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*Sarah Barnes describes the importance of pressure ulcer risk assessment in children, identifying risks that may cause children to develop pressure ulcers. She outlines how a risk assessment tool was developed for use with children and how the tool prompts nurses to take action if a problem is identified*

**KEY WORDS**

**Paediatric  
Pressure ulcer  
Risk assessment**

# The use of a pressure ulcer risk assessment tool for children

The need for pressure ulcer risk assessment has been acknowledged in adult nursing for many years. However, in paediatrics there is a misconception that children do not develop pressure ulcers (Mills, 1998). This misconception has been challenged in recent years with a growing awareness that children have specific risk factors that predispose their skin to pressure damage (Willock et al, 2000; Mills, 1998; Waterlow, 1998, 1997; Jones, 1997; Pickersgill, 1997; Zollo et al, 1996; Bedi, 1993).

Medical and technical advances have increased health care professionals' capacity to manage more complex health problems. As a result, more children are surviving acute and life-threatening illness but may have long-term health problems (Boosfeld and O'Toole, 2000).

Prolonged illness and hospitalisation can increase the risk of developing pressure-related problems.

I became aware of this problem when I nursed a child with an occipital pressure ulcer. When I became a tissue viability link nurse I began to notice more patients with the potential to develop pressure ulcers.

To explore the issue of pressure ulcers in children, I undertook a literature search. This revealed that there is little research into the subject (Willock, 2000; Olding and Patterson, 1998; Jones, 1997).

**Risk assessment** I identified five paediatric risk assessment tools. Of these, three were adapted from adult scoring systems. However, adult-based risk assessment tools may not be accurate for use with children (Waterlow, 1997). The remaining two were designed specifically for use in paediatric intensive care. Willock et al (2000) note that there is no paediatric risk assessment tool available that has been devised from substantial quality research.

**Comparing adults and children** Waterlow (1998) found that the majority of children's pressure ulcers appeared to be caused by external factors, including:

- Pressure;
- Friction;
- Moisture;
- Shearing.

This can be compared with adults who tend to be at risk due to a combination of external and intrinsic factors such as nutritional status (Waterlow, 1998).

**Identifying paediatric risk factors** As there appear to be differences in the risk factors for adults and children, I compiled a list of the factors identified in the literature as affecting children (Box 1).

Due to the lack of evidence available from research studies, I looked for a consensus of opinion. The following risk factors were identified:

- **Pressure** for prolonged periods, particularly over bony prominences (National Institute for Clinical Excellence, 2001);
- **Immobility** that results in increased periods of pressure to specific areas of the body, with the sites depending on the patient's position. Unless the patient is moved to redistribute the pressure, ulcers can develop (Neidig, 1989). For example, children who have been sedated may be unable to feel a sensation of numbness that in a healthy child would trigger a change of position;
- **Shearing forces** created when the upper layers of the skin are forced away from deeper tissues, for example when a patient is dragged up the bed (NICE, 2001);
- **Friction** that causes damage when the skin is scraped across a support surface while pressure is being applied to it (Waterlow, 1998);
- **Moisture** can cause the skin to stick to a surface, exacerbating the damage caused by friction;
- **Waterlogged skin** is weak and can be at increased risk of damage if exposed to toxins, for example those released by urine and faeces (Waterlow, 1998);
- **Prolonged surgery** can increase the risk of tissue damage developing. Theatre staff need to reposition the patient or compensate for their immobility with a special support surface;
- **Neurological deficit** can result in a child being unable to identify or act on the discomfort brought about by prolonged periods of pressure. The child may also be unable to express the desire to move;
- **Spasms** can increase the risk of tissue damage caused by the friction (Quigley and Curley, 1996). During a spasm children can perspire, which provides added moisture that can exacerbate the problem;
- **Plaster casts or splints** can cause pressure ulcers if they are not correctly applied or padded (Waterlow, 1997);
- **Monitoring lines and tubing** may cause increased pressure if a child lies on them for a prolonged period (Waterlow, 1997);
- **Age** can affect the area of the body where pressure damage can occur. Older children tend to develop sacral sores (Willock et al, 2000), while younger children are at greater risk of experiencing pressure damage to their occipital region (Willock et al, 2000; Waterlow, 1997; Zollo et al, 1996; Neidig et al, 1989). Their proportionally larger head size, their limited hair growth and the presence of less subcutaneous tissue in the occipital region make them more susceptible to shearing and pressure (Neidig et al, 1989);

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**BOX 1. CHILDREN'S RISK FACTORS**

- Immobility
- Loss of sensory perception
- Neurological deficit
- Sedation
- Some medications
- Incontinence
- Moisture
- Extremes in age
- Extremes in weight
- Nutrition
- Respiratory problems
- Thermoregulatory problems
- Cardiovascular problems
- Skin conditions
- Infection
- Plaster casts
- Splints (IV or positioning)
- IV line and monitor lines
- Prolonged surgery
- Acute, chronic or terminal illness
- Extrinsic factors: pressure, shearing forces, and friction

● **Nutrition** is essential for maintenance of healthy skin and tissue, and malnutrition delays wound healing (Olding and Patterson, 1998). A very underweight child not only has less healthy skin but also more bony prominences. An extremely overweight child may have difficulty moving, increasing the risk of tissue damage;

● **The condition of the skin** affects pressure damage. Dry scaly skin can crack easily, while oedematous skin is very friable. Medicines can affect the skin – for example prolonged use of steroids can cause thin, friable skin;

● **Compromised cardiovascular** status has been linked to pressure ulcer risk (Cockett, 1998; Olding and Patterson, 1998) but there is a need for further research in this area (Olding and Patterson, 1998).

**The development of a risk assessment tool**

Until recently my hospital had no unified method for formally assessing a child's risk of developing pressure ulcers and there was no risk-assessment tool in use. Following the literature search, I decided to develop a tool using the list of risk factors identified from the consensus of published opinion.

NICE (2001) states that pressure ulcer risk-assessment tools should act as an aide-mémoire and should not replace clinical judgement.

I accepted Waterlow's (1998) recommendation to use an assessment sheet with a series of questions based on identified risk factors. The nurse needs to answer the questions as part of the patient assessment.

The tool, which is two sides of A4 paper, includes space for the nurse to record what actions have been taken to prevent pressure ulcers developing.

A list of suggested interventions, identified from the literature search, are provided. Such interventions

include regular repositioning and skin care (Box 2).

The second side of the assessment sheet provides space in which the nurse can record any details of the skin assessment or any changes in skin integrity. This makes it easy for all the nurses involved in the child's care to identify any changes to the skin or any potential problems. A body map is included so that the location of skin problems can be clearly documented.

This section also includes a prompt of what skin problems to look for. Such skin problems can include: persistent erythema; non-blanching hyperaemia; blisters; discolouration; localised heat; oedema, induration, and purplish blue areas in dark pigmented skin tones (NICE, 2001).

**Implementation of the tool** The assessment sheet was reviewed by the trust's tissue viability team and approved for use. It was then distributed among colleagues and the documentation committee, and several amendments were made.

The tool was piloted on my ward. Before the pilot each member of staff was shown the form, and teaching on pressure ulcers and risk assessment in children was provided. This formed part of mandatory training days. An information booklet was also provided for staff and a poster was displayed in the ward office.

Following feedback, a few minor amendments were made. Nursing admission assessment forms were amended to include the following trigger questions:

- Is the child at risk of developing a pressure ulcer?
- Has a pressure ulcer risk assessment been completed?

Laminated copies of the risk assessment tool were available at the end of each child's bed and were used to assess the child on admission.

If the answer to any of the questions on the risk assessment tool was 'yes', then the risk assessment form had to be completed (Box 2). This meant that every child was assessed on admission and those children who were highlighted as being at risk had a full risk assessment documented. If a child's condition changed, then he or she was reassessed.

The tool was launched at a paediatric tissue viability link nurse study day. Link nurses then implemented it on their own wards.

**Further developments** The use of the assessment tool led to further documents being produced and implemented, including:

- A pressure ulcer risk assessment core care plan;
- A wound core care plan;
- A patient information leaflet for parents that highlights and explain the risks identified.

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**Evaluation** One method of evaluating the tool would be an incidence study. However, decreased incidence of pressure ulcers could be the result of staff education and improved response, while higher incidence could be due to enhanced observation skills by staff using the tool.

**Conclusion** The tool provides a unified assessment checklist for all nurses to use. It ensures that every child coming into our hospital has his or her risk of developing

pressure ulcers assessed and acted on. For children and their families, it prevents the complications and discomfort of pressure ulcers. For nurses, it provides a checklist and reminder of pressure ulcer risk factors. It is also a means of recording information and can be used to communicate the care that is required and delivered. For the trust, it provides a unified assessment process to prevent pressure ulcers and the costs associated with treatments, increased nursing hours and litigation. ■

**BOX 2. PART OF THE PAEDIATRIC PRESSURE AREA RISK ASSESSMENT**

Possible risk factors	Date			Code to consider
	Sign			
	Print name			
	Y/N	Int code Y/N	Int code	
1. Does the child have any neurological deficit or loss of sensory perception?				A, B, F, I
2. Is the child sedated or is his or her mobility restricted so he or she cannot change position?				A, E, F, K, I
3. Is the child regularly incontinent and are there any signs of altered skin integrity in the nappy area?				C, D, E
4. Does the child appear to be very under/overweight for his or her age?				G, B
5. Does the child have an altered level of skin integrity or abnormal skin condition?				A, C, D, E, F, I
6. Has the child been in the operating theatre/recovery for more than four hours?				A, E, F, I, H
7. Is the child required to wear a plaster cast or splints to restrict movement/position?				J, A, D, E
8. Is the child attached to any continuous monitors, tubes or lines?				F, J
9. Is the child exposed to prolonged periods of pressure, shearing forces, or friction?				A, I, D, E, K
10. Are there any other problems that may put the child at increased risk? Please state.				

**Possible interventions to consider to prevent pressure area damage (intervention codes)**

- A.** Regular repositioning and turning. Use 30-degree tilt.
- B.** Spenco overlay for comfort. \_\_\_\_\_
- C.** Use barrier film spray if risk of contamination. \_\_\_\_\_
- D.** Keep skin clean and dry. \_\_\_\_\_
- E.** Use a semi-occlusive dressing to protect high-risk areas. \_\_\_\_\_

- F.** Careful fixation/repositioning of leads/lines every one to four hours as skin dictates. \_\_\_\_\_
- G.** Refer to dietitian. \_\_\_\_\_
- H.** Pressure-reducing mattress overlay. \_\_\_\_\_
- I.** Pressure-relieving mattress. \_\_\_\_\_
- J.** Adequate padding and protection from pressure. \_\_\_\_\_

- K.** Appropriate use of manual handling aids. Do not pull out or leave equipment underneath patient. \_\_\_\_\_
- L.** Other intervention (*specify here*). \_\_\_\_\_

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