs.mcmaster.ca/ceb/community_medicine_page/docs/Effect%20of%20hand%20hygiene%5B1%5D.pdf](http://fhs.mcmaster.ca/ceb/community_medicine_page/docs/Effect%20of%20hand%20hygiene%5B1%5D.pdf) (accessed 2009 Aug 18)


Randomized controlled trials
No literature identified

Controlled clinical trials


Observational studies (safety only)
No literature identified

PREPARED BY:
Karen Cimon, Research Assistant
Emmanuel Nkansah, MLS, MA, Information Specialist
Health Technology Inquiry Service
Email: [htis@cadth.ca](mailto:htis@cadth.ca)
Tel: 1-866-898-8439
APPENDIX – FURTHER INFORMATION:

Observational studies


Additional references