SpinaB ie

Children's Health Ireland
at Temple Street

Pressure Ulcer information and guidelines

(Parents) Spina Bifida and Pressure Ulcers

What is a pressure sore?

- Injury to the skin and muscle and tissue under it
    - Blood flow to the skin and tissue is impaired
    - Oxygen and nutrients that the skin and tissue require to survive is reduced
    - Tissue becomes starved and begins to die
    - Pressure ulcer begins to form

- Any areas of redness or a break in skin caused by too much pressure

Why are children with Spina Bifida at increased risk of developing pressure ulcer?

All of the factors below depend on your child's functional level. Your child's functional level will determine if your child experiences the following:

- Reduced sensation
    - Limited feeling or awareness of pressure, pain and temperature
    - Nerves at the site of injury are impaired which results in impaired messages sent to your child's brain.

- Reduced muscle activity
    - Reduced ability to move away or off pressure areas

- Decreased circulation when muscles are less active
    - Reduced level of oxygen and nutrients the tissue and skin needs

What causes pressure areas

- **Pressure** from the weight of the body or equipment e.g. AFO's, wheelchair
- **Friction/ Shear** when skin is pulled or continuous rubbing against surfaces
- **Moisture** increases likelihood of skin breaking down

What increases the chances of a child with Spina Bifida developing a pressure area?

A review of the literature regarding pressure ulcers and children with Spina Bifida identified the following as factors which increased the likelihood of developing a pressure ulcer.

- Wheelchair user
- Bare feet

- Obesity
- Reduced ability to plan, organise and carry out tasks.
- Level of lesion
- Walking status
- Bladder incontinence
- Shunt in place
- Above knee orthopaedic surgeries
- If recent surgery has occurred
- Male
- Spinal alignment (if you child has a kyphosis or scoliosis)
- Age of child (prevalence increases with age)

(Ottorlini, K. et al 2013, Kim, S. et al 2015, Mahmood, D. et al 2011, Ong LC et al 2002)

References:

Ottolini K, Harris AB, Amling JK, Kennelly AM, Phillips LA Tosi LL. (2013) Wound care challenges in children and adults with spina bifida: an open cohort study. *J Pediatric Rehabiitationl Medicine* 6: 1-10.

Kim S, Ward E, Dicianno B, Clayton G, Sawin K, Beierwaltes P, Thibadeau, J (2015) Factors Associated with Pressure Ulcers in Individuals with Spina Bifida *Archives of Physical Medicine and Rehabilitation* ;96:1435-41

Mahmood D, Dicianno B, Bellin M. (2011) Self Management preventable conditions and assessment of care among young adults with myelomeningocele. *Child Care Health Dev* ;37: 861-5.

Ong LC, Lim YN, Sofiah A. Malaysian children with spina Bifida; relationship between functional outcome and level of lesion. *Singapore Med J* 2002; 43:12-7.

<u>Where do children with Spina Bifida get pressure ulcers?</u>

Most frequent areas:

- Feet
- Legs
- Bottom (posterior pelvis)

Children aged between 2 years of age to 10 years of age are more likely to get pressure areas on their legs and feet. Children who are 10 years or older are more likely to get pressure areas of their bottom (posterior pelvis).

(Kim, S. et al 2015)

In hospital the most common area for pressure ulcers is the occiput (back of the head).

(Willock, J. et al 2000)

Reference:

Willock J, Hughes J, Tickle S, Rossiter G, Johnson C, Pye H. Pressure sores in children in the acute hospital perspective. J Tissue Viab 2000; 10(2): 59-62.

Kim S, Ward E, Dicianno B, Clayton G, Sawin K, Beierwaltes P, Thibadeau, J Factors Associated with Pressure Ulcers in Individuals with Spina Bifida sunkyung Kim, Elisabeth Ward et al. Archives of Physical Medicine and Rehabilitation 2015;96:1435-41

<u>How to prevent pressure areas?</u>

- **Skin Check**
  Check your child's skin every morning and night when dressing and undressing for any areas of redness or discolouration.

- **Change Position**
  Your child should change their position every two hours throughout the day and every four hours during the night if your child cannot change position.

- **Change regularly**
  If your child is incontinent change their nappies regularly. As soon as the nappy becomes soiled or wet, check for same regularly.

- **Equipment**
  Trial new equipment for 30 minutes e.g. orthotics, wheelchair, stander. Complete a skin check after each session and check for areas of redness. If areas of redness are noted contact your local occupational therapist or physiotherapist.

- **Skin Condition**
  If your child's skin is dry apply moisturiser however be careful not to apply too much as too much moisture can lead to skin breakdown. Avoid very hot water when

bathing as this can result in dry skin. Dry your child's skin by patting as oppose to rubbing.

- **Applying creams**
  Do not massage the skin to prevent pressure ulcers. If the skin is fragile or swelling is present this can further damage blood vessels.

- **Diet**
  Encourage your child to eat a healthy diet and to keep hydrated.

- **Transfers**
  Avoid anything that causes friction to the child's skin e.g. do not drag your child up the bed.

- **Parafricta Bootes and undergarments**
  Can reduce the development of and progression of skin damage caused by friction and shear in people at risk of pressure ulcers.

How do I know if my child has a pressure ulcer?

- Red marks on fair skinned children
- Purple/ blue marks on dark skinned children
- Discoloured skin does not turn white when pressed
- Skin feels hot to touch and may be shiny
- Broken skin
- Blisters
- Pain
- Foul smell

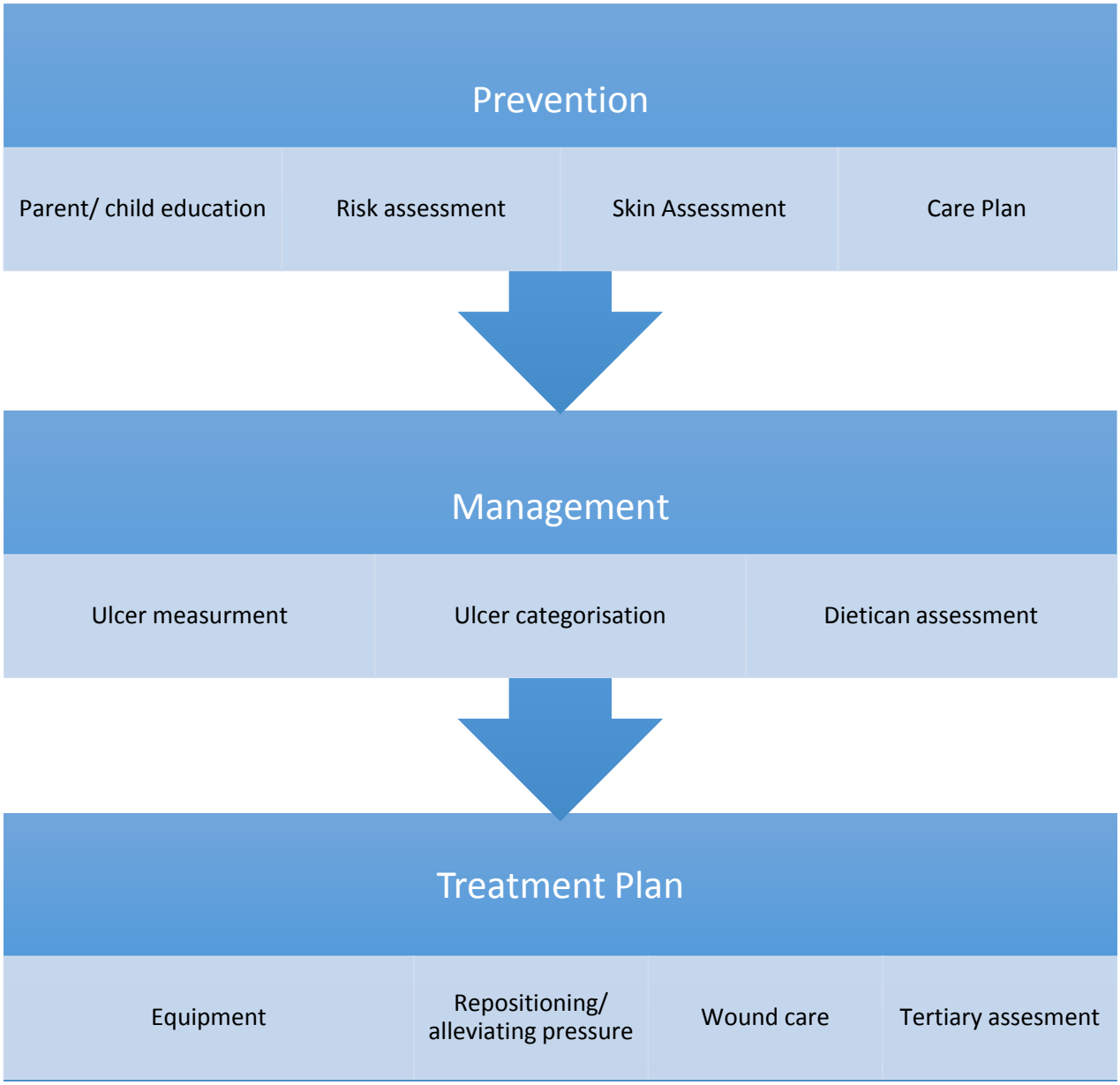
What to do when a pressure ulcer develops?

- **Alleviate the pressure** – find out what caused the pressure ulcer, discontinue use of equipment which caused the pressure ulcer and take pressure off the affected site e.g. if the pressure area is on the child's bottom avoid sitting as much as possible and encourage side lying or lying on tummy.

- Contact your **local Occupational Therapist and/or Physiotherapist** to review equipment and transfers and to complete a risk assessment

- Contact your **PHN** to review the pressure ulcer.

Spina Bifida Pressure Ulcer Pathway



Professionals

Guidelines Spina Bifida and Pressure ulcers

Prevention

Child and carer information

Carers should have an awareness of

- What a pressure ulcer is
- What causes pressure ulcers
- What are the early signs of a pressure ulcer
- How to prevent a pressure ulcers from occurring
- What is the child's level of sensation

Children with spina bifida should have an awareness of their level of sensation and the risks associated with limited sensation.

Risk assessment

- All children with Spina Bifida should have an assessment of pressure ulcer riskby an appropriate clinician using clinical knowledge and observations. The two standardised risk assessments commonly used as a screening tool to determine the level of risk are the Braden scale (21 days to 8 years) or Glamorgan Scale (birth to 18). Use one of these tools in conjunction with clinical assessment to determine the risk for developing pressure ulcers.

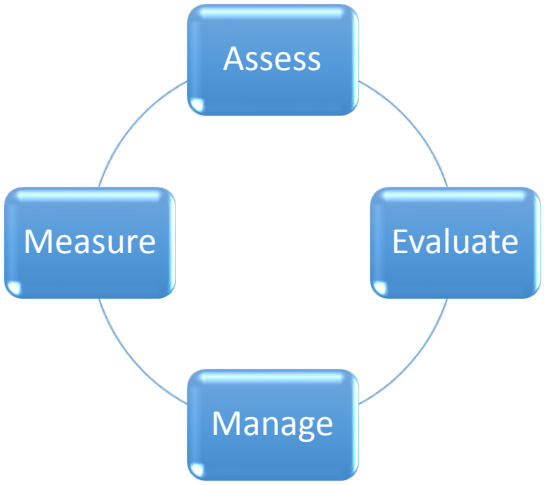
- A guided assessment of skin sensation e.g. ASIA will assist with documenting level of sensation.

- Assessment of posture and positioning will assist with identifying pressure ulcer risk. This will also determine the effects of positions on weight distribution.

- Assessment should be repeated and documented as the child develops and/ or if there is a change to health status, mobility, if a pressure ulcer develops or if there is a period immobility.

- Collaborate with the child and family to discover level of comfort and function in all positions over 24 hours and with current pressure management practices.

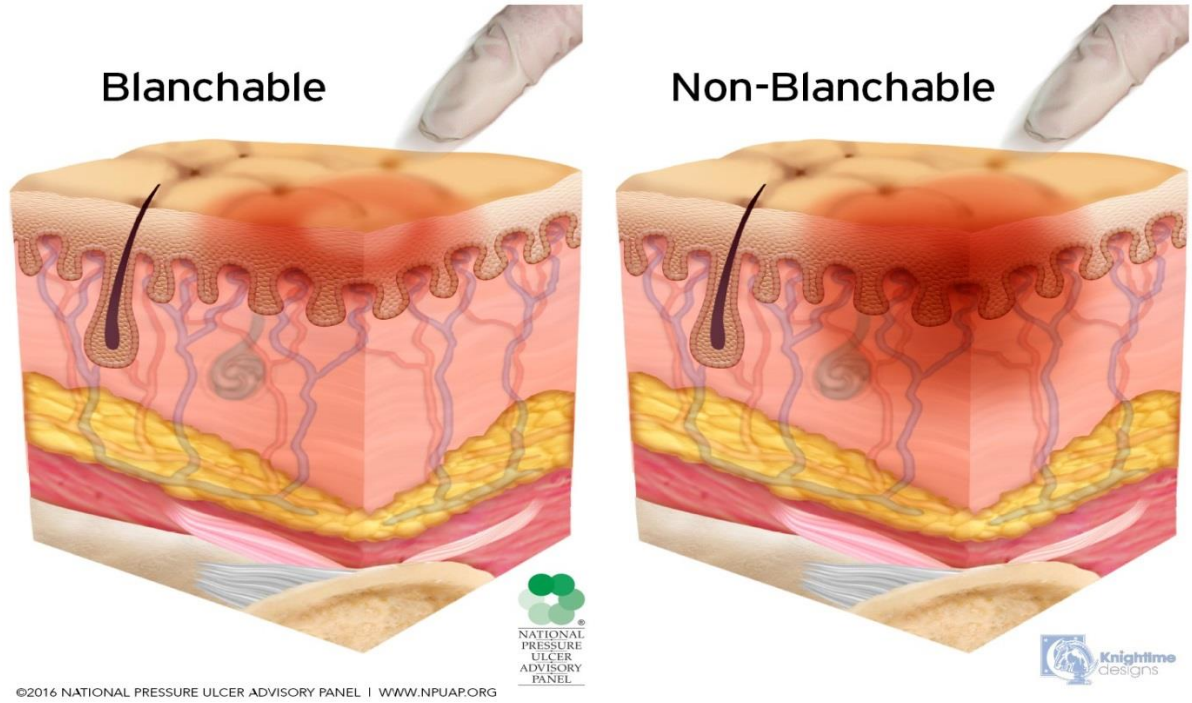
- Consider any history of pressure ulcers- increased likelihood of future pressure ulcers if the area has broken down previously.



Skin assessment

- Coach carers and children on how to complete and to take an active role in skin assessments taking the following into account:
    - Skin changes: skin colour, edema, change in tissue consistency, skin moisture
    - Skin Integrity: any cracks or openings, skin thickness, signs of itching, lesions raised or flat, bruises.
    - Skin temperature: compare symmetrical body parts for differences in skin temperature.
    - The areas which are most at risk including lower limb, posterior pelvis and occipital and areas with reduced sensation.
    - Inspect the skin under and around equipment including orthotics.
    - Assess if there are areas of redness are they blanchable or nonblanchable? Blanchable redness is visible skin redness that becomes white when pressure is applied and reddens when pressure is relieved. Nonblanchable redness is when the redness persists with the application of pressure. The two methods which can be used are:
        - Finger pressure: press finger down on the affected area for 3 seconds and observe if blanching is evident after removal of finger

        - Transparent disk: place a transparent disk over the affected area and apply pressure. Blanching can be observed underneath the disk during application.
    - Assess localised pain
    - Encourage children with Spina Bifida to take an active role in their skin assessment from an early age e.g. visually checking skin using a mirror
- When there are areas of redness inspect the skin in weight bearing areas before and after each position on all supportive surfaces.



Press on the red, pink or darkened area with your finger. If the skin becomes white when pressure is applied and reddens when pressure is relieved it is termed blanchable.

If the redness persists with the application of pressure i.e. finger it is termed non blanchable. This indicated structural damage to the capillary bed (blood supply).

Care Plan

Develop an individualised care plan specific to the needs of the child with Spina bifida. A 24-hour approach should be used to include the external forces such as pressure, shear,

friction, temperature and moisture within the child's daily activities. The following should be taken into account:

- The outcome of the risk and skin assessment.
- The need for additional pressure relief at identified areas of risk. This may include:
    - Equipment
    - Education
    - Modification of functional tasks
    - Transfer training
        - Lift or hoist as oppose to dragging
        - Use slide sheets to reduce friction
        - Consider adaptive equipment such as transfer boards and rails
- Consider all surfaces which the child uses to participate in daily activities throughout the entire day e.g. stander, orthotics, bed, mattress, wheelchair, activity chair.
- Review transfer methods currently in use
- Ability to reposition independently or with support available
- Ensure pressure is redistributed or off loaded from areas at risk of developing pressure ulcers. Determine the effectiveness of the equipment or method being used through palpation or pressure mapping if available.
- Child and family preferences – support participation in meaningful activities while also using pressure management principles as much as possible.

A collaborative care plan developed by the multidisciplinary team, family and child should include:

1. Identified risks
2. Goals for recommended strategies and/ or equipment which should be implemented throughout the child's daily routine
3. Plan for re assessment
4. Plan if pressure ulcers emerge or if pressure ulcers worsen

Management

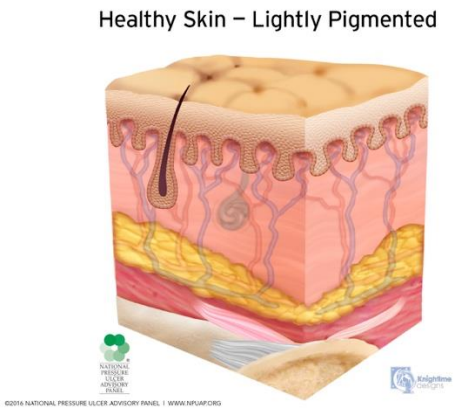
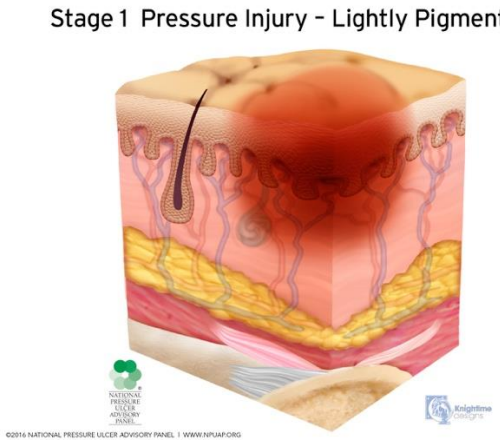
Measurement

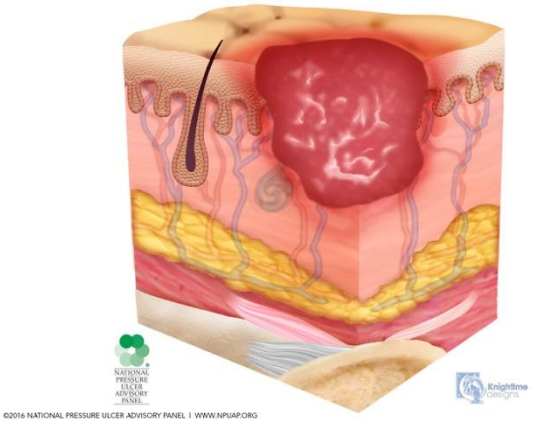
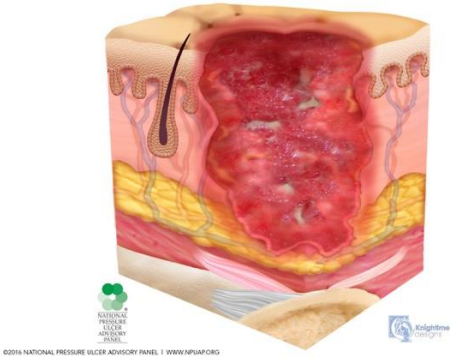
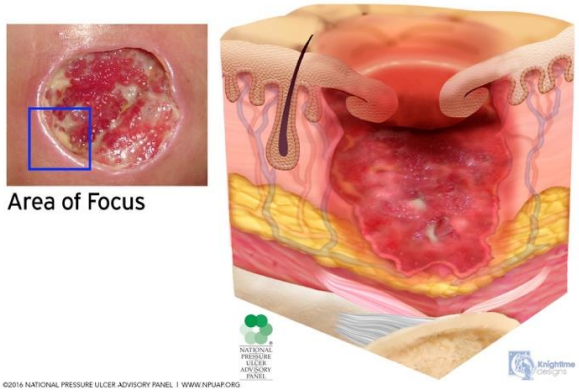
- Document the surface area of all pressure ulcers using a validated measurement technique consistently.

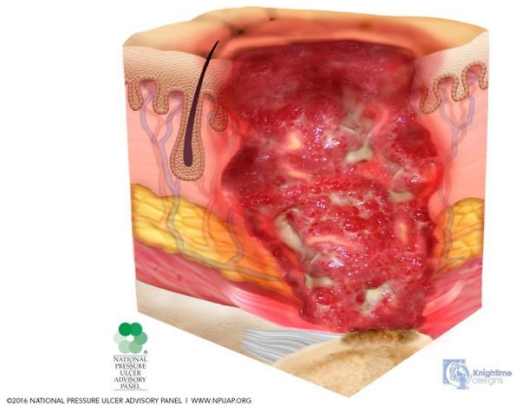
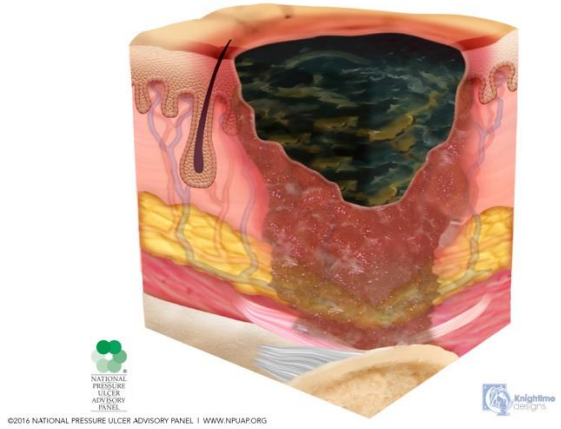
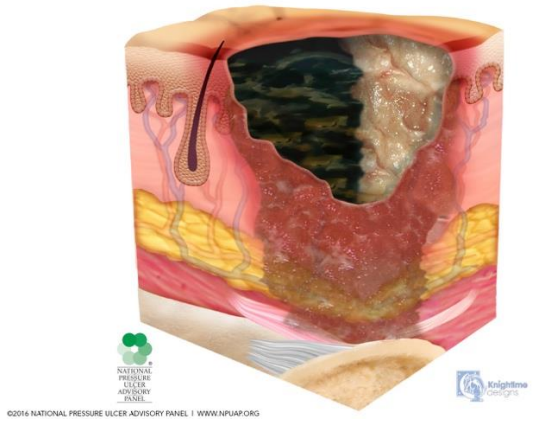
- Measure volume of wound in centimetres documenting Length X Width X Depth
  - Length – head to toe direction
  - Width – hip to hip direction
  - Depth – measure deepest part of visible wound bed
  - Do not routinely measure the volume of a pressure ulcer
  - The Pressure Ulcer Scale for Healing (PUSH tool) is a quick tools to monitor the change in pressure ulcer status over time. http://www.npuap.org/resources/educational-and-clinical-resources/push-tool/
- Photograph
  - Place measurement tape beside pressure ulcer
- Use transparency tracing if available e.g. dermamap, wound mapping grid etc.

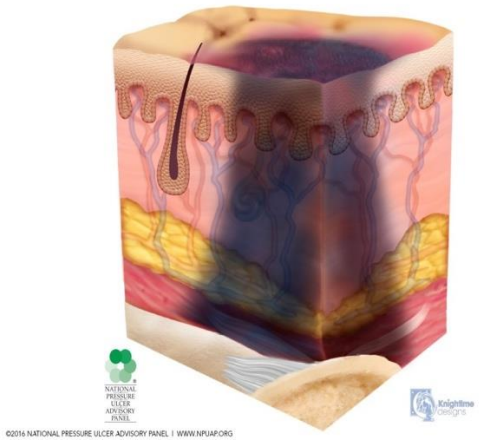
Categorisation

- Categorise each pressure ulcer using the International NPUAP-EPUAP (2009) Pressure Ulcer Classification System

Stage	
	
	• Discolouration of skin e.g. purple, blue, red • Non blanchable (persistent redness) • Warmth, oedema, difference in texture compared to surround skin • May be sore to touch, itchy or cause pain
	• Partial thickness loss of skin (dermis and or epidermis) • May presents as an abrasion or blister • Ulcer is superficial without bruising or blood filled blister • Red pink shallow wound bed or open/ruptured serum filled blister • Stage 2 is not to be used to describe skin tears,tape burns,

Stage 2 Pressure Injury  	perineal dermatitis
Stage 3 Pressure Injury  Stage 3 Pressure Injury with Epibole  	• Full thickness skin loss. Subcutaneous fat may be visible but bone, tendon or muscle are not exposed. • Depth varies by anatomical location e.g. ear and nose do not have adipose tissue and depth can be shallow

Stage 4 Pressure Injury  	• Full thickness loss with exposed bone, tendon or muscle • Slough or eschar may be present • Often involves undermining and tunnelling • Depth varies by anatomical location • Can extend into muscle and or supporting structures e.g. tendon
Unstageable Pressure Injury – Dark Eschar  Unstageable Pressure Injury – Slough and Eschar  	• Full thickness loss in which the base of the ulcer is covered by slough (yellow, tan, gray, green or brown) and/ or eschar (tan, brown or black) in the wound bed. • Until slough is removed the true depth cannot be determined i.e. grade 3 or 4 • Stable eschar should not be removed and can be classified as a grade 3 until proven otherwise

Deep Tissue Pressure Injury  	• Intact or non-intact skin with localised area of persistent non blanchable deep red, maroon, purple discolouration or epidermal separation revealing a dark wound bed or blood filled blister • Pain and temperature change precede skin colour changes

Nutrition and Dietetic assessment

A Dietitian's assessment will identify if nutritional supplements specifically to treat pressure ulcers are required. Dietician's also assess fluid intake and provide advice on nutrition which support growth and healing in people with pressure ulcers. A referral can be made by a child's GP to local dietetic services.

Treatment Plan

Clearly outline the reasons for treatment goals, the schedule of plans and if the child and/or family decide not to carry out the recommended treatment plan.

Pressure redistribution

Increased contact area will reduce the interface of the pressure

This can be achieved using either of the following methods:

1. Patient repositioning to increase contact area, for example:
    a. Increasing tilt on wheelchair to increase contact with wheelchair- a minimum of 30° tilt is required

b. Adapt wheelchair to increase contact with wheelchair as the child's posture develops
c. Using a moulded wheelchair when required to increase contact while also considering how this will impact on function
d. Avoid raising the head of the bed more than 30˚

2. Reactive supportive surface

A reactive supportive surface changes the load distribution in response to a child lying or sitting on it. The client can sink into the surface increasing the area of contact with the child's body and subsequently redistributing pressure, for example:

a. Foam cushions, overlays and mattresses
b. Air and gel filled surfaces
c. Low air loss support surfaces
d. Air fluidised support surfaces.

Pressure Relief

This can be achieved using the following methods:

- Patient repositioning to remove pressure from a particular anatomical location. Examples include:

a. Weight shifting strategies (every 15 minutes for 2 minutes)
    i. Push up using wheelchair wheels or arm rests
    ii. Leaning to the side in a wheelchair
    iii. Leaning forward ideally at 45˚– 50˚ angle
b. Standing
c. Lying in prone, supine or side lying at a 30˚ angle
d. wheelchair adaptations to promote postural alignment
e. Reposition at least every 4 hours. Ideally reposition every 2 hours if medically well.

- Active supportive surfaces e.g. alternating mattress

An active supportive surface can change its load distribution with weight applied and requires a continuous power supply. It is important to note that active supportive surfaces such as air alternating mattresses do not replace the need for a child to be repositioned.

- Lifting body parts clear
    a. Elevating heels with a wedge or pillow
    b. Side lying at a 30° angle to avoid lying directly on either hip
    c. Air cell cushion e.g. ROHO, Starlock Wheelchair cushion
    d. Levabo All up cushions
    e. Prone/ supine lying

Wound Management

In most cases the local Public Health Nurse or Tissue Viability Nurse is the professional who addresses wound management.

The following are recommendations outlined in the NICE guidelines 2017 for managing pressure ulcers in neonates, infants, children and young people:

Dressings:

- Do not use gauze dressings to treat a pressure ulcer.
- Consider using dressings which encourage warm and moist healing environments with pressure ulcers grade 2,3,4.
- Topical antimicrobial dressings can be used where there is a clinical need e.g. when cellulitis is spreading.
- Iodine dressings should not be used with neonates
- Use negative pressure wound therapy when the need for same is clinically indicated
- Debrisoft monofilament debridement pads are proven to be useful to treat acute and chronic wounds.

If the pressure ulcer grade 3/4 is not healing after a period of intervention please contact the Spina Bifida team in Temple Street Children's University Hospital.

Tieratry Assessment

If there are no improvements in the pressure ulcer objectively measured using the PUSH tool please contact a member of the Spina Bifida Team in Temple Street Children's University Hospital.