Children's Health Ireland

Crumlin | Temple Street | Tallaght | Connolly

CHILDRENS HEALTH IRELAND NURSING PRACTICE GUIDLEINE on

UMBILICAL CORD CARE

Area of use:	All of organisation ☒	CHI at Connolly ☐	CHI at Crumlin ☐
		CHI at Tallaght ☐	CHI at Temple Street ☐
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Approved by & title:	Nursing Documentation Approval Committee		
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Contents

1.0 Introduction

The Umbilical Cord plays an essential part in foetal development connecting the growing foetus to the mothers placenta. It supplies nutrients and oxygen needed for growth and carries away metabolic waste and carbon dioxide (Coyne et al 2010).

At birth the cord is clamped to prevent bleeding and then cut using a sterile technique. For the first few days after birth the vessels in the cord (two arteries and a vein) remain patent and can be cannulated in case of need for intravascular access. Inappropriate umbilical cord care can increase the risk of umbilical cord infections, for this reason its care is dependent on the quality of care at delivery and post natally (Palazzi *et al* 2015).

2.0 Definition of Umbilical Cord Care after Birth

The process of normal cord separation involves the stump turning from yellowish/green to brown/black with some moistness, a 'mucky/sticky' appearance, raw and/or an odour remaining for a day or two before becoming hard and drying out (Johnston *et al* 2003). These signs do not necessarily indicate infection, however, the necrotic tissue of the umbilical cord remains an excellent medium for bacterial growth from the material of the genital tract and/or from the environment, all of which is in close proximity to the umbilical vessels. Umbilical cord care is carried out from birth until the stump separates as it dries out and eventually falls off (Ball *et a*l 2011). This occurs within approximately the first 10 to 15 days of life, with the time being influenced by the method of care used (Leifer 2015).

3.0 Definitions and Terms

Umbilical Cord
The umbilical cord connects the developing fetus to the mother through the placenta from six weeks gestation until birth, by supplying the developing fetus with oxygen, and nutrition, and a means of waste elimination while in the womb (WHO 2022, Hernandez & Hernandez 2005, Leifer 2015). The umbilical cord is made up of blood vessels (2 arteries and 1 vein), covered by a mucoid connective tissue called Wharton's Jelly and a thin mucous membrane, which is bathed in amniotic fluid (Leifer 2015).

Umbilical Cord Care
After birth, the umbilical cord is clamped, appearing a bluish/ white colour and moist, it is then cut at approximately 2-4cm from the infants' abdominal wall to avoid pinching the skin and clamping a portion of the gut and to occlude the umbilical vessels (NasorTaha 2013). The remaining umbilical stump should be classified as a healing wound and cared for in order to prevent bleeding, and reduce the risk of infection (WHO 1998, Mullany et al 2006, Hockenberry and Wilson 2013).

4.0 Applicable to

All nursing staff employed by CHI that are involved in the umbilical cord care of infants

5.0 Objectives of the Guidelines

- To standardise the umbilical cord care of infants
- To ensure and maintain that patients safely receive umbilical cord care
- To ensure research based knowledge underpins nursing practice

6.0 Indications for Umbilical Cord Care

The principle of clean and dry cord care for newborn infants is recommended by WHO (1998) and NICE (2021). However, umbilical cord treatments vary from, isopropyl alcohol, povidone-iodine (betadine), antibiotic/antimicrobial ointments, triple dye, chlorhexidine, soap and water, breast milk, to no treatment at all (Imdad *et al* 2013). Despite this, no definitive regimen of cord care could be demonstrated as superior (McConnell 2004, Zupan *et al* 2004, White and Denyer 2006).

Antimicrobial and antiseptic treatments (WHO 1998, Imdad *et al* 2013), drying, infarction, bacterial contamination, and the presence of granulocytes can influence and delay the timing of umbilical stump separation (Lund *et al* 2001, Imdad *et al* 2013, Mullany et al 2013). This has practical implications as longer separation times may increase the risk of infections (McConnell 2004). Therefore, Zupan *et al* (2004) advocate natural drying of umbilical cord stumps for healthy, term babies at low risk of infection. Despite this, McConnell *et al* (2004) states that while there appears to be little to support continuing alcohol use, there is also insufficient evidence to support the immediate change to natural drying for cord care.

Furthermore, due to the changing landscape of microbes and higher prevalence of multi-resistant organisms, dry cord care may not be suitable within healthcare institutions (WHO 1998, Janssen *et al* 2003). WHO (1998) and Zupan *et al* (2004) recommend in the neonatal and premature infant population within critical care setting, the application of topical antimicrobials to the umbilical stump to prevent and reduce the incidence of umbilical colonisation with pathogenic bacteria and cross-infection as a result of nosocomial infections.

Umbilical cord care **with sterile H2O and sterile gauze**
Neonate (36/40 gestational age or 4 weeks post-delivery)
Premature infants (< 36 weeks gestation)
Low Birth Weight (LBW) Infants <2500g
Very Low Birth Weight (VLBW) infants <1500g
Extremely Low Birth Weight (ELBW) infants <1000g
Some infants may require specific care and care must always be individualised. It is therefore recommended that, if in doubt, seek advice from the CNS (Neonatal) and/or Neonatal consultant on call to ensure best practice is provided.

7.0 Complications Associated with Umbilical Cord Care

- Omphalitis (inflammation or infection of umbilical stump) - Umbilical haemorrhage
- Thrombophlebitis necrotizing fascitis - Neonatal tetany
- Sepsis - Patent urachus
- Bacterial multiresistance - Severe jaundice
- Toxicity - Umbilical granuloma
- Umbilical hernia - Umbilical tetanus

(McConnell 2004, Zupan et al 2004, Selkirk et al 2008, Imdad et al 2013)

8.0 Guidelines

Equipment

- Sterile water and sterile gauze
- Powder free non-sterile gloves
- Topical medication, as prescribed
- Cord Clamp Remover (only if required, see below)

ACTION	RATIONALE & REFERENCE
Ensure the infant is comfortable and in a warm, draught free area.	To help maintain a trusting relationship between the child and nurse and maintain the infants temperature.
Explain and demonstrate the procedure to parent/guardian, if present.	To obtain verbal consent from the parents/guardians, and ensuring that the philosophy of family centred care which recognises that family is the constant in a child's life is maintained (Lister 2021)
Attend to umbilical care after each nappy change and if the area becomes soiled.	To prevent the risk of cross contamination from nappy area to the umbilical area (Hernandez & Hernandez 2005)
It is recommended that all Premature, LBW, VLBW and ELBW Infants should have umbilical care performed while performing other nursing care.	Minimal handling is a basic principle of care for this population, as frequent disturbance may lead to hypoxia and health deterioration (Rennie 2013)
Decontaminate hands Aseptic Non-Touch Technique following nappy change.	To prevention of cross infection (CHI, Aseptic Non Touch Technique, 2021)
Prepare sterile field:- Use Sterile gauze and moisten with sterile water solution.	To create a sterile field (Lister 2020)
Decontaminate hands, as above and apply non-sterile gloves.	To prevent cross infection and reduced the incidence of cord stump contamination (Imdad et al 2013 in GOSH, 2022)
Cord clamps are not usually removed. However, if by Day 3 the umbilical stump is dry and the surrounding skin is assessed as being at risk of damage due to skin irritation or	The cord clamp usually falls off with the dried umbilical stump by day 10 – 15 (Dore *et al* 1998) Careful umbilical assessment can help to identify if infection is present (Zupan et al 2004 in GOSH, 2022)

pressure, the clamp can then be removed using the cord clamp remover. Assess umbilical stump and cord for evidence of healing: • yellowish/green to brown/black • some moistness • a 'mucky/sticky' appearance • raw • and/or an odour remaining for a day or two before becoming hard and drying out	To optimise early detection of localised umbilical infection and prompt treatment before a local infection becomes generalised (McConnell *et al* 2004)
Observe the umbilicus and surrounding area for signs of infection or periumbilical erythema ie. redness, odour, oozing, discharge and/or build-up of exudates. If the area surrounding the umbilicus becomes red, swollen, broken or has a discharge, it may be necessary to take a swab for culture and sensitivity (discuss with medical team first)	
Take a swab from the site if required *Note:* the signs of a healing umbilicus and an infected umbilicus are similar, (Seek advice from the CNS (Neonatal) and /or Neonatal Consultant on Call as clinically indicated).	To successfully perform a swab (CHI)
Using either: • Sterile gauze moistened with sterile water clean around the umbilical stump at skin level in a clockwise circular direction.	Prevents contamination from soiled part of the site (lister *et al* 2015).
Cleaning should start at the umbilical stump and working outwards for at least 5cms and ensure that the cord clamp is clean if present.	To ensure that the whole site is thoroughly cleaned
Allow area to dry.	As per Medication Policy (NMBI 2021).

Administer prescribed medication (topical creams/ointments) if infection is proven to be present. Fold down and secure the nappy below the level of the umbilical cord.	To prevent unnecessary friction, irritation or moisture accumulation at the cord site (McConnell *et al* 2004, Hernandez & Hernandez 2005, Hockenberry and Wilson 2009).
Avoid applying any non-prescribed creams, ointments, oils or lotions to the umbilical stump or cord area, this allows the stump to dry and separate.	These can influence and delay the timing of umbilical stump separation times (McConnell *et al* 2004)
Keep area free from urine and faeces. Dispose of all equipment ie umbilical stump and cord clamp, appropriately.	To promote safety and prevent cross infection as per local Waste guidelines.
Decontaminate hands.	To prevent the spread of infection (CHI ANTT, 2022)
Educate the parent(s)/guardian(s) about the procedure, if appropriate.	Early discharge has increased the need for parents to receive accurate, relevant information on how to care for their newborn infants when discharged from hospital and to promote family centred care approach to care (Klaus 2013).
Record the procedure in infants nursing notes and report changes that may require alternative intervention or treatment to the appropriate nursing / medical personnel.	Maintains accountability through accurate recording of nursing intervention, in accordance with the Guidelines for Good Documentation (NMBI, 2015)

9.0 Implementation Plan

Communication and Dissemination

- Guidelines will be posted on hospital Intranet, Q pulse in Temple Street and Tallaght and the CHI website.

Training

- Education and training will be delivered in the clinical area for nursing staff who deliver umbilical cord care for infants
- Education is included in induction packages in the clinical area for nursing staff who deliver umbilical cord care for infants

10.0 Evaluation and Audit

Monitoring of compliance is an important aspect of procedural documents. However, it is not possible to monitor all procedures.

Therefore, this guideline will be reviewed on a three yearly basis or when indicated by a change in best practice using the following methods:

- Feedback from nursing staff who provide umbilical cord care for infants in CHI on this guideline will contribute to ongoing guideline development.
- Monitoring Near Misses/ Adverse Incidents

11.0 Stakeholder involvement

Name	Grade	location
Jenny Dunne	CNM 3	CHI Neonatology service
Aoife Harrington	Senior Pharmacist	CHI Crumlin
Rosemary Clerkin	Clinical Placement Coordinator	CHI Crumlin
Deirdre Cooney	Clinical Education Facilitator	CHI Crumlin
Olivia Walsh	Clinical Nurse Specialist, Metabolics	CHI Temple Street
The Neonatal Advisory committee CHI		
Approved by CHI NPC on November 20th 2023		

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