Care procedures

european standards of
care for newborn health

EFCNI european foundation for
the care of newborn infants

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care for newborn health

Topic Expert Group:

Care procedures

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Overview

Care procedures and routine practices can have a big impact, especially on extremely preterm and ill infants. (1) Preterm and ill infants are also at greater risk of infections, water loss, imbalance, thermal instability, and skin injuries. (2) Therefore, this vulnerable group needs to receive appropriate activities of daily living (ADL) providing individualised support and comfort to reduce the risk of short- and long-term consequences. The activities of daily living in the neonatal unit include postural support, feeding, hygiene, nappy change, thermal care, skin and mouth care, sleep protection, weighing, but also medical interventions like inserting and managing feeding tubes, taking blood samples, and support during painful procedures.

All caregivers have to be aware that preterm and ill infants have special needs and appropriate ADL´s have to be chosen. (7,8) To avoid stress, care is carried out by experienced and specially trained healthcare professionals in a developmentally sensitive manner for the infant's comfort, hygiene, and physiologic and behavioural stability adjusted to infant's individual needs. (3–6) Techniques are used to minimise skin damage, discomfort, stress and pain, and physiologic instability. (1) Furthermore, sufficient and adequate materials and products adapted to different ages are provided, e.g. for skin cleaning.

Parents are informed and guided by healthcare professionals about the care of their infant and are seen as an active part in the care of their baby, as performing care for their infant encourages parent-infant bonding and also improves parental confidence and competence in supporting their child's ADL's. (9–11)

All care procedures should be performed by healthcare professionals trained in the principles of infant- and family-centred developmental care (see TEG Infant- and family-centred developmental care).

The Topic Expert Group on Care procedures has developed standards on topics reflecting the range of care needs of preterm and ill babies and summarises appropriate techniques.

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Inserting and managing feeding tubes

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Target group
Infants and parents

User group
Healthcare professionals, neonatal units, hospitals, and health services

Statement of standard
Inserting and managing feeding tubes in infants is performed by a trained person and adjusted to infant's needs and comfort.

Rationale
Tube feeding either via a nasogastric or orogastric tube is vital for nourishment until the infant can take full feeds by breast or bottle. Feeding tubes are also used for decompression of air and administration of medication. The way in which the feeding tube is inserted and tube feed is given makes a difference to the infant's food tolerance and comfort. Hypersensitive responses to oral stimulation and sensory defensive responses are two examples preterm infants can develop during tube feeding. (1)

Prolonged use of tube feeding is associated with reflux and difficulty making the transition to full sucking feeds (1), or later to taking solids. The presence of the tube may irritate the infant and stimulate the gag reflex. In the long term, tube fed infants may become used to this irritant, which can impair sensitivity and interfere with sucking and swallowing when oral feeding is introduced. Furthermore, healthcare professionals must be aware of the potential risks due to phthalate exposure in the neonatal unit. Therefore, materials should be identified and alternative devices should be considered. (2)

There is a small risk that the enteral feeding tube can be misplaced into the lungs or ethmoid during insertion, or move out of the stomach at a later stage. Misplacement can be recognised at an early stage, e.g. before the tube is used. There are several methods to check the placement of nasogastric feeding tubes. (3,4)

Benefits

Short-term benefits
- Reduced risk of complications due to inserting feeding tubes (4)
- Reduced pain and discomfort during insertion of the tube (5) (see TEG Care procedures)
- Reduced stress for parents (6)

Long-term benefits
- Reduced problems with transition to oral feeding (1,7)
- Improved sensory development (1)

Components of the standard

Component	Grading of evidence	Indicator of meeting the standard
For parents and family		
1. Parents are informed by healthcare professionals about the possibility of tube feeding. (8)	A (Moderate quality) B (High quality)	Patient information sheet
2. Parents are trained by healthcare professionals to recognise and act upon infant's signs of discomfort during tube insertion. (8) (see TEG Care procedures, see TEG Infant- and family-centred developmental care)	A (Moderate quality) B (High quality)	Training documentation
3. Parents have the possibility to be present and to support their infant during tube insertion. (8)	A (Moderate quality)	Parent feedback
For healthcare professionals		
4. A unit guideline on managing and maintaining feeding is adhered to by all healthcare professionals. (9,10)	B (High quality)	Guideline
5. Theoretical and practical training on managing and maintaining feeding tubes is attended by all responsible healthcare professionals. (4,11–14)	A (Moderate quality) B (High quality)	Training documentation
For neonatal unit		
6. A unit guideline on managing and maintaining feeding tubes is available and regularly updated. (9,10) (see TEG Care procedures)	A (Moderate quality) B (High quality)	Guideline
For hospital		
7. Training on inserting and maintaining feeding tubes is ensured. (9) (see TEG Patient safety & hygiene practice)	A (Moderate quality) B (Moderate quality)	Training documentation
8. Different tube sizes and tubes of safe material are available, so the size of the tube can be chosen on an individualised basis. (2)	A (High quality)	Audit report
9. Different fixation material matching with the individual infant are available. (15)	B (Moderate quality)	Audit report

For health service		
10. A national guideline on tube insertion, including material safety is available and regularly updated. (16)	B (High quality)	Guideline

Where to go – further development of care

Further development	**Grading of evidence**
For parents and family	
N/A	
For healthcare professionals	
N/A	
For neonatal unit	
N/A	
For hospital	
N/A	
For health service	
• Facilitate research on phatalates in tubes use in vulnerable infants.	A (Low quality)

Getting started

Initial steps
For parents and family
• Parents are verbally informed by healthcare professionals about tube insertion and management.
For healthcare professionals
• Attend training on managing and maintaining feeding tubes.
For neonatal unit
• Develop and implement a unit guideline on managing and maintaining feeding tubes. • Develop information material on tube insertion and management for parents.
For hospital
• Support healthcare professionals to participate in training on managing and maintaining feeding tubes.
For health service
• Develop and implement a national guideline on tube insertion, including material safety.

Description
Inserting nasogastric and orogastric tubes: step by step: (17)

ACTION	EXPLANATION
Explain procedure and infant's possible reaction.	
Invite parents to support baby e.g. holding, sucking, grasping.	Strengthens parents role in comforting and protecting their infant.
PREPARATION	
Select an appropriate tube	
Make sure that you have everything ready at the cot side e.g. tube, materials for fixing, dummy, bedding support, person to assist if available.	So you can give the infant your full attention and don't leave the infant.
Remove old fixings with oil or water	
INSERTING	
Consider most comfortable position for the infant and for caregiver to insert smoothly. Side lying is likely to be preferred by the infant if this is compatible with other treatments. Make the infant comfortable and secure e.g. wrapping, arms tucked in, legs folded, surface for foot bracing. Consider possibility of the infant being supported on mother lap/in her arms.	The choice of position and positioning supports make a difference to the infant's ability to be still and calm. This is often easiest on the side and most difficult on the back. The calmer the infant the easier it is to insert the tube.
If the infant does not have an ET tube offer a dummy to encourage sucking before inserting tube.	Sucking will help the infant to swallow tube.
Pace sliding the tube down to maintain minimum levels of arousal.	
Fix tube securely with skin friendly material. Use smallest possible pieces and place to avoid interference with eyelids and mouth.	Minimise risk of damage to skin. To avoid irritation and disorganised behaviour.
AFTER	
Provide comfort. Stay with the infant until settled.	Ensure rapid return to stability. Infants physiological reactions may be delayed.

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Mouth care

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Target group
Infants and parents

User group
Healthcare professionals, neonatal units, hospitals, and health services

Statement of standard
Appropriate mouth care is given to infants according to their individual needs and to minimise aversive responses.

Rationale
The mouth is important for eating, drinking, taste, breathing, immune defence, speech, and communication. The principle objective of mouth care is to decrease the risk of infections and to give comfort. (1,2) Oral hygiene is an integral part of total care. Assessment and planned interventions can help to prevent, minimise or maintain oral cavity health. If mouth care is not done in the right way, it also may be a negative experience. There are few studies of neonatal mouth care for preterm infants.

To enable appropriate mouth care, a thorough assessment of the oral cavity has to be done before beginning the procedure to ensure individualised care for the infants, depending on their actual state. (2)

Mouth care using colostrum may additionally prevent infections. (2) Colostrum is beneficial for every newborn infant, especially for preterm infants, whose oral reflexes (sucking, swallowing, gag reflex) are not yet developed, including those not yet taking oral feeds, because it allows the sensation and taste of colostrum and mother's milk. (2,3)

Mouth care for preterm and ill infants is more than a hygienic precaution, or a nursing task. It is an opportunity for the parents to bond with their infant, and a way for the infant to sense their parents' presence from the start. Infants and their parents communicate mainly through touch, smell and taste. If the parents are able to perform basic care for their infant, this encourages their bonding. (4) (see TEG Infant- and family-centred developmental care)

Benefits

Short-term benefits

- Improved sensory experience (5)
- Reduced risk of skin injury, and local and systemic infections (1,2,6,7)
- Improved parental confidence (4) (see TEG Infant- and family-centred developmental care)

Long-term benefits

- Reduced risk of feeding disorders due to negative experiences during neonatal mouth care (8)

Components of the standard

Component	Grading of evidence	Indicator of meeting the standard
For parents and family		
1. Parents are informed by healthcare professionals about the positive effects of optimal mouth care with breast milk.	B (High quality)	Patient information sheet
2. Parents are encouraged by healthcare professionals to take over mouth care.	B (Moderate quality)	Parent feedback
For healthcare professionals		
3. A unit guideline on mouth care is adhered to by all healthcare professionals.	B (High quality)	Guideline
4. Colostrum is used for mouth care in infants. (1,2,6,7)	A (High quality)	Guideline
5. Training on oral sensory development (8) and importance of mouth care is attended by all responsible healthcare professionals. (1,4) (see TEG Infant- and family-centred developmental care, see TEG Education & training)	A (Moderate quality) B (High quality)	Training documentation
For neonatal and paediatric unit		
6. A unit guideline on mouth care is available and regularly updated.	B (High quality)	Guideline
7. Colostrum is made available for mouth care. (9) (see TEG Nutrition)	B (Moderate quality)	Guideline
8. Soft materials are used to avoid negative oral sensory stimulation. (5,8)	A (Moderate quality)	Guideline
For hospital		
9. Material and equipment is provided.	B (High quality)	Audit report
For health service		
10. Training on mouth care is included in the Curricula of the healthcare professional education.	B (High quality)	Training documentation

Where to go – further development of care

Further development	**Grading of evidence**
For parents and family	
N/A	
For healthcare professionals	
• Develop a mouth care assessment tool. (2)	A (Moderate quality)
For neonatal and paediatric unit	
N/A	
For hospital	
N/A	
For health service	
N/A	

Getting started

Initial steps
For parents and family
• Parents are verbally informed by healthcare professionals about optimal mouth care. • Parents are supported by healthcare professionals to be involved within the mouth care of their infant or to do it by themselves. (4)
For healthcare professionals
• Attend training on oral sensory development (8) and importance of mouth care. • Invite and support parents to perform mouth care or to comfort the infant during mouth care. (4)
For neonatal and paediatric unit
• Develop and implement a unit guideline on mouth care. • Develop information material on optimal mouth care for parents.
For hospital
• Support healthcare professionals to participate in training on oral sensory development (8) and importance of mouth care.
For health service
N/A

Description

To enable appropriate mouth care, a thorough assessment of the oral cavity has to be done before beginning the procedure to ensure individualised care for the infants, depending on their actual state. (2)

Colostrum mouth care is beneficial for every newborn infant, especially for preterm infants, whose oral reflexes (sucking, swallowing, gag reflex) are not yet developed, and for those nil by mouth, because it allows the sensation and taste of colostrum and mother's milk. (2,3)

Method for mouth care; step by step (2)
Healthcare professionals should plan for mouth care to occur regularly, most commonly it will be given around the same time that 'cares' are performed. However, the frequency of mouth care should be individualised for each baby and based on their behavioural cues, sleep state and tolerance of handling. A frequency of at least 6-8 hourly will be appropriate for most babies.

Preparation:

- Invite parents to support their baby or do the mouth care together with the parents.
- Gather the required equipment together
    - Sterile water
    - Fresh colostrum (expressed breast milk, donated milk) 0.2-0.3mls ideally drawn up into a separate syringe. Due to the current knowledge of the many beneficial properties of colostrum, fresh maternal colostrum –when available- should always be the first choice for performing mouth care. Second choice (when available) should be maternal breast milk. All babies on the neonatal unit should be considered eligible for mouth care as studies so far have shown that coating the baby's mouth with colostrum is safe, even for the sickest babies, and smallest babies, including those who are nil by mouth or requiring ventilation. Mouth care with colostrum or breast milk (when available) should be performed at least once in a 12-hour period and introduced within 48hours of birth.
    - Liquid paraffin or soft Vaseline (single patient use, used only for mouth.)
- Perform hand hygiene and apply non sterile gloves.
- If the baby requires suction, this should be carried out before mouth care is performed.

Procedure:

- During mouth care, staff should be observing the condition of the mouth, lips and tongue closely, in order to make a thorough oral assessment.
- Take (a sterile) gauze swab, dip into the bottle of sterile water and squeeze to remove excess water. Wipe the baby's lips to remove dry skin or debris. Do not 'force' mouth care onto a sleeping baby, or a baby that is unwilling to open its mouth. The baby is likely to be more receptive on another occasion, and it is important that the experience is positive, helping to reduce the risk of oral aversion, for babies that already have many negative oral experiences.
- Dispose of the swab, and clean with another if necessary, never re-dip a used swab into the sterile water bottle, as this will contaminate the water with bacteria and/or mouth debris.
- Soak the cotton bud with the colostrum and gently roll the bud along the lips.
- If the mouth cavity is big enough also roll the applicator around the gum line and over the tongue the aim being to coat the buccal cavity in a layer of milk.
- If the lips are dry a thin layer of yellow soft paraffin or liquid paraffin can be applied directly to the lips, using a cotton tipped applicator or a gloved finger. If a baby is being nursed under phototherapy then soft yellow paraffin and liquid paraffin should NOT be applied to the baby's lips, due to the low but possible risk of causing burning to the skin, when exposed to the phototherapy lights.

After:

- Discard all used waste items after the procedure, including any excess milk, in order to prevent bacterial colonisation and the introduction of infection.
- Ensure equipment is restocked and left in the appropriate place, clean and tidy.
- Document the findings of oral assessment and intervention in the infant's charts and review frequency of oral care as necessary. What fluid to use for oral care
- Assessment of the mouth should be documented using a mouth assessment tool

Source

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Nappy change

Camba F, Oude-Reimer M, Frauenfelder O, Ceccatelli M, Jørgensen E, Hankes-Drielsma I, Silva E

Target group
Infants, parents, and families

User group
Healthcare professionals, neonatal units, hospitals, and health services

Statement of standard
Nappy change is performed with a technique that minimises skin damage, discomfort, and physiologic instability.

Rationale
Nappy change is an everyday care routine and necessary for infant's comfort, to keep the perineum area clean and the skin protected. Inadequate hygiene or aggressive cleansing may trigger dermatitis in the perineal area. The procedure can be stressful, especially for extremely preterm and ill infants. (1) They are at greater risk of short-term consequences of stress (e.g. fluctuations in intracranial blood pressure with an increasing risk for intraventricular haemorrhage, increased heart rate, and decreased oxygen saturation), as well as long-term consequences of stress (e.g. allostatic load and an inability to respond appropriately to a stressor). (2) The manner in which nappy change is performed makes a difference for the infant's comfort and physiologic and behavioural stability, and should be carried out in a developmentally sensitive manner. (3–6)

Benefits

Short-term benefits

- Improved comfort (2–4)
- Improved physiological stability during the procedure (3,4)
- Reduced perineal skin damage (6)
- Protected sleep (5)
- Supported parents' role and bonding (7,8)
- Improved parental awareness of their infant's behavioural cues, and participation in the care of their infant (7,9,10)

Long-term benefits

- Reduced complications associated with prematurity (2)
- Improved parental awareness of their infant's behavioural cues, and participation in their's infant´s care (consensus)

Components of the standard

Component	Grading of evidence	Indicator of meeting the standard
For parents and family		
1. Parents and family are informed by healthcare professionals about nappy change, skin care, behavioural signs of discomfort in the infant during nappy change, and how to react accordingly. (9,10) (see TEG Care procedures)	A (Moderate quality) B (High quality)	Parent feedback, Patient information sheet
2. Parents are offered the opportunity to carry out nappy change (cleaning the skin, offering postural support or holding the infant in skin-to-skin contact). (9,10)	A (Moderate quality) B (High quality)	Parent feedback
For healthcare professionals		
3. A unit guideline on nappy change is adhered to by all healthcare professionals.	B (High quality)	Guideline
4. Training on nappy change, infant behaviour during nappy change, strategies to optimise comfort, minimise disturbance, and skin care is attended by all responsible healthcare professionals.	B (High quality)	Training documentation
For neonatal unit		
5. A unit guideline on nappy change is available and regularly updated.	B (High quality)	Guideline
For hospital		
6. Training on nappy change, infant behaviour during nappy change, strategies to optimise comfort, minimise disturbance, and skin care is ensured.	B (High quality)	Training documentation
7. Disposable absorbent nappies of different sizes suitable for infants of various weights are available. (8,11)	A (Low quality)	Guideline
8. Specific skin cleaning agents and skin protection products according to different ages are available. (see TEG Care procedures)	A (Low quality) B (High quality)	Guideline
For health service		
N/A		

Where to go – further development of care

Further development	**Grading of evidence**
For parents and family	
N/A	
For healthcare professionals	
N/A	
For neonatal unit	
N/A	
For hospital	
N/A	
For health service	
N/A	

Getting started

Initial steps
For parents and family
• Parents and family are encouraged to actively participate in care procedures. • Parents and family are verbally informed by healthcare professionals about nappy change, skin care, behavioural signs of discomfort in the infant during nappy change, and how to react accordingly.
For healthcare professionals
• Attend training on nappy change, infant behavior during nappy change, strategies to optimise comfort, minimise disturbance, and skin care.
For neonatal unit
• Develop and implement a unit guideline on nappy change.
For hospital
• Support healthcare professionals to participate in training on nappy change, infant behavior during nappy change, strategies to optimise comfort, minimise disturbance, and skin care.
For health service
N/A

Source

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Positioning support and comfort

Silva E, Jørgensen E, Oude-Reimer M, Frauenfelder O, Camba F, Ceccatelli M, Gross D, Xenofontos X

Target group
Infants and parents

User group
Healthcare professionals, neonatal units, hospitals, and health services

Statement of standard
All infants receive care that provides the individualised positioning support and comfort.

Rationale
Brain maturation, fetal and neonatal movements and posture contribute to shape joints and bones. For the infant the ergonomic conditions of the womb at the end of the pregnancy, its tightness and the neurologic maturation of the fetus' brain contribute to his flexed midline oriented posture and movements. The midline position is important for brain development and to achieve, in the future, important developmental steps. (1,2)

For the preterm infant these conditions are altered. After birth gravity induces an extended position, which challenges the infant's ability to achieve a flexed midline posture because of muscle weakness. This leads to uncoordinated movements and reduced ability to self-regulate. (1,3)

Therefore, the risk for muscular and skeletal imbalances is high, and attempts to self-regulate can be stressful and energy consuming. These may be minimised through optimal positioning and comfort, particularly during routine procedures and sleep. Supportive covering improves physiologic stability, encourages smooth movements, optimises behavioural organisation (e.g. sleep), and helps the infant move smoothly towards the midline, improving development and saving energy. In addition, this benefits thermoregulation by reducing exposed body surface. (3–6)

The need for postural support will change depending on gestational age, movement maturity, and clinical condition. When the infant had developed enough maturity of their muscle tone and spontaneous smooth movements to maintain a midline posture without support, positioning support should be gradually reduced and then removed. Infants will be gradually prepared to sleep on their back before discharge to prevent Sudden Infant Death Syndrome (SIDS). (7)

Benefits

Short-term benefits

- Improved physiologic and behavioural stability (1,3)
- Supported movement (1,3)
- Improved comfort and self-regulatory behaviour (1,3)
- Reduced stress for parents (1,8,9)

Long-term benefits

- Improved skeletal development and alignment (10)
- Improved physiologic flexion of the body and postural development (10)

Components of the standard

Component	Grading of evidence	Indicator of meeting the standard
For parents and family		
1. Parents are informed about, trained, and engaged by healthcare professionals in individualised positioning support and comfort. (11)	A (Moderate quality) B (High quality)	Patient information sheet, training documentation
2. Parents are informed by healthcare professionals about the safety of the supine position during sleep and reduced risk of Sudden Infant Death Syndrome (SIDS) at home. (7) (see TEG Follow-up & continuing care and TEG Infant- and family-centred developmental care)	A (High quality) B (High quality)	Clinical records, patient information sheet
For healthcare professionals		
3. A unit guideline on positioning, comfort, and prevention of SIDS is adhered to by all healthcare professionals.	B (High quality)	Guideline
4. Training on how to position and use appropriate postural materials and strategies to prevent skeletal and muscular imbalance is attended by all responsible healthcare professionals. (7,10)	A (High quality) B (High quality)	Training documentation
For neonatal unit		
5. A unit guideline for postural principles, positioning changes and comfort, avoiding motor and postural impairment is available and regularly updated. (4,8)	A (Moderate quality) B (High quality)	Guideline
6. Individualised care planning for positioning support and comfort is implemented. (4,8)	A (Moderate quality)	Clinical records
7. Prior to discharge, all postural boundaries are removed, and infants are put to sleep in the supine position, unless otherwise indicated. (7)	A (High quality)	Guideline

For hospital		
8. Training on how to position and use appropriate postural materials and strategies to prevent skeletal and muscular imbalance is ensured.	B (High quality)	Training documentation
9. Sufficient and adequate materials for position, postural and motor support are provided. (10)	A (Moderate quality)	Audit report
10. Specialist expertise in neonatal physiotherapy, occupational therapy and developmental care is available. (11)	A (Moderate quality)	Audit report
For health service		
11. A national guideline for the prevention of SIDS is available and regularly updated. (7)	A (High quality) B (High quality)	Guideline

Where to go – further development of care

Further development	**Grading of evidence**
For parents and family	
N/A	
For healthcare professionals	
• Healthcare professionals develop cross individualised care plans for optimal positioning and comfort with other professionals in multidisciplinary meetings. (1,12)	A (High quality)
For neonatal unit	
• Carry out regular audits on the quality of positioning strategies and the motor development.	B (Moderate quality)
For hospital	
N/A	
For health service	
• Support studies addressing the effects of different positioning strategies as well as materials on the development of the infant.	B (Moderate quality)

Getting started

Initial steps
For parents and family
• Parents are verbally informed about and engaged by healthcare professionals in individualised positioning support and comfort. (10,11)
• Parents are invited to observe the best positions for their infant. (1,3,11)

For healthcare professionals

- Attend training on postural principles and the normal motor and skeletal development of infants.

For neonatal unit

- Develop and implement a unit guideline on positioning, comfort, and prevention of SIDS.
- Develop information material on positioning, comfort, and prevention of SIDS for parents.
- Allow parents to bring their own materials (e.g. own blankets) to help optimal positioning support and comfort, as long as this is in line with the hospital guideline. (11)
- Organise training sessions for healthcare professionals without appropriate training. (see TEG Education & training)

For hospital

- Support healthcare professionals to participate in training on postural principles and the normal motor and skeletal development of infants.

For health service

- Develop and implement a national guideline on positioning, comfort, and prevention of SIDS.

Source

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Promotion of breastfeeding

Frauenfelder O, Oude-Reimer M, Camba F, Ceccatelli M, Hankes-Drielsma I, Jørgensen E, Silva E

Target group
Infants, parents, and families

User group
Healthcare professionals, neonatal units, hospitals, and health services

Statement of standard:
Infants are exclusively fed with human milk during their hospital stay and mothers are supported to exclusively breastfeed after discharge.

Rationale
Breastfeeding is the natural way of providing infants with the nutrients they need for healthy growth and development. Virtually all mothers can breastfeed, provided they are supported by their partner, family, the healthcare system and society at large.

Colostrum, the first breast milk produced around the time of delivery, is recommended by the World Health Organization (WHO) as the perfect food for newborn infants. (1) Feeding or expressing breast milk should be initiated within the first hour after birth or as soon as possible at least within the first 6 hours after birth. Exclusive breastfeeding is recommended up to 6 months of age. After the first six months breastfeeding is recommended as long as both, mother and child are comfortable with this. This is often culturally based. (1,2)

The Baby Friendly Hospital Initiative (BFHI) is a global effort to implement practices that protect and promote breastfeeding. The initiative was launched by WHO and UNICEF in 1991, following the Innocent Declaration of 1990. The initiative is a global effort to implement practices that protect and promote breastfeeding. (2) All hospitals are eligible to seek BFHI accreditation. (3)

Benefits

Short-term benefits

- Improved growth and neurodevelopment (3) (see TEG Nutrition)
- Reduced risk of necrotising enterocolitis and late-onset sepsis (4–6)
- Improved mother-infant bonding (7)
- Reduced neonatal mortality and infections in term infants (8)

Long-term benefits

- Reduced risk for overweight or obesity (9)
- Reduced risk of mortality due to diarrhoea and other infections (10)
- Improved intelligence tests and higher school attendance (11)
- Improved child development and reduced health costs (12)
- Reduced risk of breast cancer following a period of breastfeeding (13,14)
- Improved confidence and mental health for mothers (consensus)

Components of the standard

Component	Grading of evidence	Indicator of meeting the standard
For parents and family		
1. All pregnant women and their partners are informed by healthcare professionals about the benefits of breastfeeding. (1)	A (High quality) B (High quality)	Patient information sheet
2. Parents are informed and guided by healthcare professionals before or directly after birth on how to breastfeed and express, how to maintain lactation, and the importance of early skin-to-skin care and breastfeeding immediately after delivery, where possible. (2,15)	A (High quality) B (High quality)	Guideline, patient information sheet, training documentation
For healthcare professionals		
3. A unit guideline on breastfeeding and expression including transition from non-nutritive to nutritive sucking is adhered to by all responsible healthcare professionals. (15)	A (High quality) B (High quality)	Guideline
4. Training on the importance of breastfeeding and how to encourage and guide mothers to breastfeed and express is attended by all responsible healthcare professionals.	B (High quality)	Training documentation
5. All infants are placed in direct skin-to-skin contact with their mothers immediately following birth for at least an hour, where possible, to encourage oxytocin release and establish initial feeding. (16,17)	A (High quality) B (High quality)	Guideline
6. Newborn infants receive no other milk than human milk, unless medically indicated for at least 24 hours after birth. (2) (see TEG Nutrition)	A (High quality) B (High quality)	Clinical records, guideline
7. Breastfeeding is encouraged on demand unless medically indicated. (18) (see TEG Nutrition)	A (Moderate quality)	Clinical records, guideline
8. Bottles are not offered to preterm infants whose mothers wish to breastfeed unless the mother has given	A (Moderate quality) B (High quality)	Clinical record, guideline

permission and alternative methods of feeding have been discussed. (8)		
For neonatal unit		
9. A unit guideline on breastfeeding and expression including transition from non-nutritive to nutritive sucking is available and regularly updated. (15)	A (High quality) B (High quality)	Guideline
10. Appropriate facilities to support the expression of mother's milk are available. (see TEG NICU design)	B (High quality)	Audit report
11. Training on the importance of breastfeeding and how to encourage and guide mothers to breastfeed and express is provided.	B (High quality)	Training documentation
12. Lactation consultants are available to support breastfeeding for parents and healthcare professionals. (18)	A (High quality) B (High quality)	Clinical records, guideline
For hospital		
13. Training on the importance of breastfeeding and how to encourage and guide mothers to breastfeed and express is ensured.	B (High quality)	Training documentation
14. Appropriate facilities to support the expression of mother's milk are available, including private rooms/space for breastfeeding and expressing milk. (see TEG Nutrition, TEG NICU Design)	B (High quality)	Audit report
15. Accreditation by the WHO Baby friendly hospital initiative (BFHI) is in place. (19)	B (High quality)	Audit report
For health service		
16. A national guideline on breastfeeding and expression is available and regularly updated.	B (High quality)	Guideline
17. Post discharge support regarding breastfeeding is provided. (20,21)	A (Moderate quality) B (High quality)	Audit report, guideline

Where to go – further development of care

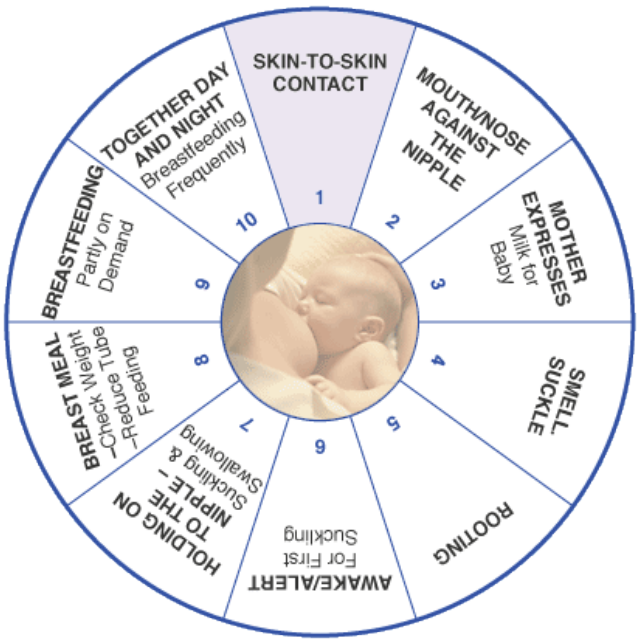
Further development	**Grading of evidence**
For parents and family	
• Collaborate with healthcare professionals with regard to the breastfeeding wheel. (15)	A (Low quality) B (Moderate quality)
For healthcare professionals	
N/A	
For neonatal unit	
N/A	
For hospital	
N/A	
For health service	
• Develop a policy to support exclusive breastfeeding for at least six months. (22)	A (High quality)

Getting started

Initial steps
For parents and family
• Parents are verbally informed about the benefits of breastfeeding. • Parents are encouraged to use skin-to-skin contact immediately after birth, where possible. • Guide mothers to understand the behavioural signs of hunger.
For healthcare professionals
• Attend training on the importance of breastfeeding and how to encourage and guide mothers to breastfeed and express.
For neonatal unit
• Develop and implement a unit guideline on breastfeeding and expression including transition from non-nutritive to nutritive sucking. • Develop information material on the benefits of breastfeeding. • Provide appropriate equipment for expression of mother's milk.
For hospital
• Support healthcare professionals to participate in training on the importance of breastfeeding and how to encourage and guide mothers to breastfeed and express.
For health service
• Develop and implement a national guideline on breastfeeding and expression. • Develop awareness-campaigns regarding the benefits of breastfeeding.

Description

Breastfeeding wheel (23)



Source

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Protecting sleep

López Maestro M, Camba F, Oude-Reimer M, Frauenfelder O, Hankes-Drielsma I, Kalbér A, Kühn T, Silva E

Target group
Infants, parents, and families

User group
Healthcare professionals, neonatal units, hospitals, and health services

Statement of standard
Sleep of all infants is respected.

Rationale
Fetuses and infants spend most of their time sleeping. Sleep is crucial to early neurosensory and motor development. (1,2) Therefore, sleep protection for infants during neonatal care is a goal for parents and healthcare professionals. Sleep is a regulated process. Sleep-wake states can be observed only after the neuronal structures involved have developed sufficiently.

Sleep state identification and respecting the period of sleeping in preterm infants become essential because good sleep organisation in the infant is related to better developmental outcomes. Protecting sleep cycles is critical to preserve the brain's ability to change, adapt and learn in response to experiences. (1) During sleep preterm infants are building their brain.

The neonatal unit environment has the potential to affect the quality and quantity of sleep (3) with disruption of brain development. (4)

It is important to encourage caregiving practices that preserve sleep, a non-invasive environment (5) focused on the infant's individual needs and behavioural patterns, and help with the transition between the states. Kangaroo mother care has shown to be an important strategy, increasing sleep time and the amount of quiet sleep (6), and improving sleep-wake cycles. (7–9)

Benefits

Short-term benefits
- Improved growth (4)
- Improved neuronal development (1,2,10)
- Improved behavioural organisation (1,2,10)
- Improved temperature regulation (11)

Long-term benefits
- Improved development of motor and neurosensory systems (12)

Components of the standard

Component	Grading of evidence	Indicator of meeting the standard
For parents and family		
1. Parents are informed by healthcare professionals about the importance and benefits of sleep during the neonatal period. (13,14)	A (Moderate quality) B (High quality)	Patient information sheet
2. Parents are trained and supported to recognise sleep signals in their infant and how to comfort the baby. (14)	A (Moderate quality) B (High quality)	Training documentation
3. Parents are encouraged and supported in skin-to-skin contact with their infant, and know the benefits regarding their infant's sleep. (6–8,14) (see TEG Infant- and family-centred developmental care)	A (Moderate quality) B (High quality)	Guideline, parent feedback
4. Parents are trained to facilitate self-calming behaviours and to use strategies to support infants sleep, restful period between caregiving and quiet alert periods. (14)	A (Moderate quality) B (High quality)	Training documentation
For healthcare professionals		
5. A unit guideline on sleep protection is adhered to by all healthcare professionals.	B (High quality)	Guideline
6. Training on the importance of sleep during the neonatal period, sleep-wake cycles in term and preterm infants and self-calming behaviours is attended by all responsible healthcare professionals. (4,5,13)	A (Moderate quality) B (High quality)	Training documentation
7. Environmental conditions that protect sleep cycles, individual needs and family participation and respect the individual behavioural states are assured. (15,16)	A (Moderate quality) B (Moderate quality)	Guideline
For neonatal unit		
8. A unit guideline on sleep protection, including the maintenance of comfort, quiet environment and light control is available and regularly updated. (15)	A (Moderate quality) B (High quality)	Guideline

9. Individualised care planning, including skin-to-skin care, to protect the infant's sleep is implemented. (4,6–8,11,14)	A (Moderate quality) B (Moderate quality)	Audit report, clinical records
For hospital		
10. Training, recommendations and strategies to respect sleep and provide education and resources about sleep and sleep protection are ensured. (15) (see TEG NICU Design)	A (Moderate quality) B (High quality)	Guideline, training documentation
11. Appropriate comfortable chairs for skin-to-skin care are available. (see TEG Infant- & family-centred developmental care, see TEG NICU Design)	A (Moderate quality) B (High quality)	Audit report
For health service		
12. A national guideline on sleep protection is available and regularly updated. (17)	B (High quality)	Guideline

Where to go – further development of care

Further development	**Grading of evidence**
For parents and family	
N/A	
For healthcare professionals	
N/A	
For neonatal unit	
N/A	
For hospital	
• Provide equipment that is low in sounds and fitting the development of the infants in the NICU to protect sleep.	B (Moderate quality)
For health service	
• Promote research into sleep to improve the quality of care.	B (Moderate quality)

Getting started

Initial steps
For parents and family
• Parents are verbally informed by healthcare professionals about the importance of sleep during care. • Adjust care to the sleep-wake rhythm of the child.
For healthcare professionals
• Attend training on the importance of sleeping during infancy and recognise sleep-wake cycles in term and preterm infants.

- Coordinate between different healthcare professionals of different specialties in order to protect the infant's sleep.
- Adjust care to the sleep-wake rhythm of the child.

For neonatal unit

- Develop and implement a unit guideline on sleep protection.
- Develop information material on the importance of sleep during care for parents.
- Organise training sessions for caregivers explaining the importance of respecting sleeping period for the infant brain development and the unit policy or guidelines.
- Provide protocols within meetings between all hospital specialities related to care in order to protect sleep to evaluate cooperation.

For hospital

- Support healthcare professionals to participate in training on the importance of sleeping during infancy and recognise sleep-wake cycles in term and preterm infants.

For health service

- Develop and implement a national guideline on sleep protection.

Description

Infants have a different sleep pattern to older individual. During infancy, there are three types of sleep: (3)

Active sleep (AS)
Irregular sleep in which the electrical activity is like the waking state. Rapid eye movement under the eyelids, irregular heartbeat and breathing are present. This type of sleeping represents 50% of newborn at term.

Quiet sleep
The body is relaxed, there is no eye movement, and the heartbeat and breathing are regular, the parasympathetic system predominates. The muscles are relaxed but there may be movement.

Undetermined sleep
It is difficult to identify, as it is neither one nor the other: characteristic of preterm infants, who have their brain in continuous development.

During active sleep there is an endogenous intense and generalised stimulation, AS might play the role of stimulation to the brain in a period when waking life is limited. Mainly, AS is associated with the development of the sensory systems and it is necessary to form long-term circuits related with memory and learning. Quiet sleep plays an important role in the synaptic remodelling, in tissue repair and recovering from illness, as well as growth. (4)

Source

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Skin care of hospitalised infants

Silva E, Oude-Reimer M, Frauenfelder O, Camba F, Ceccatelli M, Jørgensen E

Target group
Infants and parents

User group
Healthcare professionals, neonatal and paediatric units, hospitals, and health services

Statement of standard
Skin is protected, injuries are minimised, infections are prevented and comfort is promoted during skin care and other routine procedures, with regard to the individual needs of the infant.

Rationale
The immature skin of the preterm infant and particularly the skin of the ill infant may lead to inefficient barrier function. Interference with the development of the stratum corneum and associated barrier function may be a risk factor for nosocomial infections. (1) Many routine practices in the neonatal unit can interfere with the normal barrier function and skin pH: topical exposure to irritants, as antiseptics and cleansers, application and exposure to tapes and devices, such as dressings, monitor leads, probes and masks, and the removal of tapes and dressings. (2–4)

Preterm infants have immature skin with a thinner epidermis, an immature stratum corneum and a more permeable skin. They are at higher risk of infections, water loss, electrolyte imbalance, thermal instability and skin injuries. This is much more problematic for infants born before 32 weeks of gestational age. The skin of the preterm infant can take from two to nine weeks postnatal age to mature. The use of skin film barriers, adequate antiseptics and cleansers, humidity and tapes can protect the skin integrity and promote the stratum corneum development. (1,4,5)

Benefits

Short-term benefits
- Protected skin barrier (1)
- Reduced risk of skin damage (e.g. reduced risk for water and heat loss) (1)
- Reduced risk of infections (1)
- Improved comfort and reduced physiologic instability and stress responses (6)
- Improved parent-infant bonding when skin care is performed by parents (7–9) (see TEG Infant- & family-centred developmental care)
- Reduced stress for parents (7,9,10)

Long-term benefits
- Reduced potential for future skin sensitisation due to cleaning agents (1–3,5)
- Improved development of the skin barrier (1)

Components of the standard

Component	Grading of evidence	Indicator of meeting the standard
For parents and family		
1. Parents are informed by healthcare professionals about skin care. (1–3,5,6,10)	A (Moderate quality) B (High quality)	Patient information sheet
2. Parents are engaged in the skin care of their infant. (9,10) (see TEG Infant- & family-centred developmental care)	A (Moderate quality)	Parent feedback
3. Parents are present when their infant is bathed. (9–11)	A (Moderate quality) B (High quality)	Parent feedback
For healthcare professionals		
4. A unit guideline on skin care is adhered to by all healthcare professionals.	B (High quality)	Guideline
5. Training on skin function and development, skin care and protection, and skin risk assessment tools is attended by all responsible healthcare professionals. (12–14)	A (High quality) B (High quality)	Training documentation
6. A skin risk assessment tool is available and used on a daily basis. (13,15)	A (High quality)	Guideline, audit report
For neonatal and paediatric unit		
7. A unit guideline on skin care strategies and products is available and regularly updated. (4,5)	A (Moderate quality) B (Moderate quality)	Guideline
For hospital		
8. Training on skin function and development, skin care and protection, and skin risk assessment tools is ensured.	B (High quality)	Training documentation
9. Sufficient and adequate materials for skin care are provided. (4,5,16)	A (Moderate quality) B (High quality)	Audit report
For health service		
10. A national guideline on skin care is available and regularly updated.	B (High quality)	Guideline

Where to go – further development of care

Further development	**Grading of evidence**
For parents and family	
N/A	
For healthcare professionals	
N/A	
For neonatal and paediatric unit	
• Compare and review unit protocols for general skin care with international guidelines. (14)	A (Low quality)
• Monitor the number of skin injuries.	A (Low quality)
For hospital	
• Facilitate skin cleaning, protection products and skin and sensory friendly tapes and devices. (4,5,16)	A (Moderate quality) B (High quality)
For health service	
N/A	

Getting started

Initial steps
For parents and family
• Parents are verbally informed by healthcare professionals about skin care.
For healthcare professionals
• Attend training on skin function and development, skin care and protection, and skin risk assessment tools.
For neonatal and paediatric unit
• Develop and implement a unit guideline on skin care strategies and products. (14)
• Develop information material on skin care for parents.
For hospital
• Support healthcare professionals to participate in training on skin function and development, skin care and protection, and skin risk assessment tools.
For health service
• Develop and implement a national guideline on skin care.

Description

For sensitive and fragile newborn infants keeping the skin cleaned can be very demanding leading to physiological instability, discomfort and skin damage. Cleaning or bathing a preterm infant needs to take into account the immaturity and fragility of the skin and the sensitiveness of the infant. (17)

The intrauterine protection of the skin, vernix caseosa should not be removed, except where there is visible blood or other contamination, because it is a natural barrier to water loss, temperature regulation and innate immunity. (18)

In very immature preterm infants, bathing should be discouraged in the first 3-5 days and subsequently only undertaken infrequently, due to its potential to adversely

affect maturation of the acid mantle, causing irritation and drying of the skin, and inducing irritability and stress responses. (11)

The removal of monitoring and clinical devices (e.g. urine bags), dressings and tapes can disrupt the surface of the skin. Barrier films and specific strategies to remove straps must be considered. (4) Adhesive removals have a very strong smell that can disturb the infants smelling development. (16) Observation and monitoring of skin condition is important to improve the awareness of healthcare professionals and parents, and to improve good quality of care.

The skin has an important role in the development of humans. The earlier close contact between parents and child the better for future outcomes of their relationship and emotional and social development. (2)

The main recommendations regarding skin care are (14):

1. Leave vernix caseosa to absorb into the skin – do not rub it off.
2. Only bath a preterm infant or an infant who has been ill when he/she is physiologically stable.
3. If necessary, bath a “well” newborn infant when his/her temperature has been within an acceptable range for 2-4 hours after delivery, but preferably delay the first bath until the second or third day of life to assist with skin maturation.
4. Ensure temperature of bath water is maintained at 37°C. Use a bath thermometer.
5. Avoid toiletries and other cleansing products until the infant is at least a month old – use plain water to cleanse the infant’s skin.
6. Only bath a newborn infant 2-3 times a week – “top and tail” in-between bathing.
7. Use the best quality nappy available to the infant – change soiled nappies frequently and cleanse nappy area with plain water or unperfumed, alcohol-free infant wipes.
8. Expose the nappy area as often as possible and consider using a thin layer of barrier ointment in nappy area to protect the stratum corneum – ensure ointments is preservative-free and does not contain antiseptic, fragrance or colourings.
9. Avoid the use of ointments/lotions to improve the appearance of a newborn infant’s skin.
10. Ensure the umbilical cord is kept clean and dry, allowing it to be exposed to air as frequently as possible.

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Support during painful procedures and pain assessment

Oude-Reimer M, Frauenfelder O, Binter J, Camba F, Ceccatelli M, Hankes-Drielsma I, Jørgensen E, Silva E

Target group
Infants and parents

User group
Healthcare professionals, neonatal units, hospitals, and health services

Statement of standard
All infants in neonatal and paediatric units receive optimal comfort to minimise stress and pain, supported by their parents.

Rationale
Provision of optimal comfort, recognition, and treatment of pain are core skills underpinning all clinical care. Infants may be subjected to a large number of painful and stressful, although necessary, procedures during their care. (1,2) Infants depend on others to recognise, to assess and to treat pain and discomfort. (3–9) The situation for the preterm infant is more complex than that of the full term infant, since they often require intensive or high dependency care for many weeks, and their immature stage of neuromotor development may minimise the external manifestations of distress. Compared to older children and adults, infants are less able to communicate their pain and discomfort and are at greater risk for inadequate analgesia. Although awareness of symptoms of pain and stress is increasing, they are still often underestimated. (10)

Pain and stress may be minimised by regular expert prospective observation, respect for the infant's behavioural cues of pain and discomfort, attention to positioning, the immediate environment and timing of intervention, and appropriate use of pain relief strategies, including non-pharmacological strategies (5) (e.g. tuck, wrap, giving individualised supportive care and use of pacifiers) and analgesics. For some non-urgent procedures, you can expect the parents of the infant in the NICU and apply with them the non-pharmacological pain relief procedures, programming the timing of the intervention. (11)

Benefits

Short-term benefits
- Improved sleep (12)
- Improved digest of feeding (13)
- Improved weight gain (13)
- Improved cortisol levels (13)
- Improved physiologic stability (14)

Long-term benefits
- Improved brain structure and development (6)
- Improved behaviour (6,12)

Components of the standard

Component	Grading of evidence	Indicator of meeting the standard
For parents and family		
1. Parents are informed by healthcare professionals about strategies to optimise comfort, minimise painful stimuli and manage unavoidable pain during care.	A (High quality) B (High quality)	Patient information sheet
2. Parents are informed by healthcare professionals about and offered the opportunity to be present and assist during procedures, when appropriate. (10)	A (High quality) B (High quality)	Audit report, patient information sheet
3. Parents are educated by healthcare professionals to recognise pain and discomfort signals in their infant and how to comfort the infant. (15)	A (High quality) B (High quality)	Patient information sheet, training documentation
For healthcare professionals		
4. A unit guideline on the importance of appropriate pharmacologic and non-pharmacologic pain relief strategies during care and procedures is adhered to by all healthcare professionals.	B (High quality)	Audit report, guideline
5. Training to recognise pain and distress in term and preterm infants is attended by all responsible healthcare professionals. (3)	A (High quality) B (High quality)	Audit report, training documentation
6. Training to avoid any non-essential painful and discomfort procedures is attended by all healthcare professionals. (3)	A (High quality) B (High quality)	Training documentation
7. Pain and stress are assessed using validated tools. (6,9)	A (High quality) B (High quality)	Assessment tools
8. All infants receive appropriate pharmacological and non-pharmacological pain relief. (3,15–21)	A (High quality) B (High quality)	Audit report, guideline
For neonatal unit		
9. A unit guideline for maintaining comfort, avoiding unnecessary pain and discomfort and use of appropriate	A (High quality) B (High quality)	Guideline

pharmacological and non-pharmacological pain relief is available and regularly updated. (4,6,9)		
10. Each unit recognises and utilises an individualised developmental care approach when reducing and avoiding pain and discomfort experiences during infants stay in the hospital. (22)	A (High quality) B (High quality)	Audit report
For hospital		
11. Training to recognise pain and distress in term and preterm infants and to avoid any non-essential painful and discomfort procedures is ensured. (4,6,9)	A (High quality) B (High quality)	Training documentation
For health service		
N/A		

Where to go – further development of care

Further development	**Grading of evidence**
For parents and family	
• Psychological support is offered to parents to cope with a stressful experience of their infant pain. (23,24)	A (Moderate quality)
For healthcare professionals	
N/A	
For neonatal unit	
N/A	
For hospital	
N/A	
For health service	
• Promote strategies to license new preparations of pharmacological agents to relieve pain in infants. (14,25)	A (Moderate quality)
• Promote research into new approaches to pharmacological and non-pharmacological support during painful procedures in infants.	B (High quality)

Getting started

Initial steps
For parents and family
• Parents are verbally informed by healthcare professionals about strategies to optimise comfort, minimise painful stimuli and manage unavoidable pain during care.
• Planned procedures are verbally discussed with parents.
For healthcare professionals
• Attend training to recognise pain and distress and to avoid any non-essential painful and discomfort procedures in infants.

For neonatal unit

- Develop and implement a unit guideline on pain assessment and treatment.
- Develop information material on strategies to optimise comfort, minimise painful stimuli and manage unavoidable pain during care for parents.
- Use a validated pain assessment tool and a flowchart.

For hospital

- Support healthcare professionals to participate in training on pain management.

For health service

N/A

Source

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Supporting the infant during hygiene procedures

Hankes Drielsma I, Oude-Reimer M, Frauenfelder O, Camba F, Ceccatelli M, Kalbér A, Kühn T, Silva E

Target group
Infants, parents, and families

User group
Healthcare professionals, neonatal units, hospitals, and health services

Statement of standard
All infants receive appropriate activities of daily living (ADL), commencing with low-stress cleaning and moving to methods that support self-regulation once the infant is stable, alert and interactive.

Rationale
Activities of daily living (ADL) are described as tasks that every human being participates in for personal care such as eating, bathing, dressing, toileting and repositioning themselves. All infants depend on others (parents) for these daily activities in which they experience trust, empathy and bonding. (1,2)

All caregivers have to be aware that infants' skin is particularly sensitive (3) and cleaning can negatively affect skin integrity (4,5); therefore, early and frequent washing and bathing should be avoided. Furthermore, these procedures can lead to distress and physiological, as well as thermal, instability. (6–8)

Choosing an appropriate ADL includes a washing method that leads to the least distress and disruption of sleep in the infant. (7,9,10)

There are different washing methods like cleaning the minimum of body parts, sponge bathing, or immersion bathing. Washing an infant should never be a scheduled task but should always be cue based and individualised. (3,4,6,9,11–13)

The bio-behavioural cues of the infant should be the leading factor to decide the correct washing method.

Benefits

Short-term benefits
- Appropriately supported activities of daily living (ADL's) in the infants (6,9,10)
- Reduced risk of infections (4,5,14) (see TEG Care procedures)
- Minimised energy expenditure (1,2,7–10,12)
- Improved self-regulation of the infant and ensuring bathing is a pleasant experience (9–13,15)
- Supports the parental role with improved confidence and competence in supporting their child's ADL's (2,6,13,15,16)

Long-term benefits
- Improved weight gain and development of the infant (1,2,10,14,15)
- Improved parent-infant bonding (2,9,13,15,16)

Components of the standard

Component	Grading of evidence	Indicator of meeting the standard
For parents and family		
1. Parents and family are informed by healthcare professionals about hygiene and bathing procedures. (6,13,16) (see TEG Patient safety & hygiene practice)	A (High quality) B (High quality)	Patient information sheet
2. Parents are involved in interpreting cues in their infant. (1,2,13,14,16)	A (High quality) B (High quality)	Clinical records, parent feedback, patient information sheet
3. Parents are supported by healthcare professionals to carry out bathing and feel confident. (6,10,13,15,16)	A (High quality) B (High quality)	Guideline, patient information sheet
4. Parents get opportunities to practice bathing with a doll during parent education groups.	B (Moderate quality)	Training documentation
For healthcare professionals		
5. A unit guideline on hygiene and bathing procedures for infants in an individualised manner is adhered to by all healthcare professionals. (6,9,10,13)	A (High quality) B (High quality)	Guideline
6. Training on hygiene and bathing procedures is attended by all responsible healthcare professionals.	B (High quality)	Training documentation
7. All healthcare professionals see bathing as an important parental procedure which is only done with or by parents. (2,10,13,16)	A (High quality) B (High quality)	Guideline
For neonatal unit		
8. A unit guideline for hygiene and bathing procedures for infants in an individualised manner is available. (6,13,16,17)	A (High quality) B (High quality)	Guideline
9. Continuous education about bathing and interpreting cues in the infant is available. (6,13)	A (High quality) B (High quality)	Training documentation

For hospital		
10. Training on hygiene and bathing procedures is ensured.	B (High quality)	Training documentation
11. Quiet spaces where parents can bathe their infants are available. (see TEG NICU design)	B (Moderate quality)	Guideline
For health service		
N/A		

Where to go – further development of care

Further development	**Grading of evidence**
For parents and family	
N/A	
For health care professionals	
N/A	
For neonatal unit	
N/A	
For hospital	
N/A	
For health service	
N/A	

Getting started

Initial steps
For parents and family
• Parents and family are verbally informed by healthcare professionals about hygiene and bathing procedures. • Hygiene of the infant is performed by or with parents.
For health care professionals
• Attend training on hygiene and bathing procedures.
For neonatal unit
• Develop and implement a unit guideline for hygiene and bathing procedures. • Develop information material about hygiene and bathing procedures for parents.
For hospital
• Support healthcare professionals to participate in training on hygiene and bathing procedures.
For health service
N/A

Description

Coughlin (9) describes how age-appropriate activities of daily living (ADL's) in the NICU include postural support, feeding and skin management. She underlines the importance for healthcare professionals to partner with parents in the provision of ADL's. This partnership not only creates parental confidence and competence but also validates the parental role while meeting the fundamental age appropriate needs of their infant. (18)
All infants, and especially ill and preterm infants, are exposed to many stressors due to medical and nursing care procedures needed to support physiological needs that are often painful. (3,5,9,18) Other stressors infants in the NICU are exposed to are interrupted sleep, excessive noise and light levels and daily care procedures in an unfamiliar extra-uterine environment without the protection of their mother. (6)

When deciding the appropriate washing method for an individual infant it's not only important to take the age of the infant into consideration but more so to observe the infant's cues through different subsystems. These include autonomic integrity, motor activity the infant state, attention capacity and self regulation based on the Synactive Theory of Development. (1,2) Bathing should be delayed until an infant shows competence across the five subsystems.

After birth infants should not be washed. Inspection of the scalp is indicated if the newborn infant was invasively monitored during labour to identify skin damage and prevent infections. When the hair of a newborn infant is full of blood or green amniotic fluid the hair and body may be gently washed. There are no other reasons to give a full term infant a bath after birth.

Very preterm infants in the NICU who show signs of instability should never be bathed or sponge bathed fully in order to avoid distress. (11) Places where the skin can become irritated and may require cleansing are face (eyes), behind the ears, neck/throat, armpits, hands between the fingers and feet between toes. This can be carried out with warm sterile water or breast milk. (see TEG Care procedures) Cleansing a body part should be done gently while responding to the newborn infant's cues and letting parents support their newborn infant. A "4-hands-manoever" is recommended for such possible stress related procedures": two carers, ideally one healthcare professional and one parent perform body cleansing procedures: one providing care, the other supporting the infant to remain stable and calm in a potential stressful situation.

Once the infant is in a step down unit or in the NICU shows competence across the 5 subsystems the infant may be ready to experience being bathed while swaddled. (6,7,11,13) Swaddled bathing helps the infants feel secure and gives them support to self-regulate. This way they can be an active participant. Every healthcare professional should see bathing as a social event that promotes the wellbeing of the infant and includes the parents. Parental participation helps them feel confident and competent. During this process healthcare professionals can support the parents by helping them to move slowly, watch, interpret and respond to their infant's cues. A calmed bathing experience is an ideal situation to bring parents and their child into interaction, communicating to each other. This will increase self-confidence and resilience of the parents and is a perfect tool to establish secure parent-child bonding.

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Taking blood samples

Binter J, Oude-Reimer M, Frauenfelder O, Camba F, Ceccatelli M, Hankes-Drielsma I, Jørgensen E, Silva E

Target group
Infants and parents

User group
Healthcare professionals, neonatal units, hospitals, and health services

Statement of standard
The process of taking blood samples is carried out using optimal comfort strategies to minimise stress and pain using an individualised supportive technique.

Rationale
Blood sampling is necessary to monitor neonatal care. The procedure of sampling carries certain risks (e.g. haematoma, infection, damage of nervous system, and pain). (1) Blood sampling should be performed exclusively by experienced and specially trained healthcare professionals. The need for and frequency of blood sampling should be individualised. Choosing the appropriate sampling method (venous, arterial, or heel puncture) depends on the type of investigation required. Venous puncture should be the preferred method, as it causes less pain than puncturing the heel. (2–4) As with all invasive procedures, both appropriate arrangements regarding the infant's comfort and an effective pain relief therapy are necessary. It is also obligatory to comply with hygiene standards. There are no clear directives, guidelines or recommendations regulating which skin disinfectant should be chosen for preterm and term infants. (see TEG Patient safety & hygiene practice)

Benefits

Short-term benefits
- Reduced complications (2,3)
- Reduced painful interventions (2,3,5)
- Improved sleep (6)

Long-term benefits
- Improved cortisol levels (7)
- Improved brain structure/development (8,9)

Components of the standard

Component	Grading of evidence	Indicator of meeting the standard
For parents and family		
1. Parents are informed by healthcare professionals about the importance and procedure of taking blood samples, which strategies are followed by the clinic, signs of stress and pain in the infant, and how to react accordingly. (see TEG Care procedures)	B (High quality)	Patient information sheet
2. Parents are invited to be present at blood sampling and able to support (e.g. skin-to-skin care) their infant during the procedure. (10–12)	A (High quality) B (High quality)	Parent feedback
3. Parents are informed about non-pharmacological analgesic strategies (e.g. breastfeeding or pacifier). (10–15)	A (Moderate quality) B (High quality)	Patient information sheet
For healthcare professionals		
4. A unit guideline on the taking of blood samples is adhered to by all healthcare professionals.	B (High quality)	Guideline
5. Training on venous and capillary blood sampling and the behavioural identification of stress and pain in infants is attended by all responsible healthcare professionals. (see TEG Care procedures)	B (High quality)	Training documentation
6. Non-pharmacological analgesic strategies are used as a precaution, including skin-to-skin care and breastfeeding when parents are present. (10,12)	A (High quality) B (High quality)	Guideline
For neonatal unit		
7. A unit guideline on the taking of blood samples is available and regularly updated.	B (High quality)	Guideline
For hospital		
8. Training on venous and capillary blood sampling and the behavioural identification of stress and pain in infants is ensured.	B (High quality)	Training documentation

9. Appropriate equipment for blood sampling (e.g. needles matching the size of the infant) is available.	B (High quality)	Audit report

For health service
N/A

Where to go – further development of care

Further development	**Grading of evidence**
For parents and family	
• In all infants skin-to-skin care while taking elective blood samples is used. (15–17)	A (High quality)
For healthcare professionals	
N/A	
For neonatal unit	
N/A	
For hospital	
N/A	
For health service	
• Support and promote projects that develop non-invasive techniques to replace blood sampling. (10,12,15–17)	A (High quality)

Getting started

Initial steps

For parents and family
- Parents are verbally informed by healthcare professionals about the importance and procedure of taking blood samples, which strategies are followed by the clinic, signs of stress and pain in the infant, and how to react accordingly.
- Parents are invited to be present during their infant's blood sampling.

For healthcare professionals
- Attend training on venous and capillary blood sampling and the behavioural identification of stress and pain in infants.

For neonatal unit
- Develop and implement a unit guideline on blood sampling.
- Develop information material on the importance and procedure of taking blood samples, which strategies are followed by the clinic, signs of stress and pain in the infant and how to react accordingly for parents.
- Train all healthcare professionals with regard to individualised support of the infant, blood sampling, pain management and hygiene.

For hospital
- Support healthcare professionals to participate in training on venous and capillary blood sampling and the behavioural identification of stress and pain in infants

For health service
N/A

Source

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Temperature management in newborn infants

van Leeuwen M, Frauenfelder O, Oude-Reimer M, Camba F, Ceccatelli M, Hankes-Drielsma I, Kalbér A, Kühn T, Silva E

Target group
Newborn infants and parents

User group
Healthcare professionals, neonatal units, hospitals, and health services

Statement of Standard
Environmental management of temperature and humidity is necessary to optimise the management of newborn infants.

Rationale
Normal axillary temperature is defined to be between 36.5 and 37.5 degrees Celsius by international bodies. (1,2) Variation of body temperature from normal is more common in preterm and ill infants. The optimal environmental temperature is termed the thermo-neutral temperature, as defined as the temperature at which metabolic requirements of the infant are minimal. (3) Different studies have shown that low body temperatures in newborn infants are associated with mortality, increased risk of illness and delayed growth. (4–6) Similarly, high body temperature is associated with adverse outcomes, particularly in infants following hypoxia ischemia and very preterm infants. (7,8)

The physiological and behavioural responses of preterm infants to hot or cold environments are less developed than in term infants. Reduced bodyweight-body surface ratio can result in higher heat loss. Preterm infants can also have high trans-epidermal water losses through evaporation because of their thin porous skin. High evaporative water loss causes high energy expenditure due to skin cooling, increasing neonatal morbidity. (3) In addition, preterm and ill infants may be exposed during procedures to insert central catheters, endo-tracheal intubation and resuscitation, which cause fluctuation in body temperature.

Benefits

Short-term benefits
- Reduced risk of hypothermia (9)
- Reduced risk of hyperthermia (7,9)
- Minimises trans-epidermal water loss (10)
- Improved comfort and reduced physiologic instability and stress (11)
- Stabilised body temperature by skin-to-skin care (12,13)

Long-term benefits
- Improved developmental outcomes (4–6)

Components of the standard

Component	Grading of evidence	Indicator of meeting the standard
For parents and family		
1. Parents are informed by healthcare professionals about the ideal body temperature and importance of temperature management. (14)	A (High quality) B (High quality)	Patient information sheet
2. Parents are invited to measure their infant's temperature. (14,15)	A (High quality) B (High quality)	Patient information sheet, parent feedback
3. Skin-to-skin care is provided as soon as possible. (3,12,13) (see TEG Infant- and family-centred developmental care)	A (High quality) B (High quality)	Audit report, parent feedback, patient information sheet
For healthcare professionals		
4. A unit guideline on temperature management is adhered to by all healthcare professionals. (3,16)	A (High quality) B (High quality)	Guideline
5. Training on temperature measurement, management including incubator settings for the best thermal environment, the importance of maintaining normothermia in the newborn infant, and the risks of hypothermia and hyperthermia, is attended by all responsible healthcare professionals. (3–6,9,17–21)	A (High quality) B (High quality)	Training documentation
For neonatal unit		
6. A unit guideline on temperature management is available and regularly updated. (3,16)	A (High quality) B (High quality)	Guideline
7. Appropriate facilities for temperature management are available. (5,17,22–24)	A (Moderate quality) B (High quality)	Audit report, guideline
For hospital		
8. Training on temperature management is ensured. (3–6,9,17–21)	A (High quality) B (High quality)	Training documentation
9. Appropriate facilities for neonatal temperature management are provided. (5,17,22–24)	A (Moderate quality) B (High quality)	Audit report, guideline

For health service		
10. Rates of hypo- and hyperthermia are monitored. (25)	A (High quality) B (High quality)	Audit report

Where to go – further development of care

Further development	**Grading of evidence**
For parents and family	
N/A	
For healthcare professionals	
N/A	
For neonatal unit	
N/A	
For hospital	
N/A	
For health service	
• Contribute to benchmarking strategies to monitor temperature control in different settings, e.g. postnatal ward or transfer. (25)	A (High quality) B (High quality)

Getting started

Initial steps
For parents and family
• Parents are verbally informed by healthcare professionals about the ideal body temperature and importance of temperature management. • Parents are encouraged to measure their infant's temperature and contribute to thermal management.
For health care professionals
• Attend training on temperature measurement, management including incubator settings for the best thermal environment, the importance of maintaining normothermia in the newborn infant, and the risks of hypothermia and hyperthermia.
For neonatal unit
• Develop and implement a unit guideline on temperature management. • Develop information material on the ideal body temperature and importance of temperature management for parents.
For hospital
• Support healthcare professionals to participate in training on temperature management.
For health service
• Develop benchmarking of admission temperatures.

Description

Preterm infants and very low birthweight infants are prone to rapid heat loss through mechanisms of conduction, evaporation, radiation and convection. Low body temperature is directly related to higher mortality and morbidity rates. (4,8,18) A very preterm infant's admission temperature is inversely related to in-hospital mortality, with a 28% increase in the mortality rate per every 1 °C of decrease in the admission temperature. Low temperature on admission increases the rate of oxygen consumption, causes pulmonary and systemic vasoconstriction, and is associated with worsening of respiratory distress, metabolic acidosis, hypoglycaemia, coagulation disorder, and increases the risk of late sepsis and peri-intraventricular haemorrhage. (26,27)

Careful temperature management should be a standard in delivery-rooms, during transport and in the NICU.

Delivery room
In preparation for the transition process or resuscitation of a preterm infant, the temperature in the delivery room should be increased to 23°C–25°C for term infants, and should be >28°C for infants <28 weeks of gestation. (2,16,28,29) For infants born before 32 weeks' of gestation, the neonatal team should take steps to prevent cooling by 1) placing a thermal mattress under the newborn infant, 2) using plastic wrap or a bag to cover the infant without drying, and 3) placing a hat immediately after delivery. (27,30,31) For infants who require respiratory support gases should be heated and humidified. The target axillary temperature in a newborn infant during resuscitation is between 36.5°C and 37.5°C. (6,28) Hyperthermia (>38°C) should be avoided due to increased risk of RDS, neonatal seizures, cerebral palsy and early death. (32–35) Admission temperature should be regularly audited.

Transport
The transport of the newborn infant from delivery-room to the NICU needs to be safe and controlled. Very preterm infants should be transferred in a suitable transport incubator, pre-heated to 37°C, if it is not possible to effect the transfer skin-to-skin with mother or father.

NICU
Room temperature in the NICU should be maintained >23°C. Incubator temperature is dependent on the infant's size and age. Each unit should have strict protocols for the management of environmental incubator temperature and the use of humidity to reduce evaporative water loss, that are regularly audited. Skin-to-skin care is used whenever possible (see TEG Infant- and family-centred developmental care) and care should be taken to avoid thermal stress during bathing. (see TEG Care procedures)

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Weighing

Kalbér A, Kühn T, Oude-Reimer M, Frauenfelder O, Camba F, Ceccatelli M, Hankes-Drielsma I, Jørgensen E, Silva E

Target group
Infants and parents

User group
Healthcare professionals, neonatal units, and hospitals

Statement of standard
The procedure of weighing an infant is individualised to minimise stress and adapted to the clinical condition and may be carried out alongside or by the parents.

Rationale
Weighing is carried out regularly to monitor weight and nutritional status. The optimal frequency is unknown and, in practice, is variable. Daily weighing may be used as a routine procedure. The procedure of weighing an infant is particularly stressful for very preterm or ill infants, and should be adapted to the individual situation of the infant taking into account direct therapeutic benefit (e.g. fluid and nutritional management). The manner in which the procedure is conducted may adversely affect the infant's physiologic and behavioural stability.

Infants may be weighed using two different methods: using an integrated scale within the incubator (when the infant is very preterm or ill) or using a free standing scale when the infant is stable enough to handle the transfer.

Swaddling or using bedding materials (e.g. a snuggle or nest) during weighing provides more sustained support during the transfer to the scale, the infant's hands may be positioned to be accessible to the mouth to assist in self-regulation. This is consoling and inhibits heat loss, behavioural disorganisation, and physiologic distress. (1,2) The transfer to the scale should be gentle and slow, with due regard to the immature vestibular system of the infant. The environment should provide for temperature stability as well as developmentally supportive experiences regarding to excessive sounds and bright light.

Benefits

Short-term benefits
- Improved comfort of the infant (1)
- Improved physiological stability and motor organisation with reduced arousal during the procedure (1)
- Minimised energy expenditure (3)
- Reduced hypothermia (2)
- Increased parental awareness of behavioural cues and improved participation in daily care (4–6)

Long-term benefits
- Increased parental awareness of behavioural cues and improved participation in daily care (7)
- Improved healthy brain structure/developmental benefits (4,8)

Components of the standard

Component	Grading of evidence	Indicator of meeting the standard
For parents and family		
1. Parents are informed by healthcare professionals about the possibility of active participation in the weighing of their infant (swaddling, holding while transferred, providing containment on a scale), how to recognise behavioural signs of discomfort during weighing, and how to react accordingly. (4,5,9,10)	A (Moderate quality) B (Moderate quality)	Parent feedback, patient information sheet
For healthcare professionals		
2. A unit guideline on weighing (handling, transfer, frequency) is adhered to by all healthcare professionals.	B (High quality)	Guideline
3. Training on weighing (handling, transfer, frequency) and infant behaviour during weighing is attended by all responsible healthcare professionals. (11–13)	A (Moderate quality) B (High quality)	Training documentation
4. Weighing is performed not as a fix standard routine but done on an individual basis. (11)	A (Moderate quality) B (High quality)	Audit report
For neonatal unit		
5. A unit guideline on the procedure of weighing an infant is available and regularly updated.	B (High quality)	Guideline
For hospital		
6. Training on weighing an infant and infant behaviour during weighing is ensured.	B (High quality)	Training documentation
7. Appropriate material for swaddling and nesting is available. (14) (see TEG Care procedures)	A (Moderate quality) B (High quality)	Audit report
8. Modern bed/incubator built-in- scales are provided for the most vulnerable infants. (15)	A (Moderate quality) B (Moderate quality)	Audit report
For health service		
N/A		

Where to go – further development of care

Further development	**Grading of evidence**
For parents and family	
• Parents are involved as primary caregivers who learn to perform weighing by themselves. (13,16,17)	A (High quality) B (High quality)
For healthcare professionals	
• Accept parents as primary caregivers and guide and support during care practices. (13,16,17)	B (High quality)
For neonatal unit	
N/A	
For hospital	
N/A	
For health service	
N/A	

Getting started

Initial steps
For parents and family
• Parents are verbally informed by healthcare professionals about the possibility to actively participate in weighing their infant (swaddling, holding while transferred, providing containment on a scale), how to recognise the behavioural signs of discomfort during weighing, and how to react accordingly.
For healthcare professionals
• Encourage parents to actively participate in a weighing procedure. • Attend training on weighing and infant behaviour during weighing.
For neonatal unit
• Perform an individual approach of weighing to the special needs of the individual infant. • Develop and implement a unit guideline on the procedure of weighing an infant. • Develop information material on parental active participation in weighing their infant for parents.
For hospital
• Support healthcare professionals to participate in training on weighing and infant behaviour during weighing.
For health service
N/A

Source

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