

## FAQ

### DVT

## DEVICE-RELATED PRESSURE INJURY: PATHOLOGY, RISK & PREVENTION

Device-related damage occurs when prolonged pressure is applied beneath or adjacent to a medical device for example; intravenous line; catheter/drain; traction or brace device; anti-embolic stockings; intermittent pneumatic compression garments and endotracheal tubes/ties etc. While these devices may be a necessary part of the medical intervention, care should be taken to mitigate the risk of exposure to *prolonged* or *excessive* pressure - the primary cause of pressure ulceration<sup>1</sup>.

### Who is most at risk?

*Any patient who is unable to feel or respond to pressure:* patients who are anaesthetised, sedated, paralysed or have a dysfunctional motor-sensory system are most at risk. Without nursing vigilance, the pressure applied by a medical device can result in tissue damage; this can occur rapidly and become severe, particularly if the device is located over a bony or cartilaginous area such as the nose, ear, wrist or malleolus.

### How common is device-related injury?

*Device-related pressure injury is a common iatrogenic problem accounting for up to 50% of all facility-acquired pressure ulcers*<sup>234</sup>. In contrast to non-device-related pressure ulcers, which occur most frequently on the lower trunk and heels, those related to medical devices are more commonly found on the head, neck, mucosa and malleous; essentially areas where there is lack of subcutaneous tissue 4 or immature (neonate) or vulnerable skin.

### Suggested strategies for prevention

*Ensure medical devices are applied in accordance with the manufacturers instructions, with particular attention to the fit of the device;* if there is any risk of prolonged pressure application consider the following:

- Document the skin condition before applying the device to provide a reference. Inspect the skin 1-2-hours after application and schedule reassessment thereafter according to the findings but at least once per shift. Local redness, heat, pain and/or induration is a warning sign of impending tissue damage.
- Wherever possible, avoid locating or securing the device or its associated tubes, wires and securing tape over a bony prominence.
- Use gel/foam padding/dressing to protect the most vulnerable areas if pressure cannot be avoided e.g traction and stabilisation devices. Ideally, use low/non adhesive dressing to enable frequent skin inspection<sup>5</sup>.
- Use purpose-made ties and securing devices to avoid injury to the mucosa, ureteral meatus or soft tissue when using drains, catheters, intravenous lines and respiratory support.
- Anti-embolic stockings have been shown to be a particular risk to the bony malleolus and heel<sup>6</sup>, these should be fitted only after the correct size has been established and should be removed for skin inspection at least twice per day.
- When using intermittent pneumatic compression calf/thigh garments (IPC) ensure the air supply tubing is not located over the malleolus and take care not to trap the tubing inside heel off-loading devices.
- Document all assessments, findings and actions in the patient notes: this is particularly important if, for some reason, a medical device cannot be removed and a risk of tissue injury is an accepted compromise e.g. when using a spinal board or cervical collar.

<sup>1</sup> NPUAP-EPUAP Pressure ulcer prevention guideline. 2009. [www.epuap.org](http://www.epuap.org)

<sup>2</sup> Black JM, Cuddigan JE, Walko MA, et al. Medical device related pressure ulcers in hospitalised patients. *International Wound Journal*. 2010; 7(5): 358-65.

<sup>3</sup> Jaul E. A prospective pilot study of atypical pressure ulcer presentation in a skilled geriatric unit. *Ostomy Wound Management*. 2011; 57(2): 49-54

<sup>4</sup> Apold J, Rydrych D. Preventing device-related pressure ulcers: using data to guide statewide change. *Journal of Nursing Care Quality*. 2012; 27(1): 28-34.

<sup>5</sup> Fletcher J. Device related pressure ulcers made easy. *Wounds UK*. 2012; 8(2): 1-4.

<sup>6</sup> CLOTS Trial Collaboration. Effectiveness of thigh-length graduated compression stockings to reduce the risk of deep vein thrombosis after stroke (CLOTS trial 1): a multicentre, randomised controlled trial. *The Lancet*. 2009; 373(9679): 1958-1965

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