

## A call for clarity and collaboration: The need for up-to-date, evidence-based multidisciplinary guidelines for baby skin cleansing

A supplement developed and produced by WaterWipes®

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### Abstract

In September 2020, an expert group of 17 professionals with a special interest in infant skin cleansing from eight different countries was brought together by WaterWipes®, to consider best practice on baby skin cleansing and how to convey recommendations consistently to new parents. This international group reviewed selected guidelines by leading bodies and discussed their own expert recommendations to consider the advice. A clear disconnect was found between the guidelines and expert recommendations. Therefore, this group of experts are calling for updated guidelines on infant skin cleansing that are informed by experiences across the multidisciplinary team and reflect the latest scientific evidence, as well as practical considerations of modern life. They should also be regularly updated and provide specific guidance that can then be conveyed to parents and other caregivers.

### Introduction by Dr Pixie McKenna, GP and broadcaster, UK and Ireland

Becoming a parent for the first time can spark a range of wonderful emotions, but also bring with it waves of worry about this tiny, precious person. A baby's skin is its interface with the rest of the world—an organ that is vulnerable and exposed to the environment—and can therefore become a focus of parental worry, especially given that parents need to cleanse it frequently and at the very least at each nappy change. The American Academy of Pediatrics (AAP) highlights this in its guidance on newborn care stating, 'Parents often have questions about skin and cord care'.<sup>1</sup> Something so simple can actually prove a major source of concern for new parents. There is the inevitable question of 'am I doing this right?'

In order to understand how to support healthcare professionals (HCPs), parents and other caregivers to upskill in and deliver best practice on baby skin care, WaterWipes® convened a global advisory board of 17 HCPs/experts from eight countries in September 2020. The advisers represented a range of specialties, including health visiting, midwifery, neonatal specialist nursing, neonatology, dermatology, paediatrics and patient advocates. This group of experts sought to consider the current guidance on baby skin cleansing and whether these reflect emerging evidence and their own perceptions of best practice, as well as how to convey recommendations consistently to new parents.

### Countries represented



The 17 advisors cited 19 different guideline sources on infant skin cleansing. These ranged from local protocols to global recommendations and from those directed at HCPs in a specific role and speciality to those suggested for use by HCPs in general.<sup>1-13</sup> These guidelines are often contradictory, e.g. in the recommendation of cloth and water vs cotton wool and water vs baby wipes for cleansing of the nappy area,<sup>2,7,9</sup> but can also lack granularity, for example only discussing bathing and not bottom cleansing or nappy changing.<sup>1</sup>

**"Consistent guidelines are really important. Implementing a nappy rash algorithm has been of major benefit in our hospital as it ensures that everyone follows the same standard of care,"**

Tina Wesley, Senior Neonatal Nurse, Bliss, UK

**"Preterm birth flips the paradigm of parenthood on its axis. Parents place a piece of their heart in the care of neonatal staff who are often the only constant in the turbulent NICU journey. Circumstance necessitates families to place unconditional trust in their baby's caregivers but evidence-based science must be the ultimate determinant in ensuring that the highest quality care is provided for babies and this includes protecting the integrity of their skin,"**

Mandy Daly, Director of Advocacy and Policymaking, Irish Neonatal Health Alliance, Ireland

Furthermore, the dermatologists and paediatricians present expressed a general preference for relying on their own experience and anecdotal evidence when discussing skin cleansing, rather than referring to guidelines. Drivers of this behaviour included the fact that infrequently updated guidelines do not always reflect the latest evidence.

**"With the limited published guidelines on skin cleansing in paediatrics, I opted to create personalised algorithms for my patients, based on data from clinical studies, personal experience and country considerations,"**

Dr Evelyne Khoriaty, Consultant Paediatrician (family care), UAE

When parents or carers access a GP, it is normally for an acute problem. As doctors, we are very good at dealing with day-to-day emergencies and medical advice but often defer to other HCPs when it comes to dealing with something that we perceive to be simple such as skin care. Part of the reason for this is lack of knowledge and the

other is the lack of a robust resource for reference. Doctors like to resource an evidence base when delivering advice. They like this to be both clear and current, whatever constitutes 'best in class' advice.

Although the main source of advice may come via midwives, health visitors, dermatologists and paediatricians, it is important that GPs are also aligned with their guidelines. There is nothing more confusing as a new parent than getting conflicting advice.

**"It makes us look unprofessional when we are contradicting each other as HCPs and then it also causes the mother's anxiety level to go up. It undermines us all as professionals,"**

Cecile de Scally, Lead Midwife Educator, Malaak Mama & Baby Care, UAE

**HCPs feel let down by the leading bodies throughout the world that they can normally rely upon to provide robust guidance**

The World Health Organization (WHO) is committed to 'improve equity in health, reduce health risks, promote healthy lifestyles and settings, and respond to the underlying determinants of health'<sup>14</sup> and offers guidance on all aspects of health and wellbeing, including newborn care. However, given the variety in local needs and resources, on the subject of baby skin care, the recommendations are generic (see Table 1).<sup>2</sup>

**"Global guidelines would not be helpful, as the type of skin care very much depends on local climatic conditions, availability of basic hygienic measures, and financial resources, which obviously vary,"**

Professor Peter Hoeger, Paediatric Dermatologist, Children's Hospital Wilhelmstift, Hamburg, Germany

The UK's National Institute for Health and Care Excellence (NICE) is considered an authority and key source of evidence-based guidance for HCPs across the multidisciplinary team. The advisers accustomed to relying on NICE for this purpose were disappointed to note that, while the clinical guideline on postnatal care up to 8 weeks after birth [CG37] was last updated in February 2015, the specific guidance on infant skin care has not been updated since 2006.<sup>3</sup> More up-to-date guidance (September 2020) are available on the management of nappy rash; however, these are 'largely based on expert opinion in review articles on nappy rash and infant skin care'.<sup>11</sup>

**"The NICE postnatal guidelines last being updated in 2006 is not good enough. HCPs have a responsibility to give up-to-date advice, so guidelines should be up-to-date,"**

Marie Louise, Midwife, UK

In the Republic of Ireland, guidelines on baby skin cleansing from the Health and Safety Executive (HSE) are aimed at parents rather than HCPs. They are also some of the most conservative and restrictive, with only 'plain water' recommended for baby cleansing in the first 4 weeks of life, and cotton wool and water given as the preferred method of choice for napkin area cleansing in the first 2–4 weeks.<sup>9</sup>

Guidelines from the US on infant skin cleansing also fell short of HCP expectations. Guidelines from AAP have not been updated since 2012 and provide only very broad recommendations, without discussion of napkin area cleansing specifically.

While the American Academy of Dermatology (AAD) offers tips to new parents on bathing and nappy rash treatment, these again seem to be based on expert experience rather than being evidence-based and are not formulated into guidelines for HCPs.<sup>12,13</sup>

**“There are no concrete dermatological guidelines for the care of infant skin in the US. It would make the most sense to have guidelines that are across all specialties, as different HCPs come at things from different viewpoints,”**

Dr Alexis Granite, Consultant Dermatologist, affiliated with Skin Health Alliance, US

**Table 1. Summary of key English language guidelines on newborn cleansing**

Region	Guideline	Audience	Recommendations on cleansing (includes relevant text only)	Last updated	Evidence-based?
Global	WHO: Pregnancy, childbirth, postpartum and newborn care—A guide for essential practice (3rd edition) <sup>2</sup>	HCPs	<ul style="list-style-type: none"> <li>Wash the face, neck, underarms daily</li> <li>Wash the buttocks when soiled. Dry thoroughly</li> <li>Bath when necessary: <ul style="list-style-type: none"> <li>Ensure the room is warm, no draught</li> <li>Use warm water for bathing</li> <li>Thoroughly dry the baby, dress and cover after bath</li> </ul> </li> <li>Use cloth on baby's bottom to collect stool. Dispose of the stool as for woman's pads. Wash hands</li> </ul>	2015	Described as such, but references not cited
UK	NICE: Postnatal care up to 8 weeks after birth <sup>3</sup>	HCPs	<ul style="list-style-type: none"> <li>Cleansing agents should not be added to a baby's bath water nor should lotions or medicated wipes be used. The only cleansing agent suggested, where it is needed, is a mild non-perfumed soap</li> </ul>	2006	Yes
UK	NICE: Nappy rash <sup>11</sup>	HCPs	<ul style="list-style-type: none"> <li>Use water, or fragrance- and alcohol-free baby wipes; dry gently after cleaning; avoid potential irritants such as soaps and bubble bath</li> </ul>	2020	No
Republic of Ireland	HSE: Caring for your baby's skin <sup>9</sup>	Parents	<ul style="list-style-type: none"> <li>Most experts recommend you use plain water when washing your baby for the first 4 weeks or so</li> <li>Use cotton wool and water to clean your baby's skin</li> <li>Try not to use baby wipes until your baby is 2 to 4 weeks old</li> </ul>	2018	No— suggestion that it is based on expert opinion
US	AAP: Care of the well newborn <sup>1</sup>	HCPs	<ul style="list-style-type: none"> <li>The newborn infant does not require frequent bathing</li> <li>Cleansers should be mild and the child should have sponge baths until the umbilical cord detaches</li> </ul>	2012	No— appear to be based on expert opinion
US	AAD: How to bathe a newborn: Tips from dermatologists <sup>12</sup>	Parents	<ul style="list-style-type: none"> <li>Bathing your baby is simple and only needs to happen two to three times a week, as long as the diaper area is thoroughly cleaned during each diaper change</li> <li>The first thing to remember is to start off with sponge baths until your baby's umbilical cord stump falls off and heals</li> <li>You will need a bowl of lukewarm water, a washcloth and a mild, fragrance-free baby soap</li> <li>Soap only really needs to be applied to dirty areas; the neck and diaper area are usually sufficient. Add the baby soap into the bowl of water and use the washcloth to gently wash your baby. Make sure to rinse off any soap after cleaning</li> </ul>	2019	No— appear to be based on expert opinion
US	AAD: How to treat diaper rash <sup>13</sup>	Parents	<ul style="list-style-type: none"> <li>Use water and a soft washcloth or baby wipes that are alcohol- and fragrance-free. If the rash is severe, use a squirt bottle of water to clean the area, as doing so is gentler to the skin. Next, allow the area to air dry. Let your child go diaper-free as long as possible to let the skin dry and heal</li> </ul>	–	No— appear to be based on expert opinion

**"Is it important to involve multiple specialities in infant care guidelines. Midwives will be the ones advising on normal skin care but if the barrier becomes disrupted and a dermatitis develops that does not respond to simple measures, care usually moves to the dermatologist,"**

Dr Susan Mayou, Skin Health Alliance Dermatologist, UK

## **Purity is the foundation to build recommendations on**

In the absence of up-to-date evidence-based guidelines, the expert HCPs considered what they should be recommending as best practice for cleansing infant skin. Overwhelmingly, the message that can be taken away from guidance and expert opinion is the need to use cleansing techniques that are as mild and gentle as possible to avoid potential irritants to delicate baby skin.<sup>1-3,9,11-13</sup>

While historically, this may have equated to the recommendation of cotton wool and water, to this group of HCPs, this was not necessarily the case. For the attendees from the US, in particular, cotton wool and water were seen as an archaic and impractical recommendation for modern parents, especially when spending time away from the home. Qualitative study data from 280 parents also supported the notion that wipes may be more convenient, as preparing cotton wool and water can be time-consuming, as well as it being potentially difficult to access clean sources of water when out and about.<sup>15</sup> Other practical difficulties involving cotton wool and water included that cotton fibres can stick to the skin and that cotton balls or pads can be small, requiring repeated wiping and use of many balls/pads.<sup>15</sup> This group of HCPs particularly felt this was the case with cleansing meconium.

**"No one really uses cotton wool and water in the US—wipes are far more convenient,"**

Misty Williams, NICU Advanced Practice Partner, University of Arkansas for Medical Sciences, Arkansas, US

**"Cotton wool and warm water can cause blockages of sinks and pipes,"**

Lucille Bradfield, Clinical Nurse Manager,

Cork University Maternity Hospital, Ireland

**"Cotton wool can result in the need to rub the skin more compared with use of a wipe. Bigger size wipes are also more practical compared with the small balls of cotton wool,"**

Margaret Merrigan-Feenan, Clinical Midwife Manager, Dublin, Ireland

## **Is now the time to finally move on from cotton wool/ cloth and water?**

Even when water is from a reliable source or boiled, there may be further purity considerations around the use of cotton wool and water. Both tap and boiled water continue to contain impurities and particulates. When considering the cotton wool itself, although clean within its packaging, it is not entirely free from contamination and will have been processed using chemical detergents. Furthermore, if the same piece of cotton wool is dipped in water more than once or hands touch the surface, there is a risk of contaminating the water.

**"There's a lot of ignorance out there about water and water purity,"**

Cheryll Adams, Executive Director, Institute of Health Visiting, UK

The fact that water impurities can affect the skin, particularly of babies, is supported by evidence that hard water (i.e. water with increased levels of dissolved calcium and magnesium carbonate) has been associated with an increased incidence of atopic dermatitis (AD).<sup>16,17</sup> In a UK-based study of 1,204 babies, those exposed to harder water had more visible AD at 3 months of age than those exposed to softer water ( $P=0.005$ ).<sup>18</sup> In the subgroup of babies with a genetic predisposition to eczema in the form of a filaggrin loss of function mutation ( $n = 141$ ), the effect of hard water on atopic dermatitis development was even more pronounced with the prevalence of AD increasing with cumulative exposure to hard water up until 36 months of age.<sup>18</sup>

**"Up to 20% of children get eczema in the first year of life. In Germany, it is the number one disease that young parents are concerned about,"**

Professor Peter Hoeger, Paediatric Dermatologist, Children's Hospital Wilhelmstift, Hamburg, Germany

Following a review of the scientific literature by a team of independent experts, the Skin Health Alliance validated WaterWipes baby wipes as being purer than cotton wool and water. WaterWipes are manufactured under clean room conditions using a unique purifying technology. The water passes through a seven-step purification process that removes physical and chemical impurities, softens and purifies the water. This purifying process makes the water in WaterWipes significantly purer than cooled boiled water. Additionally, the wipe material undergoes a decontamination process, when combined with the formulation results in a fresh, pure product that is stable for 20 months unopened or 4 weeks after opening.

**"The water used for WaterWipes is safer [than tap water],"**

Emilia Jaśniewska, Midwife, Baby Sleep Consultant, owner of Emilymed.pl, Poland

## WaterWipes are purer than cotton wool and water\*

**Cotton wool and water\***

**Water**  
Impurities and other minerals

**Cotton wool**  
Detergents and impurities

\*cooled boiled water

**WaterWipes\***

- **7 step purification process** removes impurities, softens and purifies the water
- **Fruit extract** helps maintain skin integrity

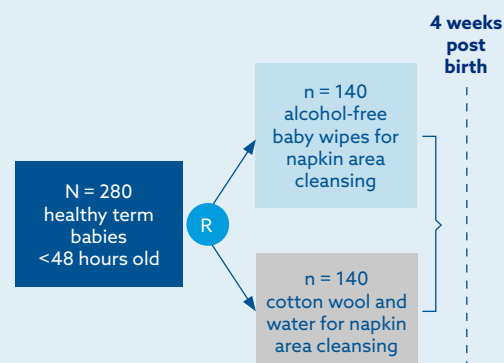
validated by

## Should baby wipes be a modern standard of care for infant napkin area cleansing?

If baby wipes have the potential to be purer than cotton wool and water, as well as more convenient, the question for HCPs becomes whether baby wipes should be recommended as best practice for napkin area cleansing. NICE recommends non-medicated baby wipes in the postnatal period, as well as 'mild' cleansers, however, many parents do not understand what is meant by 'non-medicated' or 'mild', with 'mild' also appearing to be a relative term that lacks a concrete definition.<sup>3,19</sup> Over the past decade or so, a number of studies have investigated the comparative tolerability of baby wipes compared with cotton wool/cloth and water for baby skin cleansing.

A prospective, assessor-blinded, randomised controlled equivalence trial examining napkin area cleansing of newborn term babies with alcohol-free baby wipes vs cotton wool and water was published by Lavender, et al. in 2012.<sup>20</sup> This landmark study demonstrated baby wipes to be equivalent to cotton wool and water in terms of skin hydration, skin surface pH, trans-epidermal water loss (TEWL) and erythema (see Figure 1).<sup>20</sup> In a smaller study (N = 44), also published in 2012, a comparison of baby wipes to a water-moistened washcloth demonstrated that babies cleansed with the wipes vs water had a significantly lower TEWL. However, neither of the cleansing procedures were shown to harm skin barrier maturation (P=0.007).<sup>21</sup>

**Figure 1. Randomised controlled equivalence trial of alcohol-free baby wipes vs cotton wool and water by Lavender, et al. 2012<sup>20</sup>**



**Primary outcome:**  
**Skin hydration score**

Analysis	Alcohol-free baby wipes	Cotton wool and water	P
ITT	65.4 (SD 12.4)	63.5 (SD 14.2)	0.47
PP	64.6 (SD 12.4)	63.6 (SD 14.3)	0.53

ITT=intention-to-treat; PP=per protocol; R=randomisation; SD=standard deviation.



Baby wipes have also been compared with cloth and water in premature babies. Perineal erythema and TEWL were significantly lower for wipes than cloth and water, beginning at Day 5 for erythema ( $P \leq 0.04$ ) and Day 7 for TEWL ( $P \leq 0.03$ ).<sup>22</sup> Moreover, a US-based neonatal intensive care unit found that implementing perineal skin care guidelines, while introducing WaterWipes specifically, led to a reduction in the incidence of nappy rash by 16.7%, a 34.9% reduction in severe cases and a reduced duration of nappy rash by 57% (3.5 days) per 100 patient-days.<sup>23</sup> While some advisers would feel comfortable using baby wipes, such as WaterWipes on premature babies as young as 23 weeks, others called for more studies on skin care in these micro-premature babies to generate a stronger evidence base supporting their tolerability.

**“Premature babies at the lower edge of viability (23–24 weeks’ gestation) have an epidermis that is only a few cells thick. These babies need separate, more cautious guidelines on skin care,”**

Fauzia Paize, Consultant Neonatologist, Bliss, UK

## Considering choice of baby wipes in a densely populated market without clear clinical guidance

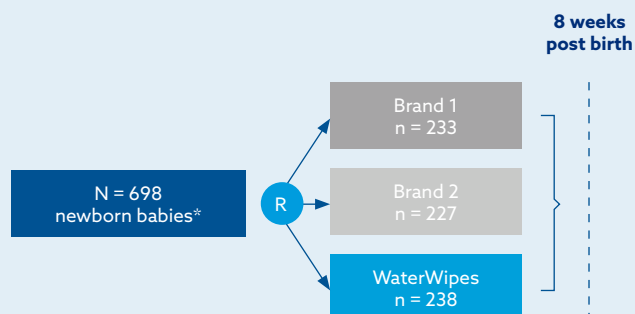
Studies comparing baby wipes with cotton wool/cloth and water often group all baby wipe products together, while in reality, the choice available can be overwhelming and ingredients within these wipes can vary considerably. The Baby Skin Integrity Comparison Survey (BaSICS) is the first study to directly compare different wipe formulations to identify any differences in the incidence of nappy rash ( $N = 698$ ).<sup>24</sup> WaterWipes were compared with two other brands marketed specifically as being mild enough for newborn skin.<sup>24</sup> In the BaSICS study, 19% of mothers using WaterWipes reported moderate-to-severe nappy rash on their babies compared with 25% and 30% with the other two brands.<sup>24</sup>

Mothers using WaterWipes also reported fewer days of moderate-to-severe nappy rash than those using the other two brands ( $P = 0.002$  and  $P < 0.001$ ) (see Figure 2).<sup>24</sup>

**“The number of participants is a huge strength of the study. Close to 700, compared with approximately 200 in the landmark study that compared wipes with cotton wool and water,”**

Marie Louise, Midwife, UK

**Figure 2. Midwifery-led real-world study comparing the effects of different brands of baby wipes on nappy rash by Price, et al. 2020<sup>24</sup>**



## Analysis of moderate-to-severe nappy rash across brands

For one day of clinical significant nappy rash with WaterWipes, the rash would have lasted **1.48 days** (95% CI–1.15–1.90) with Brand 1 ( $P = 0.002$ ) and **1.69 days** (95% CI–1.32–2.17) with Brand 2 ( $P < 0.001$ ).

Skin integrity was graded from one (no rash) to five (severe rash) and moderate-to-severe nappy rash was identified as three or above.

\*N number includes those participants that completed the full 8 weeks of the study. CI=confidence interval; R=randomisation.

**“This real-world study utilised a prospective experimental design model of mothers as co-researchers. The mothers’ observations were recorded daily, in real time via a user-friendly app on their smartphone. This resulted in a set of nappy rash data that, to our knowledge, is the most comprehensive to date for younger infants,”**

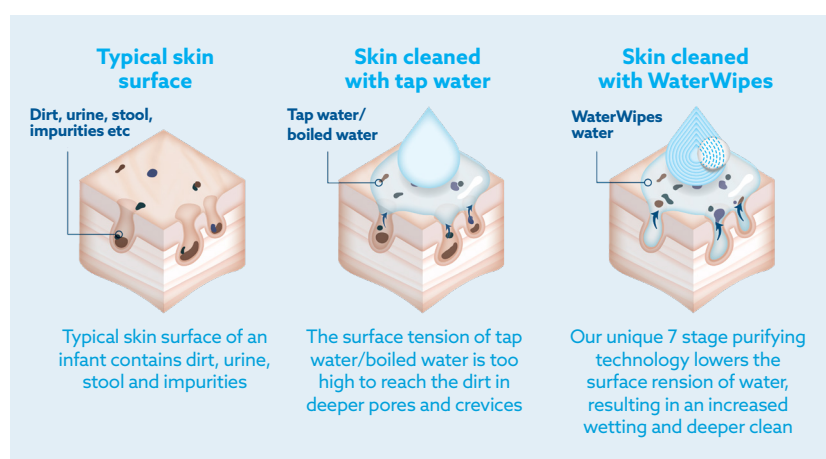
Dr Fiona MacVane Phipps, Senior Research Fellow - Midwifery (now retired), University of Salford, UK

## What makes WaterWipes different to other baby wipes?

Even in wipes considered 'pure' or 'natural' the average number of ingredients can start at seven. Made from 99.9% purified water and a drop of grapefruit seed extract, WaterWipes do not contain any artificial fragrances or added surfactants.

Fragrances can cause and worsen itching, in both those with and without AD—in some cases, the mechanisms behind this can be unclear.<sup>25</sup> They can also provoke irritation or allergic skin responses on contact.<sup>26</sup> Surfactants are added to many baby wipes to decrease surface tension, allowing fat-soluble impurities to be removed from the skin surface.<sup>26</sup> The interaction of cleanser surfactants with stratum corneum proteins and lipids can be harmful to skin. This damage can cause increased TEWL and provoke scaling, dryness, tightness, roughness, erythema and swelling.<sup>26-28</sup>

WaterWipes technology means that there is no need for added surfactants. The unique water purifying technology lowers surface tension, resulting in increased wettability and access to more dirt and impurities, therefore providing a deeper and more effective clean with just two ingredients.



WaterWipes are highly recommended by midwives and other HCPs and have become the preferred wipe for many neonatal intensive care units throughout Ireland, UK, Portugal, US, Australia and New Zealand.<sup>29</sup>

Additionally, WaterWipes are the only baby wipes to hold numerous accreditations, acceptances and registrations from global skin and allergy associations including:

- The Skin Health Alliance
- Allergy UK
- The National Eczema Association of America's Seal of Acceptance
- Vegan Society
- The French Association for the Prevention of Allergies (Association Française pour la Prévention des Allergies)
- The Eczema Association of Australasia – gold sponsor

## Conclusions and a call to action

An expert group of 17 professionals from eight different countries was brought together by WaterWipes to consider current guidance on baby skin cleansing and whether these reflect emerging evidence and their own perceptions of best practice, with the ambition to be better equipped to educate parents on how to correctly care for their baby's skin. Despite there being numerous existing guidelines, many were found to be out-of-date, vague and inconsistent. The overarching message that could be taken from these documents and the HCPs own experiences was that techniques to cleanse babies should be as mild and gentle as possible to avoid potential irritants. Cotton wool/cloth and water may no longer be the best method to achieve this, nor the most practical and that current standard-of-care is moving towards the use of baby wipes with minimal ingredients and maximal purity. Furthermore, data are emerging that suggest that brands of wipes can be further delineated based on the incidence and duration of nappy rash in babies cleansed with them.

Given this clear disconnect between the guidelines and expert recommendations in 2020, this group of experts are calling for updated guidelines on infant skin cleansing. They should be informed by experiences across the multidisciplinary team, reflect the latest scientific evidence as well as practical considerations of modern life, are regularly updated and provide specific guidance that can be conveyed to parents and other caregivers.

## Financial support

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## References

- Warren, J. B. & Phillipi, C. A. Care of the well newborn. *Pediatr Rev* 33, 4-18, doi:10.1542/pir.33-1-4 (2012).
- World Health Organization (WHO). Pregnancy, childbirth, postpartum and newborn care: A guide for essential practice (3rd edition), <[https://www.who.int/maternal\\_child\\_adolescent/documents/imca-essential-practice-guide/en/](https://www.who.int/maternal_child_adolescent/documents/imca-essential-practice-guide/en/)> (2015).
- National Institute for Health and Care Excellence. Postnatal care up to 8 weeks after birth [CG37], <<https://www.nice.org.uk/guidance/cg37>> (2006).
- Association of Women's Health, O. a. N. N. New neonatal skin care evidence-based practice guideline. *Nurs Womens Health* 17, 2, doi:<https://doi.org/10.1111/1751-486X.12085> (2013).
- Polish Neonatal Society. Standards of medical care for a newborn in Poland, <[http://www.neonatologia.edu.pl/index.php?option=com\\_content&view=article&id=38&Itemid=248](http://www.neonatologia.edu.pl/index.php?option=com_content&view=article&id=38&Itemid=248)> [article in Polish].
- Sociedade Portuguesa de Neonatologia. Skin care for newborns, <<https://www.spneonatologia.pt/documents/consensuses/>> (2014).
- National Health Service. How to change your baby's nappy, <<https://www.nhs.uk/conditions/pregnancy-and-baby/nappies/>> (2018).
- Save the Children. Care of the newborn - Saving Newborn Lives. Reference manual, <<https://resourcecentre.savethechildren.net/library/care-newborn-saving-newborn-lives-reference-manual>> (2010).
- Health Service Executive. Caring for your baby's skin, <<https://www2.hse.ie/wellbeing/child-health/caring-for-your-babys-skin.html>> (2018).
- National Health Service. Washing and bathing your baby, <<https://www.nhs.uk/conditions/pregnancy-and-baby/washing-your-baby/>> (2018).
- National Institute for Health and Care Excellence. Nappy rash, <<https://cks.nice.org.uk/topics/nappy-rash/>> (2020).
- American Academy of Dermatology. How to bathe a newborn: tips from dermatologists, <<https://www.aad.org/news/how-to-bathe-a-newborn>> (2019).
- American Academy of Dermatology. How to treat diaper rash, <<https://www.aad.org/public/parents-kids/childhood-conditions/treat-diaper-rash>>
- World Health Organization (WHO). About us, <<https://www.who.int/healthpromotion/about/en/>> (2020).
- Furber, C. et al. The challenges and realities of diaper area cleansing for parents. *J Obstet Gynecol Neonatal Nurs* 41, E13-25, doi:10.1111/j.1552-6909.2012.01390.x (2012).
- Danby, S. G. et al. The Effect of Water Hardness on Surfactant Deposition after Washing and Subsequent Skin Irritation in Atopic Dermatitis Patients and Healthy Control Subjects. *J Invest Dermatol* 138, 68-77, doi:10.1016/j.jid.2017.08.037 (2018).
- Arents, B. W. M. & Leonardi-Bee, J. Eczema and water hardness: another piece of the puzzle found? *Br J Dermatol* 183, 203-204, doi:10.1111/bjd.18864 (2020).
- Jabbar-Lopez, Z. K. et al. Longitudinal analysis of the effect of water hardness on atopic eczema: evidence for gene-environment interaction. *Br J Dermatol* 183, 285-293, doi:10.1111/bjd.18597 (2020).
- DermatologyTimes. What constitutes "mild" soap?, <<https://www.dermatologytimes.com/view/what-constitutes-mild-soap>> (2017).
- Lavender, T. et al. Effect on skin hydration of using baby wipes to clean the napkin area of newborn babies: assessor-blinded randomised controlled equivalence trial. *BMC Pediatr* 12, 59, doi:10.1186/1471-2431-12-59 (2012).
- Garcia Bartels, N. et al. Standardized diaper care regimen: a prospective, randomized pilot study on skin barrier function and epidermal IL-1 $\alpha$  in newborns. *Pediatr Dermatol* 29, 270-276, doi:10.1111/j.1525-1470.2011.01590.x (2012).
- Visscher, M. et al. Skin care in the NICU patient: effects of wipes versus cloth and water on stratum corneum integrity. *Neonatology* 96, 226-234, doi:10.1159/000215593 (2009).
- Rogers, S. et al. A Quality Improvement Approach to Perineal Skin Care: Using Standardized Guidelines and Novel Diaper Wipes to Reduce Diaper Dermatitis in NICU Infants. *Adv Neonatal Care*, doi:10.1097/anc.0000000000000795 [Epub ahead of print] (2020).
- Price, A. D. et al. The BaSICS (Baby Skin Integrity Comparison Survey) Study: a prospective experimental study using maternal observation to report the effect of baby wipes on the incidence of irritant diaper dermatitis from birth to eight weeks of age. *Pediatr Neonatol*, doi:10.1016/j.perneo.2020.10.003. [Epub ahead of print] (2020).
- Kamer, B. et al. Prevalence of atopic dermatitis in infants during the first six months of life: authors' observations. *Postepy Dermatol Alergol* 30, 277-281, doi:10.5114/pdia.2013.38355 (2013).
- Kuller, J. M. Infant Skin Care Products: What Are the Issues? *Adv Neonatal Care* 16 Suppl 5S, S3-s12, doi:10.1097/anc.0000000000000341 (2016).
- Ananthapadmanabhan, K. P. et al. Cleansing without compromise: the impact of cleansers on the skin barrier and the technology of mild cleansing. *Dermatol Ther* 17 Suppl 1, 16-25, doi:10.1111/j.1396-0296.2004.04s1002.x (2004).
- Cork, M. J. et al. Epidermal barrier dysfunction in atopic dermatitis. *J Invest Dermatol* 129, 1892-1908, doi:10.1038/jid.2009.133 (2009).
- WaterWipes. Data on file.