



Canadian Agency for  
Drugs and Technologies  
in Health

## RAPID RESPONSE REPORT: SUMMARY OF ABSTRACTS



**TITLE: Optimal In-Hospital Umbilical Cord Care for Newborns: Clinical Evidence and Guidelines**

**DATE:** 11 July 2013

### RESEARCH QUESTIONS

1. What is the clinical evidence regarding optimal in-hospital umbilical cord cleaning and care to prevent infections in newborns?
2. What are the evidence-based guidelines regarding optimal in-hospital umbilical cord care for newborns?

### KEY MESSAGE

Two systematic reviews, two randomized controlled trials, and two non-randomized studies were identified regarding optimal in-hospital umbilical cord cleaning and care to prevent infections in newborns. No relevant evidence-based guidelines were identified.

### METHODS

A limited literature search was conducted on key resources including PubMed, The Cochrane Library (2013, Issue 6), University of York Centre for Reviews and Dissemination (CRD) databases, Canadian and major international health technology agencies, as well as a focused Internet search. No filters were applied to limit the retrieval by study type. Where possible, retrieval was limited to the human population. The search was also limited to English language documents published between January 1, 2003 and June 28, 2013. Internet links were 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.

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## RESULTS

Rapid Response 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, non-randomized studies, and evidence-based guidelines.

Two systematic reviews, two randomized controlled trials, and two non-randomized studies were identified regarding optimal in-hospital umbilical cord cleaning and care to prevent infections in newborns. No relevant health technology assessment reports or evidence-based guidelines were included. Trials pertaining to low or middle income countries were not included in this report. Additional references of potential interest are provided in the appendix.

## OVERALL SUMMARY OF FINDINGS

Overall, evidence from two systematic reviews<sup>1,2</sup>, and one non-randomized study<sup>6</sup> suggested that antibacterial treatments are not superior to dry cord care for the prevention of umbilical cord infections or bacterial colonization in newborns living in developed countries. The included randomized study that compared dry cord care with antibacterial treatment, with triple dye and alcohol, found higher instances of bacterial colonization in the dry cord group.<sup>4</sup> The addition of chlorhexidine to an alcohol swab regimen may be more effective in preventing infections,<sup>3</sup> and the addition of alcohol to triple dye application was likely unnecessary.<sup>5</sup> Further detail is provided in Table 1. No relevant evidence-based guidelines were identified.

**Table 1: Details of Included Studies**

Author, Study Year; Study Objective	Intervention and Comparator	Study Results	Author Conclusions
<i>Systematic Reviews and Meta-Analyses</i>			
Imdad et al., 2013 <sup>1</sup>  To determine the effect of umbilical cord care with antimicrobials.	Antimicrobials versus usual care	31 studies examined in-hospital care; no data regarding tetanus and mortality were reported.  Antiseptics were not superior to dry cord care for the reduction of omphalitis.  Alcohol or triple dye were not advantageous in preventing streptococcus.  Triple dye resulted in a reduction in <i>S. aureus</i> colonization compared with dry cord care or alcohol.  Alcohol resulted in a reduction in <i>E. coli</i>	Authors concluded there was insufficient evidence to support the use of antimicrobials or antiseptics when compared with dry cord care in hospitals in developed countries.

**Table 1: Details of Included Studies**

Author, Study Year; Study Objective	Intervention and Comparator	Study Results	Author Conclusions
		colonization compared with dry cord care and triple dye increased the risk of <i>E. coli</i> colonization compared with alcohol.	
Zupan et al., 2004; <sup>2</sup> To evaluate methods of topical umbilical cord care.	Topical cord care versus no topical care	21 studies, 8959 participants; majority from high income countries.  No systemic infections or death; no differences in infection rates between cords treated with antiseptics compared with placebo or dry cord care.	Authors concluded that there was limited research available and that antibiotics or antiseptics were not advantageous over keeping umbilical cords clean.
<i>Randomized Controlled Trials</i>			
Oishi et al., 2004; <sup>3</sup> Compare methods of umbilical cord care.	80% ethanol with (n = 48) or without (n = 52) 0.5% CHD.	<i>S. aureus</i> present in 25% of those treated with ethanol plus CHD; 57.7% in the ethanol alone group.	Authors concluded that cord care with 80% ethanol plus 0.5% CHD was more effective than 80% alcohol alone.
Janssen et al., 2003; <sup>4</sup> Compare antibacterial cleaning versus dry umbilical cord care.	2 applications of triple dye plus alcohol swabbing 2 times a day (n = 384); dry cord care (spot cleaning soiled skin) (n = 282)	One instance of omphalitis in the dry cord care group.  Colonization with <i>E. coli</i> , coagulase-negative <i>staphylococci</i> , <i>S. aureus</i> , or group B <i>streptococci</i> was more likely in the dry cord care group versus the antibacterial group.	Authors concluded that omphalitis remained an important issue that must be monitored for if antibacterial treatments end.
<i>Non-Randomized Studies</i>			
Suliman et al., 2010; <sup>5</sup> Compare methods of antibacterial umbilical cord care	Triple dye versus triple dye plus alcohol  (no n reported in the abstract)	90 completed the study  No significant differences in the need for cord-related urgent care or for cord morbidities.	Authors concluded that there likely wasn't a need for the addition of alcohol to triple dye application.
Shoaeib et al., 2005; <sup>6</sup> To compare methods of cord care	Alcohol and "traditional" methods versus no treatment/natural drying. (definition of traditional methods not given in abstract)	70 participants  Bacterial colonization was significantly higher in the alcohol-treated group.	Authors concluded that nurses could advocate for the no treatment/natural drying approach to cord care.

**Table 1: Details of Included Studies**

Author, Study Year; Study Objective	Intervention and Comparator	Study Results	Author Conclusions
		Incidence of cord infection was significantly lower in the no treatment/natural drying group.	

CHD = chlorhexidine; n = number of participants in the group

## REFERENCES SUMMARIZED

### Health Technology Assessments

No literature identified.

### Systematic Reviews and Meta-analyses

1. Imdad A, Bautista RM, Senen KA, Uy ME, Mantaring Iii JB, Bhutta ZA. Umbilical cord antiseptics for preventing sepsis and death among newborns. *Cochrane Database Syst Rev.* 2013;5:CD008635.  
[PubMed: PM23728678](#)
2. Zupan J, Garner P, Omari AA. Topical umbilical cord care at birth. *Cochrane Database Syst Rev.* 2004;(3):CD001057.  
[PubMed: PM15266437](#)

### Randomized Controlled Trials

3. Oishi T, Iwata S, Nonoyama M, Tsuji A, Sunakawa K. Double-blind comparative study on the care of the neonatal umbilical cord using 80% ethanol with or without chlorhexidine. *J Hosp Infect.* 2004 Sep;58(1):34-7.  
[PubMed: PM15350711](#)
4. Janssen PA, Selwood BL, Dobson SR, Peacock D, Thiessen PN. To dye or not to dye: a randomized, clinical trial of a triple dye/alcohol regime versus dry cord care. *Pediatrics.* 2003 Jan;111(1):15-20.  
[PubMed: PM12509548](#)

### Non-Randomized Studies

5. Suliman AK, Watts H, Beiler J, King TS, Khan S, Carnuccio M, et al. Triple dye plus rubbing alcohol versus triple dye alone for umbilical cord care. *Clin Pediatr (Phila).* 2010 Jan;49(1):45-8.  
[PubMed: PM20034947](#)
6. Shoaib FM, Ali SA, El-Barrawy MA. Alcohol or traditional methods versus natural drying for newborn's cord care. *J Egypt Public Health Assoc.* 2005;80(1-2):169-201.  
[PubMed: PM16922152](#)

### Guidelines and Recommendations

No literature identified.

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**APPENDIX – FURTHER INFORMATION:**

**Clinical Guidelines – Rigour of Methods Unknown**

7. Rathwell A. Umbilical care [Internet]. In: Great Ormand Street Hospital for Children. London: Great Ormand Street Hospital for Children NHS Foundation Trust; 2011 [cited 2013 Jul 8]. Available from: [http://www.qosh.nhs.uk/health-professionals/clinical-guidelines/umbilical-care/#References?\\_utma=1.295927953.1372446351.1372446351.1372446351.1&\\_utmz=1.2.9.1372447069622&\\_utmc=1&\\_utmx=-&\\_utmz=1.1372446351.1.1.utmcsr=tripdatabase.com|utmccn=%28referral%29|utmcmd=referral|utmct=/search&\\_utmv=-&\\_utmz=247098116](http://www.qosh.nhs.uk/health-professionals/clinical-guidelines/umbilical-care/#References?_utma=1.295927953.1372446351.1372446351.1372446351.1&_utmz=1.2.9.1372447069622&_utmc=1&_utmx=-&_utmz=1.1372446351.1.1.utmcsr=tripdatabase.com|utmccn=%28referral%29|utmcmd=referral|utmct=/search&_utmv=-&_utmz=247098116)

**Out-of-hospital Studies**

8. Kapellen TM, Gebauer CM, Brosteanu O, Labitzke B, Vogtmann C, Kiess W. Higher rate of cord-related adverse events in neonates with dry umbilical cord care compared to chlorhexidine powder. Results of a randomized controlled study to compare efficacy and safety of chlorhexidine powder versus dry care in umbilical cord care of the newborn. *Neonatology*. 2009;96(1):13-8.  
[PubMed: PM19202343](#)

**Umbilical Cord Care in Preterm Infants**

9. Evens K, George J, Angst D, Schweig L. Does umbilical cord care in preterm infants influence cord bacterial colonization or detachment? *J Perinatol*. 2004 Feb;24(2):100-4.  
[PubMed: PM14762447](#)
10. Pezzati M, Rossi S, Tronchin M, Dani C, Filippi L, Rubaltelli FF. Umbilical cord care in premature infants: the effect of two different cord-care regimens (salicylic sugar powder vs chlorhexidine) on cord separation time and other outcomes. *Pediatrics*. 2003 Oct;112(4):e275.  
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**Additional References**

11. Whitmore JM. Newborn umbilical cord care: an evidence based quality improvement project [theses on the Internet]. San Francisco: University of San Francisco; 2010 Jan 1. Doctor of Nursing Practice (DNP) Projects. [cited 2013 Jul 8]. Available from: <http://repository.usfca.edu/cgi/viewcontent.cgi?article=1006&context=dnpp>
12. Simon NP, Simon MW. Changes in newborn bathing practices may increase the risk for omphalitis. *Clin Pediatr (Phila)*. 2004 Oct;43(8):763-7.  
[PubMed: PM15494885](#)