Pressure ulcer prevention is similar with differently priced mattresses

The choice of mattress used in hospital makes little difference to whether, or how quickly, adults develop pressure ulcers but prices differ, according to a large trial funded by the National Institute of Health Research (NIHR). Pressure-redistributing mattresses and cushions, which allow the capillaries to refill, can prevent pressure ulcers; different models are available, with some being higher-tech and more expensive than others. Previous smaller trials have looked at the effectiveness of these devices, or compared newer, sophisticated devices with older, simpler methods.

This study, reported in an NIHR Signal, aimed to compare the clinical and cost effectiveness of two common pressure-redistributing mattress types. It recruited 2,029 adults from 42 acute and community hospitals in the UK over three years. All participants were expected to stay in hospital for at least five days and were at high risk of a pressure ulcer due to being acutely ill, bed/chair-bound or having category-one pressure pain at a pressure ulcer site. The average age of participants was 78 years.

For a maximum treatment phase of 60 days, participants were randomised to:
- Use an alternating-pressure mattress – this uses a pump to change the pressure in different sections of the mattress, thereby reducing total pressure on any one area over time;
- Use a high-specification foam mattress – this is the current standard of care.

It was not possible to conceal the group participants were in due to the appearance of the mattresses. The alternating-pressure mattress was a significantly more expensive component of inpatient care (£28.80 per average hospital stay) compared with the high-specification foam mattress (£1.05) but the main driver in the cost-effective analysis was total inpatient care costs.

During the trial period, changes to the skin and development of any pain at pressure points were assessed. Skin and pain scores were assessed again 30 days after the trial ended. NT

What did the review find?
- There were fewer pressure ulcers overall than expected. By the final follow-up, 160 participants (7.9%) developed at least one pressure ulcer classified as category II or higher (70 in the alternating-pressure (AP) group; 90 in the high-specification foam group). The difference was not statistically significant
- Pressure ulcers took an average of 18 days and 12 days to develop on AP and foam mattresses respectively
- In total, 442 participants had at least one mattress change. Reasons included:
  - Discomfort – 90 participants (AP mattress), 28 (foam mattress)
  - Aiding rehabilitation/movement – 49 participants (AP), five (foam)
  - Clinical reasons – three (AP), 130 (foam)
- Only three mattress-related adverse effects were reported
- AP mattresses are more expensive (£3,742 each, assumed durability of five years) than foam mattresses (£169 each, assumed durability of six years)

Implications for nursing

Pressure ulcers are one of the most commonly reported harms in healthcare, with 1,700-2,000 patients developing them each month. Treating pressure ulcers costs the NHS >£3.8m every day, so preventing them is a priority. The National Institute for Health and Care Excellence believes more research on pressure-redistributing devices is needed but its (2014) guidance recommends high-specification foam mattresses for all adults who:
- Are admitted to secondary care
- Are at high risk of developing a pressure ulcer in primary and community care settings
- Already have a pressure ulcer.

Trusts currently consider using an alternating-pressure (AP) mattress based on clinical circumstances and local guidance. In this study, AP and foam mattresses were equally effective at preventing pressure ulcers. In some cases, AP mattresses can make rehabilitation difficult, restricting therapist movements compared with foam. There are also cost implications, as AP devices are more expensive than those of high-specification foam.

For now, the choice of mattress type used to prevent pressure ulcers needs to take better account of individual patient preferences, rehabilitation needs and pressure ulcer risk.

NIHR Signals

The National Institute for Health Research (NIHR) Dissemination Centre aims to put good evidence at the heart of decision making in healthcare. NIHR Signals are summaries of the most relevant research, published on the Discover Portal (Bit.ly/NIHRDiscover). Sign up for Signals tailored to your interest at Bit.ly/NIHRMailing

To read the full Signal report go to: Bit.ly/NIHRPressure