

## **Newborn Guideline 10**

### **CARE OF THE UMBILICAL CORD**

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The following guideline is based on the World Health Organization 1999 review of the evidence on care of the umbilical cord.

#### ***INTRODUCTION***

Preventative umbilical cord treatments intended to reduce colonization and cross infection were introduced in the 1950's and 60's when there were high infection rates in nurseries. Since then, the practice of rooming-in has reduced the rate of infection in hospitals<sup>1</sup>. However, in developed countries individual cases and epidemics of umbilical cord infections continue to occur, even in supposedly aseptic nurseries for newborns<sup>2</sup>.

Bleeding from the cord stump, although more rare than infection, can rapidly be fatal. However, bleeding can be effectively prevented by tight tying or clamping of the cord and by prevention of infection.

#### ***PATHOPHYSIOLOGY AND INFECTION RISK FACTORS***

The instrument used to cut the cord at birth cuts through living tissue and vessels that are still connected to the infant's blood stream. The instrument therefore, needs to be sterile to avoid infection.

When the cord is cut, the cord stump is suddenly deprived of its blood supply. The stump soon starts to dry and turns black and stiff (dry gangrene). Drying and separation of the stump is facilitated by exposure to air. The devitalized tissue of the cord stump can be an excellent medium for bacterial growth, especially if the stump is kept moist and unclean substances are applied to it. The umbilical stump is a common means of entry for systemic infection in the newborn infant. Keeping the stump clean and dry is therefore very important if infection is to be prevented.

The umbilicus is colonized by bacteria from environmental sources. In hospital, *S. aureus* is the most common colonizing organism and is acquired mostly from the hands of hospital personnel. The factors that cause colonization of the cord stump to progress to infection are poorly understood. Other common organisms causing cord infections in hospitals are *E. coli* and group B streptococci.

Separation of the umbilical cord stump occurs by inflammation of the junction of the cord and the skin of the abdomen. During the normal process of separation, small amounts of cloudy mucoid material may collect at that junction; this may be misinterpreted as pus and the cord may appear moist, sticky or smelly. The cord normally falls off between 5 and 15 days after birth. Factors that delay this process are the application of antiseptics to the stump, infection and caesarean section.

After the cord separates, the umbilicus continues to emit small amounts of mucoid material until complete healing takes place, usually a few days after separation. During this time the umbilicus is still susceptible to infections.

### **FREQUENCY OF CORD INFECTIONS<sup>3</sup>**

The risk of umbilical infection has been reduced as a result of earlier postpartum discharge from hospital.<sup>4</sup> The exact incidence of cord infections is unknown, but omphalitis is very rare in developed countries.<sup>5</sup> The frequency of umbilical cord infections may be under-reported as babies may be discharged early from hospital and not followed up at home. The greatest period of risk for umbilical stump colonization is the first three days of life. Risk decreases with time as the umbilical wound heals and the stump separates.

### **SIGNS AND SYMPTOMS OF INFECTION<sup>6</sup>**

Signs of inflammation (erythema, edema, tenderness) of the tissues surrounding the cord support the diagnosis of omphalitis. As infection delays or prevents obliteration of the vessels, umbilical bleeding is a common sequel. There may also be a purulent discharge from the stump. However, no data are available on the predictive value, sensitivity or specificity of these signs for umbilical infection. Associated signs such as fever, lethargy and poor feeding suggest systemic complication. In many instances, the diagnosis of cord infection is uncertain. In a normal drying process the cord may appear unusually moist and odorous with or without discharge, but with no other signs. The challenge for the caregiver is to be able to differentiate between the normal process and infection.

### **CORD CARE**

#### **I. USE OF AGENTS ON THE CORD STUMP**

Recent evidence indicates that rubbing alcohol does not promote drying, is less effective against bacteria than other antimicrobials, and delays cord separation time.<sup>7,8,9</sup> The relative values of triple dye, bacitracin ointment, alcohol, and natural drying vis-à-vis cord care are not clear enough to allow for a single recommendation to be made.<sup>10,11</sup> The Cochrane Database of Systematic Reviews concluded that “we are unable to be sure what is best practice for cord care in institutions in developed countries” but there is no evidence that doing anything other than keeping the cord clean is helpful.<sup>12</sup>

#### **II. CORD CARE RECOMMENDATIONS**

Few interventions for cord care have been evaluated by randomized controlled trials<sup>13</sup>. From the available evidence the following is recommended for cord care:<sup>14,15</sup>

- Wash hands with soap and water before and after contact with the umbilical area
- The umbilical cord should initially be cut with a sterile instrument
- **Keep the cord clean and dry.** Water on a cotton swab may be used to clean gently around the base of the cord (alcohol swabs are not recommended).
- Expose cord to air or cover loosely with clean clothes
- Fold diaper below the level of the umbilicus

- Avoid buttons, coins, bandages or binders over the navel
- In health care facilities, any agents used to clean the infant's skin or cord should be single-use, thereby preventing cross-contamination with other babies
- Practice 24-hour rooming-in particularly in health care facilities
- Encourage skin-to-skin contact with the mother to promote colonization with non-pathogenic bacteria from the mother's skin flora
- Support early and frequent breastfeeding which provides the newborn with antibodies to help fight infections

### III. PARENT TEACHING

Parents should be taught:

- **The principles of cord care before discharge.**
- **To not apply any substances to the cord at home .**
- **To seek medical attention if there are signs of swelling or redness in the periumbilical region extending beyond 5 mm from the umbilicus. Urgent medical care is needed if these signs are accompanied by signs of systemic illness such as fever, lethargy and/or poor feeding<sup>16</sup>**

### **REFERENCES**

1. Barclay, L., Harrington, A., Conroy, R., Royal, R. & Laforgia, J. (1994). A comparative study of neonates' umbilical cord management. The Australian Journal of Advanced Nursing, 11(3), 34-40.
2. World Health Organization. (1999). Care of the Umbilical Cord: A Review of the Evidence. Geneva: Author.
3. World Health Organization. (1999). Care of the Umbilical Cord: A Review of the Evidence. Geneva: Author.
4. Medves, J. & O'Brian, B. (1997). Cleaning solutions and bacterial colonization in promoting healing and early separation of the umbilical cord in health newborns. Canadian Journal of Public Health, 88(6), 380-82.
5. Medves, J. & O'Brian, B. (1997). Cleaning solutions and bacterial colonization in promoting healing and early separation of the umbilical cord in health newborns. Canadian Journal of Public Health, 88(6), 380-82.
6. World Health Organization. (1999). Care of the Umbilical Cord: A Review of the Evidence. Geneva: Author.
7. World Health Organization. (1999). Care of the Umbilical Cord: A Review of the Evidence. Geneva: Author.

8. Dore, S., Buchan, D., Coulas, S., Hamber, L., Stewart, M., Cowan, D. & Jamieson, L. (1998). Alcohol versus natural drying for newborn cord care. JOGNN, 27(6), 621-27.
9. Medves, J. & O'Brian, B. (1997). Cleaning solutions and bacterial colonization in promoting healing and early separation of the umbilical cord in health newborns. Canadian Journal of Public Health, 88(6), 380-82.
10. Health Canada. (2000). Family-Centred Maternity and Newborn Care: National Guidelines. Ottawa: Minister of Public Works and Government Services.
11. Walker, R. (1999). Care of the umbilical cord after birth: A limited review of recent literature. Paediatr Child Health, 4(2), 105-107.
12. Zupan, J. & Garner, P. (1999). Topical umbilical cord care at birth. The Cochrane Database of Systematic Review: The Cochrane Library, Volume (4).
13. Zupan, J. & Garner, P. (1999). Topical umbilical cord care at birth. The Cochrane Database of Systematic Review: The Cochrane Library, Volume (4).
14. World Health Organization. (1999). Care of the Umbilical Cord: A Review of the Evidence. Geneva: Author.
15. Health Canada. (2000). Family-Centred Maternity and Newborn Care: National Guidelines. Ottawa: Minister of Public Works and Government Services.
16. BC Women's and Children's Health Centre & Vancouver Richmond Health Board (2000 – unpublished policy). Cord Care Study. Vancouver, Author.

\* The document Care of the Umbilical Cord: a Review of the Evidence. WHO (1999) can be found on the Internet at: [www.who.int/rht/documents/MSM98-4/MSM-98-4.htm](http://www.who.int/rht/documents/MSM98-4/MSM-98-4.htm)