GUIDELINES ON THE CARE OF THE UMBILICAL CORD IN OLCHC

Version Number	*3*
Date of Issue	*20th August 2015*
Reference Number	*GCUCOLCHC-08-2015-EH-V3*
Review Interval	*3 yearly*
Approved By *Name:* *Title:*	*Signature:* *Date: August 2015*
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Document Review History		
Review Date	***Reviewed By***	***Signature***
August 2018		

Document Change History	
Change to Document	***Reason for Change***

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1.0 Introduction

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 postnatally (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 (Johnston et al 2003, Mullany *et al* 2006, Leifer 2015).

5.0 Definitions / 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 1998, 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).

3.0 Applicable to

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

4.0 Objectives of the Guidelines

To standardise the umbilical cord care of infants in OLCHC
To ensure and maintain that patients safely receive umbilical cord care in OLCHC
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 (2014). However, umbilical cord treatments vary from, isopropyl alcohol, povidone-iodine (bethadine), antibiotic/antimicrobial ointments, triple dye, chlorohexidine, soap and water, breast milk, to no treatment at all (Zupan *et al* 2004, Vural and Kisa 2006, Selkirk *et al* 2008; 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 multiresistant 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. Therefore, while clinical judgement must be used at all times, O'Connor (2007, 2009, personal letter), White (2013, 2015, personal letter) and O'Sullivan (2015, personal letter) recommends that the type of umbilical cord care used for infants within OLCHC is dependent on the following criteria:

Umbilical cord care **with 70% alcohol swabs (ONLY*)**	Umbilical cord care **with sterile H2O and sterile gauze**
Infants with groin/abdominal/thorax surgery within 2 weeks of birth	Neonate (36/40 gestational age or 4 weeks post delivery)
Infants with fulminate sepsis	Premature infants (< 36 weeks gestation)
Term Infants with umbilical venous/arterial catheter	Low Birth Weight (LBW) Infants <2500g
	Very Low Birth Weight (VLBW) infants <1500g
	Extremely Low Birth Weight (ELBW) infants <1000g
Some infants may not clearly meet these criteria 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)
- Thrombophlebitis necrotizing faciatitis
- Sepsis
- Bacterial multiresistance
- Toxicity
- Umbilical hernia
- Umbilical haemorrhage
- Neonatal tetany
- Patent urachus
- Severe jaundice
- Umbilical granuloma
- Umbilical tetanus

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

8.0 Guidelines

Equipment

- Sterile H2O and sterile gauze **OR** 70% (Isopropyl) Alcohol (ONLY*) swabs X 3 – 5
- Powder free non-sterile gloves
- Topical medication, as prescribed
- Cord Clamp Remover (only if required, see below)

***Note:** 70% isopropyl alcohol (ONLY) swabs for umbilical care must be ordered separately and used specifically for this purpose. **Clinell Wipe® injection swabs** are **not recommended** for skin asepsis in **children ≥ 2 months (SARI 2010)** as they contain 2% chlorhexidine gluconate in 70% isopropyl alcohol

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 thermoregulation (Hockenberry and Wilson 2009)
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 (Hockenberry and Wilson 2009)
Attend to umbilical care after each nappy change.	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 (ANTT) Level 3 following nappy change.	To prevention of cross infection (HSE 2009, OLCHC 2011, 2013, Nurse Practice Committee 2013)
Prepare sterile field at Level 3 ANTT by opening either:- • 70% alcohol swabs into an open 70% alcohol swab packaging, **or** • sterile gauze and moisten with sterile H2O solution.	To create a sterile field (Dougherty *et al* 2015, Nurse Practice Committee 2013)

Decontaminate hands, as above and apply non-sterile gloves.	To prevent cross infection and reduced the incidence of cord stump contamination (Pezzati *et al* 2003, OLCHC 2013, Nurse Practice Committee 2013)
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 pressure, the clamp can then be removed using the cord clamp remover.	The cord clamp usually falls off with the dried umbilical stump by day 10 – 15 (Dore *et al* 1998)
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	Careful umbilical assessment can help to identify, if infection is present (Ball *et al* 2011)
Observe the umbilicus and surrounding area for signs of infection or periumbilical erythema i.e. redness, odour, oozing, discharge and/or buildup 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) Refer to the OLCHC Laboratory User Handbook for further guidance on performing an umbilical swab for the Microbiology Laboratory in OLCHC *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 optimise early detection of localised umbilical infection and prompt treatment before a local infection becomes generalised (Johnston *et al* 2003, McConnell *et al* 2004) To successfully perform a swab (Mohammed and Trigg 2010, Nurse Practice Committee 2014). (OLCHC 2012a)
Using either: • 70% alcohol swabs,	In accordance with the infants clinical condition and gestational age (O'Connor 2009, O'Sullivan 2015, White 2015). These 70% alcohol swabs should not contain or be

or • Sterile gauze moistened with sterile H2O, clean around the umbilical stump at skin level in a clockwise circular direction.	impregnated with chlorhexidine gluconate solution as it is not recommended for use in infants under 2 months (SARI 2010). Prevents contamination from soiled part of the site (Dougherty *et al* 2015). To ensure that the whole site is thoroughly cleaned (Trigg & Mohammeh 2010).
Cleaning should start at the umbilical stump and working outwards for at least 5cms and ensure that the cord clamp is clean if present). Allow area to dry.	To ensure maximum efficacy of alcohol (Dougherty *et al* 2015, SARI 2010) and prevent moisture accumulation on the cord (McConnell *et al* 2004). In adherence with Medication Policy (OLCHC 2006, An Bord Altranais 2007).
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). These can influence and delay the timing of umbilical stump separation times (McConnell *et al* 2004)
Avoid applying any non-prescribed creams, ointments, oils or lotions to the umbilical stump or cord area. Keep area free from urine and faeces.	To promote safety and prevent cross infection (OLCHC 2012b, 2014) To prevent the spread of infection (HSE 2009, OLCHC 2011, 2013, Nurse Practice Committee 2013)
Dispose of all equipment i.e. umbilical stump and cord clamp, appropriately. Decontaminate hands at Level 3 ANTT. 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). Maintains accountability through accurate recording of nursing intervention, in

Record the procedure in infant's nursing notes and report changes that may require alternative intervention or treatment to the appropriate nursing / medical personnel.	accordance with the Guidelines for Good Documentation (An Bord Altranais 2002, National Hospitals Office 2009)

9.0 Implementation Plan

Communication and Dissemination

- Guidelines will be posted on hospital Intranet
- Hard copies of this Guideline are available in the Nurse Practice Guidelines Folder in each clinical area

Training

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

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 OLCHC on this guideline will contribute to ongoing guideline development.
- Monitoring Near Misses/ Adverse Incidents in accordance with OLCHC

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