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Dyna-Form Mercury Advance:

A Revolutionary Step Up, Step Down Approach. The clinical impact on a very high risk patient with pre-existing category 4 pressure ulceration.

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Introduction

Pressure ulcer prevention and treatment is currently at the very top of the clinical agenda and as never before the role of the Tissue Viability Specialist under close scrutiny. The long predicted rise in pressure ulcer prevalence and incidence has not materialised as figures seem to be stubbornly flat. Given the UK's aging population everyone is running very hard to stand still, therefore we need to look at new ways of tackling this pernicious problem. This case study looks at the clinical impact of the Mercury Advance Hybrid mattress when used to treat a very high risk patient with diabetes and serious underlying (intrinsic factors) co-morbidities. This product is the core component of the new pressure ulcer prevention and treatment strategy developed by Direct Healthcare Services of South Wales; Intelligent Pressure care Management. Not only did the Stage 4 pressure ulcer respond well to the regime but the patient benefitted from better sleep, improved mobility and uplift in his general mental wellbeing.

Pressure Ulcers

Pressure ulcers are the most expensive form of chronic wound faced by healthcare organisations in the UK (Posnett & Franks, 2007). Each year it is estimated that 400,000 patients will develop an ulcer in the UK alone (Bennett, Dealey & Posnett, 2004), the vast majority of which are regarded as avoidable. The European Pressure Ulcer advisory panel (EPUAP, 2009) identifies 4 categories of pressure ulcers with guidance regarding which type of pressure relieving products are best used. Also it is clear from research that prompt intervention resulting in preventing the development of pressure ulceration is much more preferable to costly treatment.

Pressure ulcers are defined as 'localized injury to skin and/or underlying tissue usually over a bony prominence, as a result of pressure, or pressure in combination with shear.' A category 4 pressure ulcer is the smallest category in terms of number but represent the biggest financial, nursing and patient burden (Bennett, Dealey & Posnett, 2004). These patient episodes can result in serious risk of death (via septicaemia), loss of limbs, extensive surgery, on-going pain and physiological harm as well as years of on-going care (Guy, 2012).

EPUAP, NPUAP Pressure Ulcer Categories



**Category 1
Pressure Ulcer**

Intact skin with non-blanchable redness of a localized area usually over a bony prominence.



**Category 2
Pressure Ulcer**

Partial thickness loss of dermis presenting as a shallow open ulcer with a red pink wound bed, without slough, or intact/open serum-filled blister.



**Category 3
Pressure Ulcer**

Full thickness tissue loss. Subcutaneous fat may also be visible but bone, tendon or muscle is not exposed.



**Category 4
Pressure Ulcer**

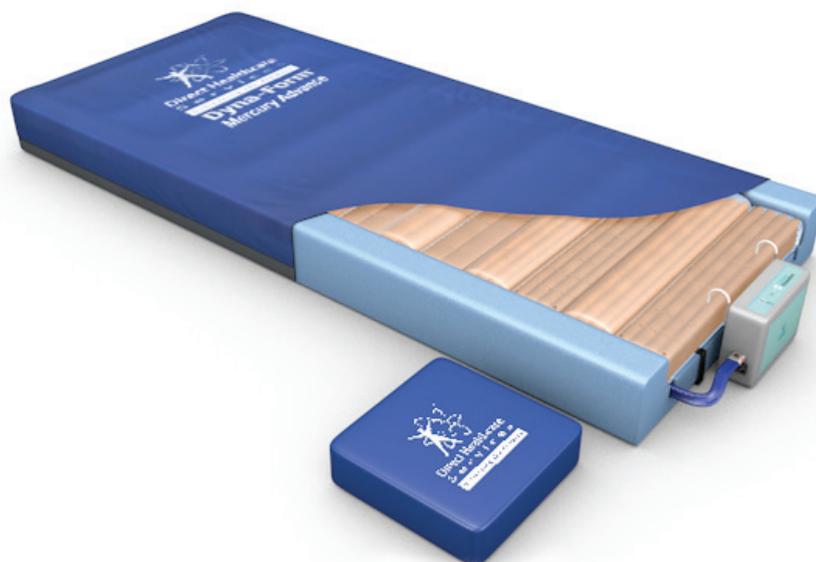
Full thickness tissue loss with exposed bone, tendon or muscle. Slough or eschar may be present. (EPUAP, NPUAP, 2009 Quick reference guide, Washington).

Current Clinical and Political background

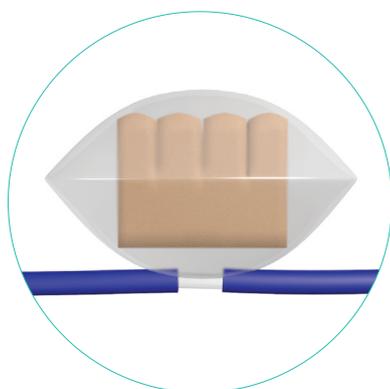
These avoidable harms have been targeted by the Department of Health (DOH 2009), Care Quality Commission (Health Improvement, Scotland) the National Patient Safety Agency as 'never' events, that is patients when given the correct, timely care required should be able to avoid them completely. The majority of pressure ulcers are entirely preventable through risk assessment and implementing effective and timely pressure-relieving measures, such as repositioning immobile patients and removing pressure from all risk areas (DOH 2009) The link is being made by those inside and outside the profession that pressure ulcer development is directly attributable to poor nursing care. Hence the need for intelligent debate and intervention regards what is a pressure ulcer and can they all be avoided? However given the weight of the issue in the current healthcare environment, new, timely, affordable strategies and solutions need to be implemented as an urgent priority. In 2010, the term Zero tolerance was used in connection with pressure ulceration by the National Patient Safety Agency (NPSA 2010) and so called on all health organisations to 'work towards preventing them entirely' (Ousey 2011), this is the TVN's call to arms in the struggle against avoidable pressure ulceration.

The Product

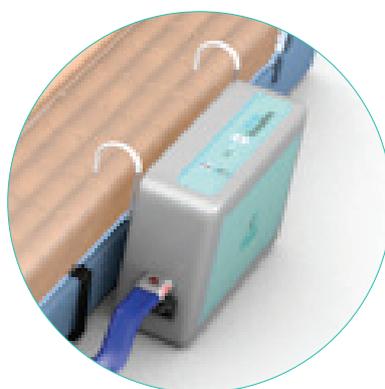
The Dyna-Form Mercury Advance (Direct Healthcare Services Ltd, Cardiff). The Dyna-Form Mercury Advance mattress is a “Very High Risk” dynamic replacement system, combined with the benefits of modern foam technology



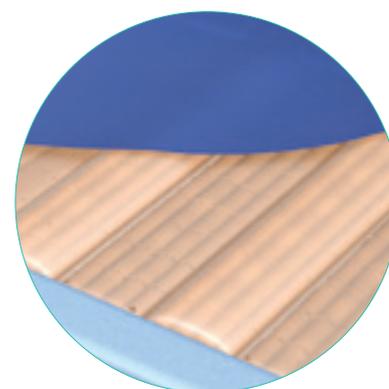
Offering high levels of patient comfort, this unique system has the facility to double “step up” to that of a dynamic mattress when clinically required. Achieved by simply adding the pump to the static unit, this allows for the rapid stepping up as clinically required, but does not tie up scarce resources with patients who may or may not require an active surface. The addition of the pump can be completed whilst the patient is still on the support surface (no moving and handling issues). This is made possible by using the unique foam within an air cell design combined with a choice of flexible pump settings.



The Cells



Multi-functional Pump



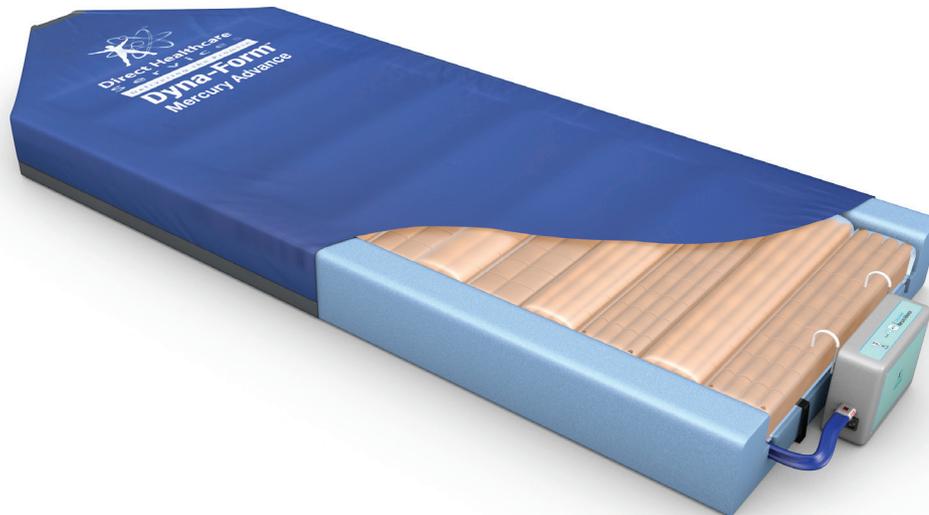
Cells in-situ

Similarly, the mattress's function can be reduced as the patient's condition improves. This flexibility makes it ideal for use within all patient care environments, reducing logistic and decontamination costs. A higher maximum weight capacity, up to *40 stone / 254kg, allows the product to meet the modern challenges of those heavier clients. All component parts are interchangeable and replaceable, maximising product life and reducing environmental impact. The outer cover consists of the latest high frequency welded, multi stretch and vapour permeable fabric technology, surpassing the latest, strictest infection control policies.

When combined as a strategic solution, Intelligent Pressure Care management, the Mercury advance and derivative products may hold one of the keys to breaking through the glass ceiling of pressure ulcer prevalence and incidence.

The Advance Trolley Mattress

The ability to react rapidly to the patients' needs in a timely appropriate manner in all clinical settings is a major goal of all health care providers. For over 12 months the Trust has been using the Intelligent Pressure Care model, a unique step up step down strategy to improve patient care, avoid the risk of moving and handling related injury and reducing the cost of expensive rental products. The time saved by using the system has the effect of freeing up the Nurses to attend to other clinical priorities.



Case study

A 62 year old man was admitted from an acute hospital into a community hospital bed with a category 4 sacral pressure ulcer. The wound was 12cm (length) x 6cm (width) X 4cm central depth undermining 3cm in all areas. The wound bed consisted of 70% slough 30% granulation.

This gentleman is a type 2 diabetic, with peripheral vascular disease and a below knee amputation but he had good dietary input. His risk assessment clearly indicated that he required a dynamic support surface, however he was reluctant to be nursed on an alternating pressure relieving mattress, stating he found them extremely uncomfortable.

Mr X was receiving care from the Tissue Viability service regarding dressing selection along with the ward staff. He had been placed on a full mattress replacement on admission to the community hospital ward. On our assessment Mr X strongly insisted he could not sleep as the bed was noisy and the motion of the mattress was making him feel nauseous, he also expressed that he could not pull himself over as he felt he was disappearing into the mattress, he was extremely withdrawn and questioned how was he going to cope at home!

In line with good practice we discussed his care regime with him and his relatives. 'The patient should be central to all care interventions and as such, patients, their family and carers should be advised on pressure relieving strategies ...' (Ousey 2011). The option of using the Dyna-Form Advance mattress was given to him and that we would value his opinion on the comfort, and other potential benefits of this support surface. Mr X subsequently agreed to participate in the evaluations.

Clinical Outcomes

After 48 hours of care on the Mercury Advance Mr X requested to see the Tissue viability Nurse. His comments were very surprising, for after only a short period of time he stated that he had never had such a good night's sleep and indeed not slept as well for weeks. He also added that he could reposition himself in bed and therefore had regained his independence.

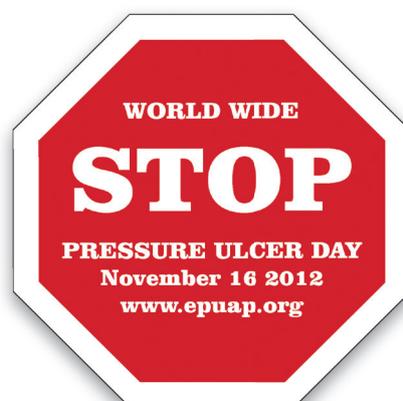
Within 9 days the wound size had reduced significantly by 3cm length and 2cm width the depth had reduced to 1cm undermining in all areas. The wound bed was 50% slough and 50% granulating.

At Week 4 following our implementation plan and the use of the Dyna-Form Advance mattress, the wound had reduced by half again and Mr X was now getting out of bed with the physiotherapist to start mobilizing and then going back onto the bed. By 8 weeks from admission Mr X's wound was 10% slough and 90% granulation having alternate day dressings and he stated that he felt he was looking forward to going home.

Twelve weeks after admission Mr X was discharged home, his wound was 2cm x 2cm 100% granulation. The only thing he requested when discussing his discharge was could he please have a Dyna-Form Advance mattress at home, we did advise him that he could now be nursed on a standardised foam mattress.

Post Evaluation Impact

Since this evaluation we have purchased a number of Dyna-Form Advance mattresses and reduced the need for full therapeutic systems to be used with excellent results on all grades of pressure damage, along with utilising the SSKIN BUNDLE programme.



Summary

Pressure ulcer prevention and treatment is currently at the very top of the clinical agenda and as never before the role of the Tissue Viability Specialist under close scrutiny. The long predicted rise in pressure ulcer prevalence and incidence has not materialised as figures seem to be stubbornly flat. Given the UK's aging population everyone is running very hard to stand still, therefore we need to look at new ways of tackling this pernicious problem. This case study records the positive clinical impact of the Mercury Advance Hybrid mattress when used as part of a holistic approach to patient care. It was the surface of choice used to treat an elderly gentleman suffering from type 2 diabetes and limited mobility due to a below the knee amputation, who had developed a category 4 sacral pressure ulcer. This product is the core component of the new pressure ulcer prevention and treatment strategy developed by Direct Healthcare Services of South Wales; Intelligent Pressure care Management. Not only did the Stage 4 pressure ulcer respond well to the regime but the patient benefitted from better sleep, improved mobility and uplift in his general mental wellbeing.

We have now been using the Advance for at least 12 months. All of the community hospitals in the new Trust use the Dyna-Form Mercury Advance and are gradually replacing static foam surfaces. By having the mattresses on standby without a pump (keeping a smaller number of pumps free to circulate) only marrying them up to the Advance mattress as and when they are needed by the patient; rapid intervention in an intelligent, cost effective manner is facilitated.

Intelligent Pressure Care Management allows for one product to meet the vast majority of patient needs within a wide variety of care settings, reducing the need for expensive rentals and simplifying the management of the support surface provision, training and logistics. Also whilst delivering a clinical performance capable of treating appropriate very high risk patient groups, who would not normally tolerate active systems.

Conflict of interest

None

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