

Using Lift Equipment in Combination with Pressure-Redistributing Beds and Mattresses

- A guide to the clinical management of pressure ulcer risk associated with immobility

The following information is intended to highlight key aspects, which clinicians may wish to consider when seeking a pragmatic, safe and effective solution to physically reposition the immobile patient in bed. Recommendations are based on the latest International Pressure Ulcer Prevention and Treatment Guidelines issued in August 2014¹.

PRESSURE ULCERS: Key considerations

- Immobile patients are at a high risk of pressure ulceration (PU) if the **pressure** over vulnerable tissue, such as on the sacrum and heels, is not effectively managed¹.
- Patients, who are repositioned using a poor technique, or are poorly supported while sitting (bed or chair), are most vulnerable to **shear** forces: where the soft tissue moves over the deeper bony structures causing vessel occlusion and sub-dermal damage¹.
- If the skin is unable to effectively disperse excess **moisture** or **temperature** it becomes less tolerant to persistent pressure and so more vulnerable to ulceration and **friction** injury¹.
- Protection from the damaging effects of prolonged pressure, shear, moisture and heat is usually achieved through a combination of:
 - Regular repositioning (e.g. turning, standing, boosting (lifting) up the bed) using the correct techniques and aids. Typically 2 to 4-hrly when in bed, more frequently when seated, and determined for each individual by clinical need including; inherent risk factors, clothing, personal choice, type of support surface, prescribed medical orders etc.

PLUS

- A '**Reactive**' pressure-redistributing mattress/cushion (fig. 1), which is designed to deliver constant pressure over the tissue at a lower level than on a conventional mattress: this is achieved by enabling the patient to sink into the soft surface (**immersion**) and have the surface conform to the body (**envelopment**). By spreading the load over a wider area the pressure over vulnerable points is lowered. Examples are foam, gel, air-filled, low air loss, air fluidised.

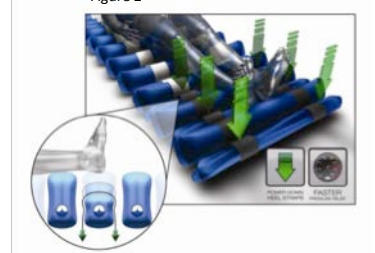
Figure 1



OR...

- An '**Active**' pressure-redistributing mattress/cushion, which is designed to deliver **periodic pressure off-loading** through the cyclical inflation and deflation of air cells contained within the support surface (fig. 2). As the air cells deflate, tissue is off-loaded: this sequence occurs several times each hour mimicking normal spontaneous movement.

Figure 2



PATIENT HANDLING AND REPOSITIONING: *Key considerations*

- Regular repositioning is a fundamental intervention for pressure ulcer prevention in immobile patients and is especially relevant when the support surface has limited pressure-redistribution properties, such as foam mattresses and/or for those patients at greatest risk.
- In addition to the advantages of repositioning for pressure ulcer prevention and management, patients require repositioning for other reasons both physiological and psychological; this may increase the frequency of intervention beyond that required for tissue health e.g. comfort, pain management or respiratory care.
- Manual repositioning can disturb sleep, cause pain and increase anxiety so there is a balance between appropriate repositioning as directed by clinical need, versus optimal rest periods; important given the beneficial relationship between sleep and healing.
- Using **appropriate lift equipment** (figs. 3 & 4) for patient repositioning is highly beneficial in preventing pressure ulcers, particularly where it encourages timely intervention². Patients, who are lifted correctly, also find the experience **less frightening, more comfortable and more dignified**.
- Using appropriate lift equipment for patient repositioning is also much safer for the caregiver. Practitioners who move immobile or semi-mobile patients (mobility level C, D & E; fig. 5) are at particular risk of physical injury if they do not have the right aids, techniques and working space³. **The single greatest hazard for caregivers is associated with manual lifting, moving and repositioning of dependent individuals⁴.**



Figure 3. Maxi Slide Flites™



Figure 4. Maxi Transfer Sheet™

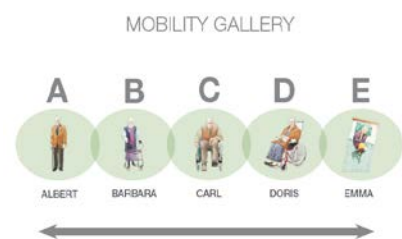


Figure 5. Mobility Gallery™

USING THERAPEUTIC MATTRESSES WITH LIFT EQUIPMENT: *Key considerations*

- The ability of a mattress or cushion to optimise pressure-redistribution (immersion, envelopment, off-loading) and microclimate management (temperature and moisture control) may be inhibited by contact layers placed over the surface e.g. clothing, pads, incontinence products *and* lift equipment e.g. slings. As a result, pressure ulcer guidelines typically recommend the removal of all lift devices after use^{1,5}. This is to discourage the retention of slings and lift sheets that are inflexible, non-breathable and have seams or creases that may have a negative impact on the skin environment.
- The latest version of the guideline however acknowledges the considerable advances in textile development and recognise some lift equipment may be left in situ but only if **the equipment is specifically designed for this purpose¹**,
- The Maxi Transfer Sheet™ (MTS) is one such device that fits this design requirement. This sheet is soft and flexible with excellent moisture and heat dispersal properties⁶. The silk-like, polyester, fabric provides a low friction interface, which is associated with a lowered friction force and shear stress on and beneath the skin¹; it also enhances, rather than hinders, the pressure-redistribution properties of both active⁶ and reactive⁷ mattresses. This sheet is designed to replace the normal cotton bed sheet and so remains beneath the patient (fig. 6). This increased accessibility encourages safe patient handling and avoids the additional effort needed to insert and remove a sling at each repositioning interval^{2,3}. In addition, the *Maxi Transfer Sheet* has been shown to further reduce caregiver risk exposure by 'reducing the physical load associated with specific transfers and eliminating the need for some transfers altogether⁸.
- Realistically, the needs of the immobile patient are seldom simple and compromise is often inevitable, particularly when repositioning is necessarily frequent e.g. every 2-hours. In order to reduce the risk of pressure ulceration, manage continence, accommodate the patients' wishes and minimise the risk of carer injury, clinicians may need to utilise a combination of repositioning aids, which are used in association with the specialist support surface. In many cases, manufacturer or clinical guidelines do not directly support these decisions.



Figure 6

**Optimal outcomes arise from a combination of individualised repositioning
And the use of a therapeutic support surface**

Deviation from prevailing Best Practice Guidelines or a manufacturers' Instructions For Use should be informed, considered, justified and documented.

Responsibility for the final choice rests with the clinician.

DURING ADMISSION/TRANSFERS

- Use a trolley/gurney with pressure redistributing properties.
- Use friction-reducing devices or lifting slings to transfer the patient between trolleys, diagnostic tables and the bed; this reduces friction and shear on the patient and work load on the caregiver. This is particularly important during the immediate post-admission/assessment phase when transfers may be frequent.
- If the admission process is longer than 1-2 hours use a lateral transfer device, or a patient lifter combined with a repositioning sling, to turn the patient side to side (ideally 30° – 30°); this avoids prolonged pressure over the vulnerable sacrum. Float the heels using pillows or off-loading devices.
- Transfer to a hospital bed with specialised pressure redistributing mattress as soon as possible.

ON UNIT/FINAL DESTINATION

- Once the patient has reached their final destination, remove lift equipment unless, like the *Maxi Transfer Sheet*, it is considered suitable for retention and minimise the layers between the patient and the specialist support surface.
- If a *Maxi Transfer Sheet* is not available, and the frequency of removing and replacing the sling is such that the risk to the carer is increased or the disruption to the patient outweighs the benefit of removal, then:
 - Ensure the fabric is not creased
 - Ensure the patient's skin, particularly over a bony prominence, is not placed over a seam
 - Be aware that the pressure-redistribution properties may be affected and be sure to inspect the skin response at every turn – altering the frequency if required.
 - **Document the reason for the decision process as it may contravene clinical and manufacturer guidelines**
- Reduce the risk of shear from sliding down the bed (semi-recumbent patient) by:
 - Using a multi-section bed frame (fig. 7), which enables the knee section to be raised and so supporting the patient in a comfortable reclined position (semi-Fowler's)
 - Raise the knee before, or at the same time as, raising the backrest so that the patient is supported
 - Use a multi-section profiling bed frame to reduce compression of the abdomen
 - If the bed does not have a knee-raise facility; raise the foot of the bed by 10° (if not contra-indicated) to reduce the likelihood of the patient sliding down when semi-recumbent
 - Keep the backrest at no more than 30° unless contra-indicated¹
- Use an 'active' pressure-redistributing support surface for patients who cannot be frequently repositioned¹
 - E.g. patients in traction, pain, medically unstable, respiratory or cardiac decompensation.



References

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