National Clinical Guideline Centre

Draft

Appendix N

Pressure ulcer prevention and management

Delphi consensus results

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Draft for Consultation

Commissioned by the National Institute for Health and Care Excellence

Royal College of Physicians

The Royal College of Surgeons of England

RCGP Royal College of General Practitioners

Royal College of Nursing

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Contents

Appendix N: Delphi consensus results 7
N.1 Composition of panel membership 7
N.2 Panel members 7
N.3 Qualitative analysis 9
N.4 Results 9
N.4.1 Nutrition and hydration for prevention of pressure ulcers 9
N.4.2 Barrier creams for the prevention of pressure ulcers and moisture lesions 13
N.4.3 Skin massage for the prevention of pressure ulcers 14
N.4.4 Repositioning for the prevention of pressure ulcers 15
N.4.5 Pressure redistributing devices for the prevention of pressure ulcers 18
N.4.6 Pressure redistributing devices for the prevention of heel pressure ulcers 21
N.4.7 Risk assessment for pressure ulcers 22
N.4.8 Skin assessment methods for the prevention of pressure ulcers 23
N.4.9 Nutritional and hydrational interventions for the treatment of pressure ulcers 25
N.4.10 Pressure ulcer measurement 27
N.4.11 Classification of pressure ulcers 28
N.4.12 Topical and systemic treatments for the treatment of pressure ulcers 29
N.4.13 Round 2 31
N.4.14 Debridement for pressure ulcers 32
N.4.15 Dressings for the management of pressure ulcers 33
N.4.16 Pressure redistributing devices for the management of pressure ulcers 35
N.4.17 Electrotherapy, negative pressure wound therapy and hyperbaric oxygen therapy 39
N.4.18 Management of heel pressure ulcers 41
N.4.19 Delphi statements where consensus was not achieved 41
N.4.20 Healthcare professional training and education 43
N.5 Round 1 agreement data 44
N.6 Round 2 agreement data 58

Appendix N: Delphi consensus results

Methods used in developing the Delphi consensus survey can be found in Chapter XX of the guideline 'Prevention of pressure ulcers'.

N.1 Composition of panel membership

The GDG agreed in advance the proposed composition of the Delphi consensus panel, namely:

- Neonatal nurse
- Paediatric intensive care/critical care nurses
- Physiotherapists
- Staff from children's respite homes
- Children's community nurses
- Staff from schools for children with moderate/severe learning disability
- Professionals caring for children with metabolic conditions
- Children's cardiac intensive care staff
- Paediatrician
- Staff from paediatric critical care
- Paediatric nurse
- Tissue viability nurse
- Paediatric occupational therapist
- Paediatric physiotherapist
- General practitioner
- Primary care nurse
- Paediatric dermatologist
- Consultant in paediatric neurodisability
- Paediatric dietician
- Patient/carers/parents
- Neonatologist
- Children's cardiac intensive care staff
- Paediatric respite care consultant
- Children's oncology nurse
- Plastic surgeon
- Vascular surgeon

Other professions were considered for inclusion on the panel on a case by case basis.

N.2 Panel members

Denis	Anthony
Karen	Armitage
Jaspreet	Bansil

Rachael	Bolland
Lisa	Brown
Sue	Burkin
Andrea	Cockett
James	Coulston
Caroline	Dawn
Joanna	Dixon
Louise	Douglas
Julie	Evans
Sally	Farrer
Susan	Flavin
Carley	Gibbens
Evelyn	Gilday
Anne-Marie	Gillingham
Nikhil	Gokhani
Andrea	Graham
Lynne	Grant
Jason	Gray
Sylvie	Hampton
Ceri	Harris
Kerryanne	Hatcher
Melanie	Haughan
Karen	Hill
Corrina	Hulkes
Sara	Hutchcox
Joanna	Inglis-Lyons
Claire	Jackson
Deb	Jones
Hamish	Laing
Ruth	Lester
June	Lindsay
Eva	Madsen
Trish	Mahon
Logan	Manikam
Evelyn	Mansoor
Jan	Maxwell
Ruth	May
Valerie	McGurk
John	McRobert
Jeanette	Milne
Ofrah	Muflahi
Alison	Parnham
Gillian	Parsons

Joan	Pickersgill
Zoe	Pooley
Jonathan	Punt
Kumal	Rajpaul
Mark	Robinson
Angela	Rodgers
Mike	Samuels
Debby	Sinclair
Jackie	Stephen-Haynes
Kate	Swailes
Norma	Timoney
Julie	Trudigan
Rachel	Von Graeventiz
Richard	White
Rebecca	Whitney
Elaine	Wilkins
Nick	Wilson-Jones
Pam	Taylor
Fania	Pagnamenta
Rachel	McConnell
James	Callaghan
Caron	Eyre
Louise	Scannell

N.3 Qualitative analysis

A free text box was available for panel comments for each statement. Members of the panel used these to text boxes to provide further feedback on each statement.

Comments from Round 1 were analysed and categorised by theme and considered by the GDG when developing the recommendation (for accepted statements) or amending the statement for inclusion in Round 2 (for non-accepted statements). These are included below.

Comments from Round 2 were used to help inform the 'Linking evidence to recommendations' section for accepted statements.

N.4 Results

N.4.1 Nutrition and hydration for prevention of pressure ulcers

N.4.1.1 Round 1

N.4.1.1.1 Delphi statements where consensus was achieved

n	Statement	% consensus	Themes of comments received
1	Healthcare professionals	97%	• **Basis for recommendation** - 2panel members provided justification for a recommendation

n	Statement	% consensus	Themes of comments received
	should offer neonates, infants, children and young people with pressure ulcers a suitable age related nutritional assessment.		supporting the nutritional assessment in neonates, infants, children and young people firstly as it was an extrapolation of adult evidence and secondly, as protein would be lost through the pressure ulcer. • **For all children** – a number of panel members commented that all children should receive a nutritional assessment, regardless of whether they had developed a pressure ulcer. • **Assessment tool** – one comment identified the lack of nutritional assessment tool available for this population. One comment highlighted that the Paediatric Yorkhill Malnutrition score was used in their hospital for infants, children and young people. • **Dietetics** – a number of comments noted that importance of ensuring that the assessment was carried out by a dietician with appropriate knowledge of this area. • **High risk** – one panel member felt that only infants, children and young people at risk of developing a pressure ulcer should have a nutritional assessment. • **Considerations** – one comment noted that weight and ethnicity should also be taken into account when assessing nutritional status.
2	Healthcare professionals should offer neonates, infants, children and young people with pressure ulcers, who are nutritionally deficient, correction of their nutritional deficiency.	94%	• **Dietitian** – the majority of comments highlighted the importance of involving a suitably qualified paediatric dietician in the provision of nutritional supplementation. • **End of life care** – some panel members highlighted that it would not always be appropriate to provide correction of nutritional deficiency, for example, during end of life care. • **Clinical condition** – one comment highlighted that this should not be done where it was detrimental to a child's clinical condition.
3	Healthcare professionals should ensure that neonates, infants, children and young people with pressure ulcers have a diet that maintains adequate nutritional status, including that	99%	

n	Statement	% consensus	Themes of comments received
	required for growth and wound healing		
4	Healthcare professionals should offer neonates, infants, children and young people with pressure ulcers appropriate assessment of fluid balance, taking into account fluid loss from the ulcer(s) and other sources.	100%	• **Methods –** one comment was received noting that assessment should include precise measurement of fluid balance by blood results.

N.4.1.1.2 Delphi statements where consensus was not achieved

n	Statement	Comments	Outcome
1	Healthcare professionals should not offer nutritional supplementation to neonates, infants, children or young people at risk of developing pressure ulcers, where nutritional intake is adequate for developmental age and comorbidities	Comments received suggested that the advice of a paediatric dietician would be needed before providing nutritional or hydrational supplementation to neonates, infants, children or young people who are considered at risk of developing pressure ulcers.	Amended for inclusion in Round 2. The GDG discussed the responses received and identified that there was general agreement on the principles underlying the statement. The GDG therefore amended the statement to clarify that the statement refers to any supplementation specifically for pressure ulcer prevention in those neonates, infants, children and young people who have sufficient nutrition.
2	Healthcare professionals should not offer hydrational supplementation to neonates, infants, children or young people at risk of developing		The GDG discussed the responses received and identified that there was general agreement on the principles underlying the statement. The GDG therefore amended the statement to clarify that the statement refers to any supplementation specifically for pressure ulcer prevention in those neonates, infants, children and young people who have sufficient hydration.

n	Statement	Comments	Outcome
	pressure ulcers, where hydrational intake is adequate for developmental age and associated fluid losses.		

N.4.1.2 Round 2

N.4.1.2.1 Delphi statements where consensus was achieved

n	Statement	% consensus	Conclusion
1	Following nutritional assessment, if nutritional status is adequate, taking into account developmental age and comorbidities, healthcare professionals should not give further supplementation specifically for the prevention of pressure ulcers in neonates, infants, children and young people	77%	Accepted.
2	Following assessment of hydration, if hydrational status is adequate, taking into account developmental age and comorbidities, healthcare professionals should not give further supplementation specifically	89%	Accepted.

n	Statement	% consensus	Conclusion
	for the prevention of pressure ulcers in neonates, infants, children and young people.		

N.4.1.2.2 Delphi statements where consensus was not achieved

None.

N.4.2 Barrier creams for the prevention of pressure ulcers and moisture lesions

N.4.2.1 Round 1

N.4.2.1.1 Delphi statements where consensus was achieved

None.

N.4.2.1.2 Delphi statements where consensus was not achieved

n	Statement	Comments	Outcome
1	Healthcare professionals should not use barrier creams (e.g. cavilon and securar cream) for the prevention of pressure ulcers in neonates, infants, children and young people.	Comments received suggested that although barrier creams had little direct impact upon the development of pressure ulcers, they played a role in the protection of skin and reduction of friction and shear in neonates and infants, as well as children and young people who are incontinent.	Amended for inclusion in Round 2 as a single statement. The GDG identified that many participants were unclear about the role of barrier creams in the prevention of pressure ulcers or moisture lesions and that the inclusion of two statements may have made consensus on this issue difficult. As such, one statement was developed by the GDG to clarify that the only possible role for the use of barrier creams was for the prevention of skin damage, such as moisture lesions.
2	Healthcare professionals should not use barrier creams for the prevention of moisture lesions in neonates, infants, children and young people.		

N.4.2.2 Round 2

N.4.2.2.1 Delphi statements where consensus was achieved

n	Statement	% consensus	Conclusion
1	Healthcare	89%	Accepted

n	Statement	% consensus	Conclusion
	professionals should consider using barrier creams for neonates, infants, as well as children and young people who are incontinent, for the prevention of skin damage such as moisture lesions.		

N.4.2.2.2 Delphi statements where consensus was not achieved

None.

N.4.3 Skin massage for the prevention of pressure ulcers

N.4.3.1 Round 1

N.4.3.1.1 Delphi statements where consensus was achieved

None.

N.4.3.1.2 Delphi statements where consensus was not achieved

n	Statement	Comments	Outcome
1	Healthcare professionals should not offer skin massage to neonates, infants, children and young people, for the prevention of pressure ulcers.	Comments received generally supported the statement and most did not feel that skin massage was beneficial for the prevention of pressure ulcers. However, there were specific comments relating to: Neonates & infants: there is a particular risk of skin breakdown in these	Amended for inclusion in Round 2. Comments received from the Delphi consensus panel during Round 1 suggested that there were situations in which skin massage may be appropriate in these populations. The GDG wished to clarify that the statement referred specifically to use of skin massage for the prevention of pressure ulcers only, and did not cover skin massage for other indications or for comfort. The GDG also wished to highlight that the statement referred to skin massage of the at-risk area and did not refer to any other massage.

n	Statement	Comments	Outcome
		populations with massage End of life care: it was felt that these populations may benefit from skin massage for comfort reasons As such, the statements were amended to reflect specific requirements in these populations.	

N.4.3.2 Round 2

N.4.3.2.1 Delphi statements where consensus was achieved

None.

N.4.3.2.2 Delphi statements where consensus was not achieved

n	Statement	% consensus	Conclusion
1	Healthcare professionals should not offer skin massage for the area at risk specifically for the prevention of pressure ulcers in neonates, infants, children and young people.		Statement not accepted. Further detail on the development of the recommendation can be found in the 'Linking evidence to recommendation' section.

N.4.4 Repositioning for the prevention of pressure ulcers

N.4.4.1 Round 1

N.4.4.1.1 Delphi statements where consensus was achieved

n	Statement	% consensus	Themes of comments received
1	Healthcare professionals	77%	• **Tailor care to the child** – responders highlighted the importance of ensuring that care was tailored

n	Statement	% consensus	Themes of comments received
	should ensure that neonates, infants, children and young people at high risk of developing a pressure ulcer are repositioned at least every 4 hours.		to the individual and that some children who are considered at high risk of developing a pressure ulcer may require repositioning more frequently, depending on clinical judgement and the outcome of risk assessment. Populations which were highlighted as potentially being at high risk included those with spinal cord injury and those with neurological disease. Other responders highlighted the need for considering other methods of repositioning for children who cannot be moved without affecting the clinical condition (for example, those in neonatal or paediatric intensive care units) and in those where repositioning was a lower priority (for example, repositioning should be for comfort only in those nearing the end of life). • **Consider repositioning more frequently** – some responders highlighted that two hourly or more frequent repositioning would be needed for some individuals. • **Repositioning by other means** – panel members identified that young children were often more likely to be repositioned more frequently by the nature of their age, as parents/carers and healthcare professionals would be in physical contact with the child (for example, when changing nappies, feeding or comforting). • **Process** – comments highlighted that there should be suitable documentation in place to outline processes for repositioning. Ideas put forward by panel members included a pathway indicating the process for repositioning and individualised care plans highlighting repositioning times. • **Support surfaces** - panel members identified that the frequency of repositioning may vary depending on the type of support surface provided. • **Settings requiring special considerations** – panel members identified a number of settings in which may require special considerations when repositioning a child or young person. This included school settings, inpatient, community and neonatal/paediatric intensive care units.

n	Statement	% consensus	Themes of comments received
2	Healthcare professionals should ensure that repositioning equipment is made available to aid repositioning of young people, where clinically indicated.	95%	• **Availability** – A number of panel members highlighted that the availability of repositioning equipment was often a problem and that arrangements should be put in place with commissioners to make sure this is available to clinicians. • **Training** – Comments noted that it was important for healthcare professionals to receive training in the use of repositioning equipment. • **Specific equipment –** one panel member felt that slide sheets were often useful to prevent friction. • **Correct usage** – one panel member noted that equipment with a safe working load weight for children would be effective in safe manual handling. • **Benefits** – a comment was received from a panel member highlighting the benefits to both the healthcare professional and the patient. • **Not needed –** one responder highlighted that this population may often be able to reposition themselves without the use of equipment.
3	In children and young people, who refuse repositioning, healthcare professionals should ensure that patients and carers understand the reasons for repositioning.	89%	• **Amendments to wording –** Several comments suggested minor amendments to the wording, for example 'refuse' should be amended to 'decline', parents/carers should be included. The recommendation was amended to reflect these changes. • **Documentation** - a number of panel members highlighted the need to document reasons for declining repositioning in the clinical notes. • **Methods** – some comments were received suggesting methods for explaining the need for repositioning and the consequences of declining repositioning. For example, one comment noted that pictures/diagrams were a good way of explaining the need to reposition where there are difficulties in understanding or where English is not the first language. Another comment highlighted that written and verbal advice should be provided at each assessment. • **Informed consent** – one comment highlighted that explaining the reasons for repositioning was part of obtaining informed consent. • **Training** - it was noted that healthcare professionals need to have training in providing clear guidance on repositioning.
4	Healthcare professionals should consider the use of play experts to encourage repositioning in children who have difficulty with compliance.	77%	

N.4.4.1.2 Delphi statements where consensus was not achieved

None.

N.4.5 Pressure redistributing devices for the prevention of pressure ulcers

N.4.5.1 Round 1

N.4.5.1.1 Delphi statements where consensus was achieved

n	Statement	% consensus	Themes of comments received
1	Healthcare professionals should use a high specification cot mattress for all neonates and infants, or a high specification foam mattress for all children and young people	83%	• **Risk dependent –** a number of comments highlighted that the use of a high specification foam mattress may depend upon the risk level of the neonate or infant. One comment noted that this should be dependent upon the outcome of risk assessment. • Support surfaces – other comments suggested that high specification foam mattresses should only be used in the absence of other pressure redistributing devices. • **Limitations –** one panel member highlighted that there were specific limitations with regards to the use of high specification cot mattresses specifically that they did not always allow for movement of the infant or neonate, which can affect the development of pressure ulcers and rehabilitation. • **Tailor care to the child** - again, comments highlighted the need to individualise care to the child. For example, on panel member noted that the need for a high specification mattress is dependent upon the clinical condition, the length of stay, risk level (see above) and level of mobility. Specific comments relating to neonates noted that the need for a high specification mattress would be dependent upon the age of the neonate. • **Resource limitations** – panel members noted that there were benefits to providing the same specification of mattress to all people in a setting. It was highlighted that by providing all patients with a higher standard of mattress, high risk patients are not exposed to standard foam mattresses whilst awaiting risk assessment and prevents confusion and delays in providing the most appropriate mattress. Other comments noted that providing a high specification foam mattress for all patients can mean that there is a reduction in the need for healthcare professionals to spend time allocating the correct mattress, reducing overall risk. • **Neonates –**panel members noted that neonates as a population would be considered a high risk group and therefore it would be appropriate to provide a high specification cot mattress to all.

n	Statement	% consensus	Themes of comments received
2	Healthcare professionals should use a high specification pressure redistributing mattress for all neonates, infants, children and young people at risk of developing a pressure ulcer.	76%	• **Tailor care to child**- a range of comments highlighted that it was important that care was tailored to the child. For example, the type of mattress used might be dependent upon the skin condition of the child, • **Risk dependent**- a number of comments noted that the use of high specification pressure redistributing mattresses was dependent upon the level of risk, which should be identified with the use of a risk assessment tool. One panel member noted that there were no validated risk assessment tools available for neonates. • **Neonates –** panel members highlighted that high specification mattresses were not always appropriate for the neonatal population, particularly those on ventilators, due to the size of the infant and the amount of equipment needed. Other comments highlighted that all neonates were considered a high risk population and should therefore be given high specification pressure redistributing mattresses. • **Contraindications –** it was identified by a number of panel members that it was not always appropriate to offer a pressure redistributing mattress. For example, contraindications included ventilated neonates, people with spinal cord injury or people with head injury. • **Support surfaces –** several comments highlighted the need to ensure that some populations receive other types of support surfaces, for example, dynamic support surfaces/alternating pressure mattresses for those at highest risk.
3	Healthcare professionals should take into account the specific sites at risk of developing pressure ulcers in neonates, infants, children and young people, when undertaking and documenting a skin assessment.	98%	• **Device related ulcers** – although the prevention and treatment of device-related pressure ulcers it outside the scope of the current guideline, a number of stakeholders highlighted that neonates, infants, children and young people were at particular risk of developing pressure ulcers from medical devices (for example, nasal cannulas, CPAP masks, splints and oxygen tubing). • **Methods of documentation** – a number of panel members highlighted different methods of documenting skin assessment, for example, the use of body maps and medical photography. • **Frequency of assessment** – comments highlighted the need for regular, frequent skin assessment. • **Ulcer sites –** Specific sites were highlighted as areas of high risk for neonates, infants, children and young people. These include the occiput, sacrum, back, buttocks, heels and elbows. A number of panel members also noted that it was important to ensure that whole body assessment could be carried out. • **Training –** One panel member noted that it was

n	Statement	% consensus	Themes of comments received
			important for healthcare professionals to receive training in skin assessment of these groups, as it was important to use a standardised approach. • **Risk assessment –** Panel members noted that a specific risk assessment tool was needed for these populations.
4	Healthcare professionals should use a high specification pressure redistributing overlay for all neonates, infants, children and young people at risk of developing a pressure ulcer.	75%	• **Risk dependent –** several comments highlighted that the use of an overlay may be dependent upon the risk of a child and this should be decided following a formal risk assessment. Those at highest risk should be given dynamic support surfaces. • **Tailor care to child –** panel members noted that the use of pressure redistributing devices should be tailored to the child, accounting for level of risk, clinical condition, physical need and the environment. • **Settings –** comments were received which identified that overlays could be of use in the community or home setting. • **Mattresses –** a large number of comments noted that the use of mattresses was preferable to the use of overlays. However, comments did note that there were specific situations in which the use of overlays was beneficial. For example, members highlighted that overlays could be used where there may be a delay in the provision of a pressure redistributing mattresses. • **Contraindications** – a number of comments were received which reiterated that the use of overlays was potentially hazardous in these populations. Comments noted that overlays may increase the height of a child over the bed rails and therefore result in a falling hazard. Other comments noted that the weight of a child (particularly for neonates) should be considered when using specific pressure redistributing devices. Another comment noted that there were issues relating to cleaning and decontamination with regards to overlays.

N.4.5.1.2 Delphi statements where consensus was not achieved

None.

N.4.5.2 Round 2

N.4.5.2.1 Delphi statements where consensus was achieved

None.

N.4.5.2.2 Delphi statements where consensus was not achieved

None.

N.4.6 Pressure redistributing devices for the prevention of heel pressure ulcers

N.4.6.1 Round 1

N.4.6.1.1 Delphi statements where consensus was achieved

n	Statement	% consensus	Themes of comments received.
1	Healthcare professionals should offer children and young people at high risk of developing heel pressure ulcers a heel elevation strategy/pressure relief strategy that can be tolerated by children and young people.	97%	• **Methods –** comments were received to suggest different methods of achieving heel pressure reduction in these populations. For example, there was suggestion that heel pads were of use, whilst another comment highlighted that playing can often reduce heel pressure. • **Tailor care to the child** – a panel member highlighted that a heel pressure reduction strategy should account for the clinical condition of the child and that any decisions should be made in conjunction with the clinical team. • **As part of a care package** – a panel member identified that a heel pressure reduction strategy should not be used in isolation.
2	Healthcare professionals should offer infants, children and young people who are long term wheel chair users appropriate wheelchair assessments.	97%	• **Methods** – the use of pressure mapping was identified as a useful means of identifying the need for wheel chair cushions/seating. • **Education –** the importance of educating wheel chair users in the risk of pressure ulcer development was noted. • **Service considerations –** there were comments from panel members who noted that there was likely to be some difficulty in providing timely wheel chair assessments in their area. One panel member noted that this was often due to wheel chair users travelling from outside of their local area to access services, whilst a second noted that this would be because of the lack of paediatric occupational therapists available. • **Frequency –** a number of panel members highlighted the importance of ensuring regular assessments for children young people who are long term wheel chair users. Reasons for regular assessment included the growth of children affecting the appropriateness of their wheelchair size, the need to consider wheel chair cushions and the potential for rapid change in clinical condition in these patients. • **Occupational therapy** – one comment identified that assessment should be carried out by a healthcare professional who is appropriate trained in carrying out assessment. A second comment suggested that this would be in co-ordination with paediatric occupational therapists/ physiotherapists. One panel member highlighted the lack of paediatric occupational therapists available in their area.

N.4.6.1.2 Delphi statements where consensus was not achieved

None.

N.4.6.2 Round 2

N.4.6.2.1 Delphi statements where consensus was achieved

None.

N.4.6.2.2 Delphi statements where consensus was not achieved

None.

N.4.7 Risk assessment for pressure ulcers

N.4.7.1 Round 1

N.4.7.1.1 Delphi statements where consensus was achieved

n	Statement	% consensus	Themes of comments received
1	Healthcare professionals should use a validated risk assessment tool, appropriate for age and setting, for the prevention of pressure ulcers in neonates, infants, children and young people.	91%	• **Clinical judgement –** the majority of comments received highlighted the importance of using risk assessment tools in conjunction with clinical judgement. Panel members noted that any risk assessment should be carried out in the context of a wider clinical assessment (for example, with skin assessment) by an experienced healthcare professional. • **Validated tool –** panel members highlighted the difficulty in identifying a validated risk assessment tool for use in neonates, infants, children and young people. The panel emphasised the need to use a tool specifically designed for us in these populations and the need for further research to support the use of these tools. Panel members also noted that risk assessment tools should be appropriate to the setting in which they are used. • **Glamorgan scale –** a number of people identified that the Glamorgan scale was the most reliable, validated tool available for use in the paediatric population. • **No scales available –** some panel members were unaware that any validated risk assessment scales were available for use in these populations. • **Neonates –** panel members identified that neonates were a population in which there were no specific risk assessment tools available. One panel member noted that this was a particular problem given that the population was automatically assumed to be at high risk. • **Risk factors –** one member noted that an aide memoire of risk factors may be most useful than a formal risk assessment tool. • **Ease of use –** one panel member noted that it was

n	Statement	% consensus	Themes of comments received
			important that any risk assessment tool was easy to use and not overly time consuming.

N.4.7.1.2 Delphi statements where consensus was not achieved

n	Statement	Comments	Outcome
1	Healthcare professionals should consider using a non-validated risk assessment/scoring tool to promote the awareness of risk factors in the prevention of pressure ulcers in neonates, infants, children and young people.	Comments suggested that non-validated tools only have a place in populations where validated tools are not available. The panel highlighted that it was important for any tool to be used in conjunction with clinical judgement. Comments highlighted the importance of further research in this area to ensure that validated tools are available in the future.	After discussion, the GDG agreed that this statement would be removed for Round 2 of the Delphi consensus, as it was no longer appropriate. This was because a recommendation was developed from a Round 1 statement that was agreed which covered the use of risk assessment tools in these populations. It was therefore removed for the purposes of Round 2.

N.4.7.2 Round 2

N.4.7.2.1 Delphi statements where consensus was achieved

None.

N.4.7.2.2 Delphi statements where consensus was not achieved

None.

N.4.8 Skin assessment methods for the prevention of pressure ulcers

N.4.8.1 Round 1

N.4.8.1.1 Delphi statements where consensus was achieved

None.

N.4.8.1.2 Delphi statements where consensus was not achieved

n	Statement	Comments	Outcome
1	Healthcare professionals should use diascopy for the assessment of skin in neonates, infants, children and young people considered to be at risk of developing pressure ulcers.	Comments suggested that panel members were unsure of the term 'diascopy'. The statement was amended to clarify this term. Comments also highlighted that there were specific populations in which this would be more difficult, namely neonates and those with darker skin. The potential infection risk of using plastic discs was also highlighted.	The GDG discussed these statements and the comments received during Round 1, and agreed that a single statement identifying the need for skin assessment would replace these in Round 2. Comments received have highlighted that different considerations are needed in different populations, for example, neonates and people with vascularised skin. The GDG therefore highlighted that skin assessment was likely to account for both blanching of skin and changes in localised skin temperature and these were therefore included as components of a comprehensive skin assessment in Round 2. Amended as a single statement for inclusion in Round 2.
2	Healthcare professionals should measure skin temperature for the assessment of skin in neonates, infants, children and young people considered to be at risk of developing pressure ulcers.	Comments agreed with taking into account skin temperature as part of a comprehensive skin assessment but, suggested that this doesn't necessarily need to be measured formally. The panel also suggested that this should be part of a wider skin assessment procedure.	

N.4.8.2 Round 2

N.4.8.2.1 Delphi statements where consensus was achieved

n	Statement	% consensus	Conclusion
1	Offer a comprehensive skin assessment to neonates, infants, children and young people at risk of developing pressure ulcers, taking into account temperature and blanching of skin.	95%	Agreed.

N.4.8.2.2 Delphi statements where consensus was not achieved

None.

N.4.9 Nutritional and hydrational interventions for the treatment of pressure ulcers

N.4.9.1 Round 1

N.4.9.1.1 Delphi statements where consensus was achieved

None.

N.4.9.1.2 Delphi statements where consensus was not achieved

n	Statement	Comments	Outcome
1	Healthcare professionals should not offer nutritional supplementation to neonates, infants, children or young people for the treatment of pressure ulcers, where nutritional intake is adequate for developmental age.	Comments suggested that the input of a dietician would be required before providing nutritional supplementation to these populations.	Amended for inclusion in Round 2. The GDG discussed the comments received during Round 1 and noted that comments reflected that many healthcare professionals wished to consult with a dietitian with experience of working with children before offering nutritional supplementation. The GDG therefore clarified the statement to highlight that this should be discussed with a dietitian with relevant expertise.
2	Healthcare		Amended for inclusion in Round 2.

n	Statement	Comments	Outcome
	professionals should not offer hydrational supplementation to neonates, infants, children and young people, where hydration is adequate for the developmental age and associated fluid losses.		The GDG felt that it was important to highlight the need to ensure that all neonates, infants, children and young people have adequate hydration. This was felt to be especially important where pressure ulcers had been developed because of associated fluid losses. It was felt that where this was need was not met, discussion should take place with appropriately skilled medical staff. The GDG therefore clarified the statement to reflect this.

N.4.9.2 Round 2

N.4.9.2.1 Delphi statements where consensus was achieved

n	Statement	% consensus	Conclusion
1	Healthcare professionals should discuss with a dietitian with experience of working in paediatrics whether to offer nutritional supplementation specifically for the treatment of pressure ulcers in neonates, infants, children and young people with adequate nutritional intake.	88&	Accepted.
2	Healthcare professionals should ensure that neonates, infants, children and young people have adequate hydration for age, growth	97%	Accepted.

n	Statement	% consensus	Conclusion
	and healing. Where there is any doubt, seek medical advice.		

N.4.9.2.2 Delphi statements where consensus was not achieved

None.

N.4.10 Pressure ulcer measurement

N.4.10.1 Round 1

N.4.10.1.1 Delphi statements where consensus was achieved

n	Statement	% consensus	Comments
1	Healthcare professionals should formally document the surface area of a pressure ulcer in neonates, infants, children and young people, using a validated quantitative technique such as planimetry.	75%	• **Methods –** the majority of comments provided suggestions as to methods for the measurement of pressure ulcer surface area. Comments highlighted that the use of images (for example, photography) is beneficial. Many comments agreed that the use of planimatry could be useful however, there was concern regarding the provision of this service and some panel members suggested that measurement could be done via other methods (for example, by using a tape measure). • **Clarification** – two comments requested further clarification regarding planimetry. **Resource implications –** two comments highlighted possible resource implications in the provision of techniques such as planimetry.

N.4.10.1.2 Delphi statements where consensus was not achieved

n	Statement	Comments	Outcome
1	Healthcare professionals should not formally measure the depth and volume of a pressure ulcer in neonates, infants, children and young people.	Comments suggested that there were benefits to knowing the depth and volume of an ulcer. However, there was disagreement as to the best method and whether this should be documented formally.	Amended for inclusion as a single statement in Round 2. The GDG discussed the statements on formal measurement and qualitative assessment of pressure ulcer depth and volume. Comments received during Round 1 suggested that there were benefits to knowing the depth and volume of an ulcer, however there was disagreement as to the best method to do so. The GDG therefore agreed that the two statements would be merged into a single statement to reflect that an estimate of depth and volume was likely to be the most appropriate means of measuring a pressure ulcer. A separate recommendation was agreed in Round 1 to highlight the need to document surface area of the pressure ulcer.
2	Healthcare professionals should undertake a qualitative assessment of the depth and		

n	Statement	Comments	Outcome
	volume of pressure ulcers in neonates, infants, children and young people.		
3	Healthcare professionals should document the proportion of pressure ulcer area to the body surface area of a neonate, infant, child or young person.	Comment suggested that this was not common practice and was not likely to add anything to the assessment of an ulcer.	The GDG discussed this statement and agreed that it was not appropriate to include this in Round 2 of the survey. Statement deleted and not included in Round 2.

N.4.10.2 Round 2

N.4.10.2.1 Delphi statements where consensus was achieved

n	Statement	% consensus	Conclusion
1	Healthcare professionals should document an estimate of the depth and volume of a pressure ulcer in neonates, infants, children and young people.	86%	Accepted.

N.4.10.2.2 Delphi statements where consensus was not achieved

None.

N.4.11 Classification of pressure ulcers

N.4.11.1 Round 1

N.4.11.1.1 Delphi statements where consensus was achieved

n	Statement	% consensus	Comments
1	Healthcare professionals should classify all pressure ulcers in neonates, infants,	84%	**Continual review –** one comment noted that it is not always possible to categorise as some are un-gradable. There is a need for re-grading over time. **Standardisation –** the majority of comments were in agreement that there needs to be a form of standardisation of grading and consistency. A tool that all healthcare professionals can use and agree

n	Statement	% consensus	Comments
	children and young people using the EPUAP/NPUAP grading scheme.		on is needed. The need to provide standardisation of description and allow change over time to be identified **Agree EPUAP** – one agreed that EPUAP is widely used and recognised in the UK. Agreed that EPUAP provides adequate data for categorisation. **Other tools –** not all agreed on the use of EPUAP. Pictorial representation was suggested as was the Scottish adapted version of EPUAP. One respondent stated that EPUAP categorisation is over complicated and increases the workload of tissue viability nurses.

N.4.11.1.2 Delphi statements where consensus was not achieved

None.

N.4.11.2 Round 2

N.4.11.2.1 Delphi statements where consensus was achieved

None.

N.4.11.2.2 Delphi statements where consensus was not achieved

None.

N.4.12 Topical and systemic treatments for the treatment of pressure ulcers

N.4.12.1 Round 1

N.4.12.1.1 Delphi statements where consensus was achieved

n	Statement	% consensus	Comments
1	Healthcare professionals should use appropriate systemic antibiotics for the treatment of infected pressure ulcers (ie. advancing cellulitis, osteomyelitis or systemic infection) in neonates, infants, children and young people, as specified in the British National Formulary for	96%	• **Tailor care to the child –** comments noted the importance of considering the individual when offering systemic antibiotics, particularly the clinical state and history of the child. • **Where clinically indicated** – comments highlighted the need to ensure that systemic antibiotics were only used where clinically indicated. Other comments identified that a positive swab was not always a valid means of identifying infection alone and should only be used in conjunction with clinical signs of infection. • **Microbiology** – panel members felt that systemic antibiotics should only be used in conjunction with microbiology departments. • **Localised care –** panel members indicated that the use of systemic antibiotics should be in line with local guidelines and taking into account localised factors. • **Debridement –** one panel member felt that surgical debridement may be indicated in this population.

n	Statement	% consensus	Comments
	Children (BNFc).		**Setting –** a comment was received highlighting difficulties in accessing this information in a primary care/community setting.
2	Healthcare professionals should account for local sensitivities in antibiotic resistance, in conjunction with the microbiology department of their local hospital.	95%	
3	Healthcare professionals should only use systemic antibiotic therapy for neonates, infants, children and young people, where clinically indicated (e.g. a positive wound swab or when two or more clinical signs of infection are present at the same time).	80%	

N.4.12.1.2 Delphi statements where consensus was not achieved

n	Statement	Comments	Outcome
1	Healthcare professionals should use appropriate topical antimicrobials for neonates, infants, children and young people, with infected pressure ulcers, as specified in the British National Formulary for Children	Comments suggested that this was a contentious issue and that there were differences in clinical practice. This particularly related to the use of honey and silver in neonates and infants. There were comments to	Amended for inclusion in Round 2. The GDG discussed the comments received on this statement and amended it to reflect that, although topical antimicrobials may be used in some situations for the treatment of infected pressure ulcers, it was likely that systemic antibiotics would be used for the majority of these situations. However, there may be instances were infected pressure ulcers are treated topically and the statement has been clarified to reflect this. The GDG also noted that certain antimicrobials (e.g., iodine) were not necessarily appropriate for use in these populations and this would be highlighted when developing the recommendation.

n	Statement	Comments	Outcome
	(BNFc).	suggest that there may be an issue relating to toxicity with the use of silver. Some comments also suggested that topical antimicrobials should be used only in conjunction with local microbiology departments, to account for local resistances. Comments also noted that these should only be used following appropriate assessment.	

N.4.13 Round 2

N.4.13.1.1 Delphi statements where consensus was achieved

n	Statement	% consensus	Conclusion
1	Healthcare professionals should not routinely use topical antimicrobials for infected pressure ulcers in neonates, infants, children and young people.	77%	Accepted.

N.4.13.1.2 Delphi statements where consensus was not achieved

None.

N.4.14 Debridement for pressure ulcers

N.4.14.1 Round 1

N.4.14.1.1 Delphi statements where consensus was achieved

n	Statement	% consensus	Comments
1	Healthcare professionals should use autolytic debridement, by the use of appropriate dressings, for the debridement of devitalized tissue in neonates, infants, children and young people.	84%	• **Tailor care to the child –** comments from panel members noted that care should be individualised to the child and that for some children, debridement may not be appropriate. Factors that panel members identified as requiring consideration included the extent of devitalised tissue, the overall aim of care, the status of the patient and the clinical scenario. • **Neonates** – one panel member identified that particular caution should be applied when using autolytic debridement for neonates. • **Tissue viability** – one panel member noted that the use of autolytic debridement should be by a tissue viability specialist. • **In conjunction with other care** – a number of comments identified that autolytic debridement should only be used in combination with other management strategies as a wider package of care.

N.4.14.1.2 Delphi statements where consensus was not achieved

n	Statement	Comments	Outcome
1	Healthcare professionals should consider the use of sharp and surgical debridement in neonates, infants, children and young people, where autolytic debridement is insufficient.	Comments suggested that surgical and sharp debridement was not appropriate in neonates and infants. Comments also noted that surgical and sharp debridement should only be done in discussion with the surgical team.	Amended for inclusion in Round 2. The GDG discussed the comments received during Round 1, which focused on ensuring that a suitably qualified individual carried out any surgical or sharp debridement (e.g., a member of the surgical team or a trained tissue viability nurse). The GDG amended the statement to highlight this. The GDG felt that the statement should also be amended to highlight that autolytic debridement with appropriate dressings would be used before any sharp or surgical debridement was considered.

N.4.14.2 Round 2

N.4.14.2.1 Delphi statements where consensus was achieved

n	Statement	% consensus	Conclusion

n	Statement	% consensus	Conclusion
1	Healthcare professionals should consider the use of sharp and surgical debridement by appropriately qualified staff, where autolytic debridement via the use of appropriate dressings is insufficient, in neonates, infants, children and young people.	84%	Accepted.

N.4.14.2.2 Delphi statements where consensus was not achieved

None.

N.4.15 Dressings for the management of pressure ulcers

N.4.15.1 Round 1

N.4.15.1.1 Delphi statements where consensus was achieved

n	Statement	Consensus	Comments
1	Healthcare professionals should not use iodine dressings for the treatment of pressure ulcers in neonates.	86%	**Toxicity –** panel members noted that there was a risk of toxicity from the use of iodine dressings which was now unnecessary given the availability of alternative treatments. **Caution –** comments noted that there may be some situations in which the use of an iodine dressing would be appropriate in a neonate but this would be when other forms of antimicrobial dressings are contraindicated and only with extreme caution. **Tailor care to the child –** one comment highlighted the need to consider treatment within the wider context of a management plan. One panel member noted that the risk of using iodine dressings should be considered for each child.

N.4.15.1.2 Delphi statements where consensus was not achieved

n	Statement	Comments	Outcome
1	Healthcare professionals should treat all pressure ulcers	Comments received by the panel suggested that	Amended for inclusion in Round 2. The GDG discussed comments from panel members which suggested that the use of such dressings

n	Statement	Comments	Outcome
	with wound dressings which promote a warm, moist wound healing environment.	individuals would require different dressings based upon their clinical condition. For example, patients with Grade 1 -2 ulcers may not require dressings, whereas patients who are vascular compromised or who are terminally ill may not be treated in this manner.	would not be appropriate for Grade 1 ulcers and only for some Grade 2 ulcers. Comments also highlighted that different dressings would be required depending upon the clinical condition of the neonate, infant, child or young person. As such, the statement was amended to reflect that such a dressing should be considered, rather than used for all ulcers. The statement was also amended to reflect that this may be used for Grade 2, 3 or 4 ulcers only.
2	Healthcare professionals should not routinely use topical antimicrobial dressings (e.g., silver or iodine) for the treatment of pressure ulcers in infants, children and young people.	Comments suggested that care should be taken when using silver or iodine dressings in children. Other comments highlighted that these dressings should only be used where there is a clinical indication for a topical antimicrobial dressing.	Amended for inclusion in Round 2. The GDG noted that the majority of comments received during Round 1 were based upon the use of silver and iodine dressings. The statement was therefore amended to remove these examples, as it was agreed that they were not appropriate examples. The statement was also amended to suggest that there may be situations in which topical antimicrobial dressings are appropriate and that these may be considered when treating neonates, infants, children and young people, depending upon the clinical condition.

N.4.15.2 Round 2

N.4.15.2.1 Delphi statements where consensus was achieved

n	Statement	% consensus	Conclusion
1	Healthcare professionals should consider treating Grade 2, 3 and 4	87%	Accepted.

	pressure ulcers with a wound dressing which promotes a warm , moist wound healing environment		
2	Healthcare professionals should consider using topical antimicrobial dressings for the treatment of pressure ulcers in infants, children and young people, where clinically indicated.	79%	Accepted.

N.4.15.2.2 Delphi statements where consensus was not achieved

None.

N.4.16 Pressure redistributing devices for the management of pressure ulcers

None.

N.4.16.1 Round 1

N.4.16.1.1 Delphi statements where consensus was achieved

n	Statement	% consensus	Comments
1	Healthcare professionals should use a high specification cot or bed mattress for all neonates, infants and children who have developed pressure ulcers.	83%	• **Tailor care to the child –** comments highlighted the need to tailor the cot / bed mattress to the needs of the child. It was stated that the type of mattress/overlay used needs to be assessed on an individual basis - depending on extent of ulcer developed, availability, other risk factors involved and what the child can tolerate. Factors to consider include the physical, clinical, environment, location and cause of the pressure ulcer and the ability to re-position the patient. Need to consider that other equipment may more appropriate. • **Availability –** it was noted that dynamic mattresses are not available for neonates and cots. • **Type of mattress –** it was suggested that alternating pressure mattresses and pressure redistributing mattresses should be used for this population. • **Other –** it was suggested that a high spec mattresses should be used from the beginning of care if the neonate, infant or child is identified as

n	Statement	% consensus	Comments
			being at risk.

N.4.16.1.2 Delphi statements where consensus was not achieved

n	Statement	Comments	Outcome
1	Healthcare professionals should use a high specification cot or bed overlay for all neonates, infants and children who have developed pressure ulcers.	Comments highlighted the importance of assessing each child's clinical need, on the basis of their condition, ulcer and risk factors. One panel member noted that the provision of a high specification overlay was dependent upon the pressure redistributing strategy employed. Other comments noted that people who have a pressure ulcer should be provided with a dynamic mattress, except these are not available for neonates and cots. Comments noted that pressure ulcers resulting from devices may not require a pressure redistributing mattress.	Amended for inclusion in Round 2. The GDG discussed the statement and the comments received during round 1, which focused on the benefits of using an overlay where a mattress is unavailable. In particular, comments noted that this would be preferable to delaying pressure relief. However, comments also highlighted that there were potential safety issues in the use of certain overlays, particularly where this raises the height of the child above the bed rails. The statement was therefore amended to highlight that an overlay may be considered where a mattress is unavailable but safety should be considered where this is used.

n	Statement	Comments	Outcome
2	Healthcare professionals should use a high specification cot or bed overlay for all neonates, infants and children who have developed pressure ulcers. Healthcare professionals should use dynamic support surface for the treatment of pressure ulcers in young people.	Comments highlighted that provision of a dynamic support surface should be on the basis of an individual assessment. For example, other comments noted that the appropriatenes s of this may be dependent upon the size and weight of the young person, the clinical condition and tolerability of the device.	Amended for inclusion in Round 2. The GDG discussed the use of dynamic support surfaces and the comments received during Round 1, which focused upon considering the appropriateness of a dynamic support surface, taking into account a child's weight, clinical condition and tolerability. The statement was therefore amended to highlight that a dynamic support surface may be considered however, any decision should account for these factors. Additionally, the GDG identified that it was dynamic support surfaces may be appropriate for both children and young people, depending upon individual factors. Therefore the statement was also amended to include children.
3	Healthcare professionals should not use dynamic support surface for the treatment of pressure ulcers in neonates, infants and children.	Comments highlighted that dynamic support surfaces may be appropriate for children. The panel were not aware of dynamic support surfaces being available for neonates.	Amended for inclusion in Round 2. The GDG discussed the use of dynamic support surfaces for neonates, infants and children. It was agreed that dynamic support surfaces may be considered in children and therefore, they were included in the preceding statement. It was agreed that there may be some circumstances in which neonates and infants may benefit from the use of a dynamic support surface. Therefore, the statement was amended to reflect that this should not be used routinely, although there may be circumstances in which this is indicated.
4	Healthcare professionals should not use a standard foam cot/bed mattress for neonates, children, infants or young people who have previously developed pressure ulcers and should use	Comments received highlighted that this would be dependent upon the reason for pressure ulcer development and current risk.	Amended for inclusion in Round 2. The GDG discussed comments received during Round 1 which highlighted that this would depend upon the reason for initial pressure ulcer development. The GDG agreed that, given pressure ulcers caused by devices were not included in the current guideline, standard foam mattresses should not be used for those who have developed a pressure ulcer previously, given this would mean that they were at risk of subsequent pressure ulcer development. The GDG therefore amended the statement to reflect that these should not be used routinely, however current risk level should be considered when choosing a specialist support

n	Statement	Comments	Outcome
	specialist patient support surfaces as clinically indicated.		surface for this population.

N.4.16.2 Round 2

N.4.16.2.1 Delphi statements where consensus was achieved

n	Statement	% consensus	Conclusion
1	Healthcare professionals should consider the use of a high specification cot or bed overlay for neonates, infants and children who have developed pressure ulcers, where a high specification mattress is not available, taking into account safety.	86%	Accepted.
2	Healthcare professionals should consider the use of a dynamic support surface for children and young people who have developed pressure ulcers, where this can be tolerated, if pressure on the affected area cannot be relieved by other means (such as repositioning). The support surface should be appropriate for the size and weight of the child	95%	Accepted.

n	Statement	% consensus	Conclusion
3	Healthcare professionals should not routinely use a standard foam cot/bed mattress for neonates, children, infants or young people who have previously developed pressure ulcers and should consider using specialist support surfaces, taking into account current risk level and mobility.	89%	Accepted.

N.4.16.2.2 Delphi statements where consensus was not achieved

n	Statement	% consensus	Conclusion
1	Healthcare professionals should not routinely use dynamic support surfaces for the treatment of pressure ulcers in neonates and infants.	64%	Not accepted. Further detail on how the recommendation was developed can be found in 'Linking evidence to recommendation' section.

N.4.17 Electrotherapy, negative pressure wound therapy and hyperbaric oxygen therapy

N.4.17.1 Round 1

N.4.17.1.1 Delphi statements where consensus was achieved

n	Statement	% consensus	Comments
1	Healthcare professionals should not routinely use electrotherapy for the treatment of neonates, infants,	77%	• **Lack of evidence -** it was felt that there was no evidence to support its use. • **When to use –** if it is to be used a full health assessment should be made and only to be used under medical supervision.

n	Statement	% consensus	Comments
	children and young people with pressure ulcers.		

N.4.17.1.2 Delphi statements where consensus was not achieved

n	Statement	Comments	Outcome
2	Healthcare professionals should not use negative pressure wound therapy for the treatment of pressure ulcers in neonates, infants, children and young people.	Comments noted that this could be useful in these populations and supported use of this technique.	Amended for inclusion in Round 2. The GDG discussed comments received which suggested that the use of negative pressure wound therapy may be helpful in some situations. The GDG agreed that it was not likely that NPWT would be useful for all neonates, infants, children and young people who developed pressure ulcers, although there may be certain situations in which it was helpful, particularly when other methods of treatment had failed. Therefore the statement was amended to reflect that this should not be routinely.
2	Healthcare professionals should not use hyperbaric oxygen therapy for the treatment of pressure ulcers in neonates, infants, children and young people.	Comments noted that although there were some reported cases of benefit, neonates may be at risk of ROP and that there is limited evidence to suggest that this may work.	Amended for inclusion in Round 2. The GDG discussed comments which suggested that there may be a role for hyperbaric oxygen therapy in the treatment of pressure ulcers. The GDG agreed that, although consensus was not reached in Round 1, for safety reasons the statement would not be amended for Round 2. Further clarification was included in the statement to ensure that responders are clear about the definition hyperbaric oxygen therapy.

N.4.17.2 Round 2

N.4.17.2.1 Delphi statements where consensus was achieved

None.

N.4.17.2.2 Delphi statements where consensus was not achieved

n	Statement	% consensus	Conclusion
1	Healthcare professionals should not routinely use negative pressure wound therapy for the treatment of pressure ulcers in neonates, infants,	67%	Not accepted. Further detail on how the recommendation was developed can be found in 'Linking evidence to recommendation' for the section.

n	Statement	% consensus	Conclusion
	children and young people.		
2	Healthcare professionals should not use hyperbaric oxygen therapy (the use of 'above atmospheric pressure' to increase the oxygen supply to the wound bed) for the treatment of pressure ulcers in neonates, infants, children and young people.	65%	Not accepted. Further detail on how the recommendation was developed can be found in 'Linking evidence to recommendation' for the section.

N.4.18 Management of heel pressure ulcers

N.4.18.1 Round 1

N.4.18.1.1 Delphi statements where consensus was achieved

n	Statement	% consensus	Conclusion
1	Healthcare professionals should treat heel pressure ulcer s in neonates, infants, children and young people in line with treatment for adults, taking in account differences in size, mobility and tolerability.	84%	Accepted. The GDG discussed treatment with of heel pressure ulcers. Comments received during Round 1 had highlighted that although treatment in children was likely to be similar to adults, there may be differences arising from variation in size, mobility and tolerability and the statement was amended to reflect this.

N.4.19 Delphi statements where consensus was not achieved

n	Statement	Comments	Outcome

n	Statement	Comments	Outcome
1	Healthcare professionals should treat heel pressure ulcers in neonates, infants, children and young people in line with treatments for adults.	Comments suggested treatment should be individualised to the child, although treatment principles may reflect those of adults. However, this should be adapted to reflect their size, whether they are of walking age and whether they are able to wear shoes. Other comments highlighted that the development of heel ulcers in children and young people was rare.	Amended for inclusion in Round 2.

N.4.19.1 Round 2

N.4.19.1.1 Delphi statements where consensus was achieved

n	Statement	% consensus	Conclusion
1	Health professionals should inspect the occipital area skin when carrying out skin inspection in neonates / infants / children / young people	96%	Accepted. The GDG discussed treatment with of heel pressure ulcers. Comments received during Round 1 had highlighted that although treatment in children was likely to be similar to adults, there may be differences arising from variation in size, mobility and tolerability and the statement was amended to reflect this.

n	Statement	% consensus	Conclusion
	at risk of developing pressure ulcers.		
3	Pressure redistributing surfaces should be used to prevent occipital pressure ulcers in neonates / infants / children / young people at risk of developing pressure ulcers.	76%	Accepted.
4	Repositioning neonates / infants / children / young people at risk of developing pressure ulcers should include ensuring that pressure on areas of the scalp of the head is also relieved.	96%	Accepted.

N.4.19.1.2 Delphi statements where consensus was not achieved

None.

N.4.20 Healthcare professional training and education

N.4.20.1 Round 1

N.4.20.1.1 Delphi statements where consensus was achieved

n	Statement	% consensus	Comments
1	Healthcare professionals caring for neonates, infants, children or young people should have training in the prevention of pressure ulcers	100%	**Specific requirements –** respondents fed back that the following areas need to be covered in training; critical care and neurological conditions, areas where there is susceptibility, emphasise at risk situations, **Training requirements –** it was suggested that such training should be mandatory and should be included in all areas of training; pre-registration as well as in-house.

n	Statement	% consensus	Comments
	from all causes.		
2	Training and education should be provided to healthcare professionals caring for neonates, infants, children and young people in the provision of pressure distributing devices for the prevention of pressure ulcers	98%	• **Training pattern –** it was indicated that this needs to be mandatory with a zero tolerance approach to pressure ulcers. In addition it was noted that this training should not occur in isolation but that it should be part of a comprehensive training programme. • **Training tools** - It was thought that turn charts are a useful tool to ensure continuity.
3	Training and education should be provided to healthcare professionals caring for neonates, infants, children and young people in repositioning strategies to prevent pressure ulcers.	98%	

N.4.20.1.2 Delphi statements where consensus was not achieved

None.

N.4.20.2 Round 2

N.4.20.2.1 Delphi statements where consensus was achieved

None.

N.4.20.2.2 Delphi statements where consensus was not achieved

None.

N.5 Round 1 agreement data

Statement	% agreed (-ve)	% agreed (+ve)	n	# responded	Conclusion
Healthcare professionals should not offer	13/55 24%	25/55 45%	71	55	Amend for Round 2

Statement	% agreed (-ve)	% agreed (+ve)	n	# responded	Conclusion
nutritional supplementation to neonates, infants, children or young people at risk of developing pressure ulcers, where nutritional intake is adequate for developmental age and comorbidities.					
Healthcare professionals should not offer hydrational supplementation to neonates, infants, children or young people at risk of developing pressure ulcers, where hydrational intake is adequate for developmental age and associated fluid losses.	9/58 16%	27/58 47%	71	58	Amend for Round 2
4. Healthcare professionals should not use barrier creams (e.g. cavilon and securar cream) for the prevention of pressure ulcers in neonates, infants, children and young people.	30/71 42%	16/71 23%	71	61	Amend for Round 2
5. Healthcare professionals should not use barrier creams for the prevention of	42/58 72%	6/58 10%	71	58	Amend for Round 2

Statement	% agreed (-ve)	% agreed (+ve)	n	# responded	Conclusion
moisture lesions in neonates, infants, children and young people.					
6. Healthcare professionals should not offer skin massage to neonates, infants, children and young people, for the prevention of pressure ulcers.	13/55 24%	28/55 51%	71	55	Amend for Round 2
7. Healthcare professionals should ensure that neonates, infants, children and young people at high risk of developing a pressure ulcer are repositioned at least every 4 hours.	7/65 11%	50/65 77%	71	65	Accepted (positive). GDG to use in developing recommendation.
8. Healthcare professionals should ensure that repositioning equipment is made available to aid repositioning of young people, where clinically indicated.	0/65 0%	62/65 95%	71	65	Accepted (positive). GDG to use in developing recommendation.
9. In children and young people, who refuse repositioning, healthcare professionals should ensure that patients and carers understand the	0/65 0%	65/65 100%	71	65	Accepted (positive). GDG to use in developing recommendation.

Statement	% agreed (-ve)	% agreed (+ve)	n	# responded	Conclusion
reasons for repositioning,					
10. Healthcare professionals should consider the use of play experts to encourage repositioning in children who have difficulty with compliance	0/65 0%	63/65 97%	71	65	Accepted (positive). GDG to use in developing recommendation.
11. Healthcare professionals should use a high specification cot mattress for all neonates and infants, or a high specification foam mattress for all children and young people	9/62 15%	39/62 83%	71	62	Accepted (positive). GDG to use in developing recommendation.
12. Healthcare professionals should use a high specification pressure redistributing mattress for all neonates, infants, children and young people at risk of developing a pressure ulcer.	5/63 8%	48/63 76%	71	63	Accepted (positive). GDG to use in developing recommendation.
13. Healthcare professionals should take into account the specific sites at risk of developing pressure ulcers in neonates, infants, children and young people, when	0/65 0%	64/65 98%	71	65	Accepted (positive). GDG to use in developing recommendation.

Statement	% agreed (-ve)	% agreed (+ve)	n	# responded	Conclusion
undertaking and documenting a skin assessment.					
14. Healthcare professionals should use a high specification pressure redistributing overlay for all neonates, infants, children and young people at risk of developing a pressure ulcer.	6/58 10%	34/58 60%	71	58	Accepted (positive). GDG to use in developing recommendation.
15. Healthcare professionals should offer children and young people at high risk of developing heel pressure ulcers a heel elevation strategy/pressure relief strategy that can be tolerated by children and young people.	1/62 2%	60/62 97%	71	62	Accepted (positive). GDG to use in developing recommendation.
16. Healthcare professionals should offer infants, children and young people who are long term wheel chair users appropriate wheelchair assessments.	0/64 0%	62/64 97%	71	64	Accepted (positive). GDG to use in developing recommendation.
17. Healthcare professionals should use a validated risk assessment tool, appropriate for	0/66 0%	60/66 91%	71	66	Accepted (positive). GDG to use in developing recommendation.

Statement	% agreed (-ve)	% agreed (+ve)	n	# responded	Conclusion
age and setting, for the prevention of pressure ulcers in neonates, infants, children and young people.					
18. Healthcare professionals should consider using a non validated risk assessment/scoring tool to promote the awareness of risk factors in the prevention of pressure ulcers in neonates, infants, children and young people.	19/65 29%	17/65 26%	71	65	Amend for Round 2
19. Healthcare professionals should use diascopy for the assessment of skin in neonates, infants, children and young people considered to be at risk of developing pressure ulcers.	6/35 17%	17/35 49%	71	35	Amend for Round 2
20. Healthcare professionals should measure skin temperature for the assessment of skin in neonates, infants, children and young people considered to be at risk of developing pressure ulcers.	8/50 16%	23/50 46%	71	50	Amend for Round 2

Statement	% agreed (-ve)	% agreed (+ve)	n	# responded	Conclusion
21. Healthcare professionals should offer neonates, infants, children and young people with pressure ulcers a suitable age related nutritional assessment.	0/64 0%	62/64 97%	71	64	Accepted (positive). GDG to use in developing recommendation.
22. Healthcare professionals should not offer nutritional supplementation to neonates, infants, children or young people for the treatment of pressure ulcers, where nutritional intake is adequate for developmental age.	22/58 38%	18/58 31%	71	58	Amend for Round 2
23. Healthcare professionals should offer neonates, infants, children and young people with pressure ulcers, who are nutritionally deficient, correction of their nutritional deficiency.	0/64 0%	60/64 94%	71	64	Accepted (positive). GDG to use in developing recommendation.
24. Healthcare professionals should ensure that neonates, infants, children and young people with pressure ulcers have a	0/65 0%	63/65 99%	71	65	Accepted (positive). GDG to use in developing recommendation.

Statement	% agreed (-ve)	% agreed (+ve)	n	# responded	Conclusion
diet that maintains adequate nutritional status, including that required for growth and wound healing.					
25. Healthcare professionals should offer neonates, infants, children and young people with pressure ulcers appropriate assessment of fluid balance, taking into account fluid loss from the ulcer(s) and other sources.	0/62 0%	62/62 100%	71	62	Accepted (positive). GDG to use in developing recommendation.
26. Healthcare professionals should not offer hydrational supplementation to neonates, infants, children and young people, where hydration is adequate for the developmental age and associated fluid losses.	10/61 16%	32/61 52%	71	61	Amend for Round 2
27. Healthcare professionals should formally document the surface area of a pressure ulcer in neonates, infants, children and young people, using a	4/61 7%	46/61 75%	71	61	Accepted (positive). GDG to use in developing recommendation.

Statement	% agreed (-ve)	% agreed (+ve)	n	# responded	Conclusion
validated quantitative technique such as planimetry.					
28. Healthcare professionals should not formally measure the depth and volume of a pressure ulcer in neonates, infants, children and young people.	36/61 59%	10/61 16%	71	61	Amend for Round 2
29. Healthcare professionals should undertake a qualitative assessment of the depth and volume of pressure ulcers in neonates, infants, children and young people.	3/59 5%	42/59 71%	71	59	Amend for Round 2.
30. Healthcare professionals should document the proportion of pressure ulcer area to the body surface area of a neonate, infant, child or young person.	5/60 8%	36/60 60%	71	60	Amend for Round 2.
31. Healthcare professionals should classify all pressure ulcers in neonates, infants, children and young people using the EPUAP/NPUAP grading scheme.	1/56 2%	47/56 84%	71	56	Accepted (positive). GDG to use in developing recommendati on.
32. Healthcare	4/54	40/54	71	54	Amend for

Statement	% agreed (-ve)	% agreed (+ve)	n	# responded	Conclusion
professionals should use appropriate topical antimicrobials for neonates, infants, children and young people, with infected pressure ulcers, as specified in the British National Formulary for Children (BNFc)	9%	74%			Round 2.
33. Healthcare professionals should use appropriate systemic antibiotics for the treatment of infected pressure ulcers (ie. advancing cellulitis, osteomyelitis or systemic infection) in neonates, infants, children and young people, as specified in the British National Formulary for Children (BNFc).	0/56 0%	54/56 96%	71	56	Accepted (positive). GDG to use in developing recommendation.
34. Healthcare professionals should account for local sensitivities in antibiotic resistance, in conjunction with the microbiology department of their local hospital.	0/59 0%	56/59 95%	71	59	Accepted (positive). GDG to use in developing recommendation.
35. Healthcare professionals should only use	4/59	47/59	71	59	Accepted (positive).

Statement	% agreed (-ve)	% agreed (+ve)	n	# responded	Conclusion
systemic antibiotic therapy for neonates, infants, children and young people, where clinically indicated (e.g. a positive wound swab or when two or more clinical signs of infection are present at the same time).	7%	80%			GDG to use in developing recommendation.
36. Healthcare professionals should use autolytic debridement, by the use of appropriate dressings, for the debridement of devitalized tissue in neonates, infants, children and young people.	1/50 2%	42/50 84%	71	50	Accepted (positive). GDG to use in developing recommendation.
37. Healthcare professionals should consider the use of sharp and surgical debridement in neonates, infants, children and young people, where autolytic debridement is insufficient.	6/48 13%	30/48 63%	71	48	Amend for Round 2.
38. Healthcare professionals should treat all pressure ulcers with wound dressings which promote a warm, moist wound healing	4/53 8%	39/53 74%	71	53	Amend for Round 2

Statement	% agreed (-ve)	% agreed (+ve)	n	# responded	Conclusion
environment.					
39. Healthcare professionals should not routinely use topical antimicrobial dressings (e.g., silver or iodine) for the treatment of pressure ulcers in infants, children and young people.	1/65 2%	42/65 65%	71	65	Amend for Round 2.
40. Healthcare professionals should not use iodine dressings for the treatment of pressure ulcers in neonates.	1/42 2%	36/42 86%	71	42	Accepted (positive). GDG to use in developing recommendation.
41. Healthcare professionals should use a high specification cot or bed mattress for all neonates, infants and children who have developed pressure ulcers.	3/60 5%	50/60 83%	71	60	Accepted (positive). GDG to use in developing recommendation.
42. Healthcare professionals should use a high specification cot or bed overlay for all neonates, infants and children who have developed pressure ulcers.	8/53 15%	34/53 64%	71	53	Amend for Round 2.
43. Healthcare professionals should use dynamic support surface for the treatment of	2/50 4%	37/50 74%	71	50	Amend for Round 2.

Statement	% agreed (-ve)	% agreed (+ve)	n	# responded	Conclusion
pressure ulcers in young people.					
44. Healthcare professionals should not use dynamic support surface for the treatment of pressure ulcers in neonates, infants and children.	26/49 53%	6/49 12%	71	49	Amend for Round 2.
45. Healthcare professionals should not use a standard foam cot/bed mattress for neonates, children, infants or young people who have previously developed pressure ulcers and should use specialist patient support surfaces as clinically indicated.	2/58 3%	42/58 72%	71	58	Amend for Round 2.
46. Healthcare professionals should not routinely use electrotherapy for the treatment of neonates, infants, children and young people with pressure ulcers.	3/30 10%	23/30 77%	71	30	Accepted (positive). GDG to use in developing recommendati on.
47. Healthcare professionals should not use negative pressure wound therapy for the treatment of	21/46 46%	5/46 11%	71	46	Amend for Round 2.

Statement	% agreed (-ve)	% agreed (+ve)	n	# responded	Conclusion
pressure ulcers in neonates, infants, children and young people.					
48. Healthcare professionals should not use hyperbaric oxygen therapy for the treatment of pressure ulcers in neonates, infants, children and young people.	6/23 26%	10/23 43%	71	23	Amend for Round 2.
49. Healthcare professionals should treat heel pressure ulcers in neonates, infants, children and young people in line with treatments for adults.	13/54 24%	23/54 43%	71	54	Amend for Round 2.
50. Healthcare professionals caring for neonates, infants, children or young people should have training in the prevention of pressure ulcers from all causes.	0/63 0%	63/63 100%	71	63	Accepted (positive). GDG to use in developing recommendati on.
51. Training and education should be provided to healthcare professionals caring for neonates, infants, children and young people in the provision of pressure distributing	0/63 0%	62/63 98%	71	61	Accepted (positive). GDG to use in developing recommendati on.

Statement	% agreed (-ve)	% agreed (+ve)	n	# responded	Conclusion
devices for the prevention of pressure ulcers					
52. Training and education should be provided to healthcare professionals caring for neonates, infants, children and young people in repositioning strategies to prevent pressure ulcers.	0/63 0%	62/63 98%	71	63	Accepted (positive). GDG to use in developing recommendation.

N.6 Round 2 agreement data

Statement	% agreed (-ve)	% agreed (+ve)	n	# responded	Conclusion
Following nutritional assessment, if nutritional status is adequate, taking into account developmental age and comorbidities, healthcare professionals should not give further supplementation specifically for the prevention of pressure ulcers in neonates, infants, children and young people.	1/56 1.6%	43/56 76.7%	60	56	Accepted.
Following assessment of hydration, if hydrational status is adequate, taking into account	1/56 1.6%	42/56 75%	60	56	Accepted.

Statement	% agreed (-ve)	% agreed (+ve)	n	# responded	Conclusion
developmental age and comorbidities, healthcare professionals should not give further supplementation specifically for the prevention of pressure ulcers in neonates, infants, children and young people.					
Healthcare professionals should consider using barrier creams for neonates, infants, as well as children and young people who are incontinent, for the prevention of skin damage such as moisture lesions.	4/57 7%	51/57 89%	60	57	Accepted.
Healthcare professionals should not offer skin massage for the area at risk specifically for the prevention of pressure ulcers in neonates, infants, children and young people.	4/50 8%	35/50 70%	60	50	Statement not accepted.
Offer a comprehensive skin assessment to neonates, infants, children and young people at risk of developing	1/57 1.7%	54/57 95%	60	57	Accepted

Statement	% agreed (-ve)	% agreed (+ve)	n	# responded	Conclusion
pressure ulcers, taking into account temperature and blanching of skin.					
Healthcare professionals should discuss with a dietitian with experience of working in paediatrics whether to offer nutritional supplementation specifically for the treatment of pressure ulcers in neonates, infants, children and young people with adequate nutritional intake.	0/58 0%	51/58 88%	60	58	Accepted.
Healthcare professionals should ensure that neonates, infants, children and young people have adequate hydration for age, growth and healing. Where there is any doubt, seek medical advice.	1/58 1.7%	56/58 97%	60	58	Accepted.
Healthcare professionals should document an estimate of the depth and volume of a pressure ulcer in neonates, infants, children and young people.	2/56 3.5%	48/56 85.7%	60	56	Accepted.

Statement	% agreed (-ve)	% agreed (+ve)	n	# responded	Conclusion
Healthcare professionals should not routinely use topical antimicrobials for infected pressure ulcers in neonates, infants, children and young people.	2/48 4%	37/48 77%	60	48	Accepted.
Healthcare professionals should consider the use of sharp and surgical debridement by appropriately qualified staff, where autolytic debridement via the use of appropriate dressings is insufficient, in neonates, infants, children and young people.	2/50 4%	42/50 84%	60	50	Accepted.
Healthcare professionals should consider treating Grade 2, 3 and 4 pressure ulcers with a wound dressing which promotes a warm , moist wound healing environment.	3/54 5.5%	47/54 87%	60	54	Accepted.
Healthcare professionals should consider using topical antimicrobial dressings for the treatment of pressure ulcers in infants, children and	1/53 1.8%	42/53 79%	60	53	Accepted.

Statement	% agreed (-ve)	% agreed (+ve)	n	# responded	Conclusion
young people, where clinically indicated.					
Healthcare professionals should consider the use of a high specification cot or bed overlay for neonates, infants and children who have developed pressure ulcers, where a high specification mattress is not available, taking into account safety.	1/56 1.7%	48/56 85.7%	60	56	Accepted.
Healthcare professionals should consider the use of a dynamic support surface for children and young people who have developed pressure ulcers, where this can be tolerated, if pressure on the affected area cannot be relieved by other means (such as repositioning). The support surface should be appropriate for the size and weight of the child	2/55 3.6%	52/55 95%	60	55	Accepted
Healthcare professionals should not routinely use dynamic support surfaces for the treatment of	5/53 9%	34/53 64%	60	53	Not accepted. To be discussed with the GDG.

Statement	% agreed (-ve)	% agreed (+ve)	n	# responded	Conclusion
pressure ulcers in neonates and infants.					
Healthcare professionals should not routinely use a standard foam cot/bed mattress for neonates, children, infants or young people who have previously developed pressure ulcers and should consider using specialist support surfaces, taking into account current risk level and mobility.	4/56 7%	50/56 89%	60	56	Accepted.
Healthcare professionals should not routinely use negative pressure wound therapy for the treatment of pressure ulcers in neonates, infants, children and young people.	5/42 12%	28/42 67%	60	42	Not accepted. To be discussed with the GDG.
Healthcare professionals should not use hyperbaric oxygen therapy (the use of 'above atmospheric pressure' to increase the oxygen supply to the wound bed) for the treatment of pressure ulcers	2/23 7%	15/23 65%	60	23	Not accepted. To be discussed with the GDG.

Statement	% agreed (-ve)	% agreed (+ve)	n	# responded	Conclusion
in neonates, infants, children and young people.					
Healthcare professionals should treat heel pressure ulcer s in neonates, infants, children and young people in line with treatment for adults, taking in account differences in size, mobility and tolerability.	4/51 7.8%	43/51 84%	60	51	Accepted
Health professionals should inspect the occipital area skin when carrying out skin inspection in neonates / infants / children / young people at risk of developing pressure ulcers.	2/56 3.5%	54/56 96%	60	56	Accepted.
Pressure redistributing surfaces should be used to prevent occipital pressure ulcers in neonates / infants / children / young people at risk of developing pressure ulcers.	2/51 3.9%	39/51 76%	60	9	Accepted.
Repositioning neonates / infants / children / young people at risk of developing	2/55 3.6%	53/55 96%	60	55	Accepted.

Statement	% agreed (-ve)	% agreed (+ve)	n	# responded	Conclusion
pressure ulcers should include ensuring that pressure on areas of the scalp of the head is also relieved.					