Evaluation of a continuous bedside pressure mapping system to measure the effectiveness of a patient repositioning intervention in the prevention of pressure ulcers in two UK Acute (Hospital) Orthopaedic Trauma wards

Michelle Greenwood, Lead Nurse, Tissue Viability, Walsall Healthcare NHS Trust, UK michelle.greenwood@walsallhealthcare.nhs.uk

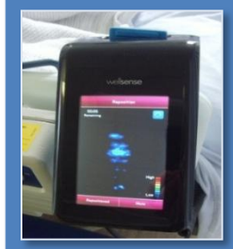
Mark Collier, Lead Nurse/Consultant-Tissue Viability, United Lincolnshire Hospitals NHS Trust, UK mark.collier@ulh.nhs.uk

Background

In recent years, the incidence of pressure ulcers acquired within the NHS has either remained the same or increased. Pressure ulcer development has been identified as one of four harms to patients that should be addressed and is considered a key indicator of patient safety. The NHS Midlands and East have set a goal to eliminate all avoidable pressure ulcers [categories 2 to 4 (EPUAP Classification system)] by December 2012. A key tool for achieving this goal is the introduction of the SSKIN bundle, of which patient repositioning is a vital component, to minimise the risk of pressure ulcer development.

Novel Bedside Pressure Mapping System

A recently developed continuous bedside pressure mapping system (CBPM),* available in the USA and Europe, is used as part of pressure ulcer prevention protocols. In a joint evaluation, the Walsall Healthcare NHS Trust and United Lincolnshire Hospitals tissue viability teams assessed the relevance of this technology for use in clinical practice in the UK.



Patient lying on back. Ready for repositioning (pink alert).

Patient repositioned. Reduced pressure (less green area).

Patient lying on left side. Red area at hip= increased pressure.

Objectives

To collect quantitative and qualitative data to determine if the CBPM system would provide practical and clinical benefit if adopted within a UK pressure ulcer prevention strategy.

Methods

- 12 CBPM systems installed in two Orthopaedic Trauma Department wards (6 in each Trust) – Walsall Manor Hospital and Pilgrim Hospital.
- Patients selected based on 'high risk' of developing a pressure ulcer or having already developed an ulcer.
- Pressure ulcer data collected.
- Staff surveyed about use of the CBPM and views of patients/family visitors.

Outcomes and Evaluation

Quantitative Outcomes

No new pressure ulcers developed in patients on the CBPM system. Identifying trends in pressure ulcers incidence is complicated by 1) significant monthly variation and 2) the relatively small number of ulcers across the hospitals. However, introduction of the CBPM system appears to have had a positive effect on ward level incidence in both hospitals. The tables below report the number of pressure ulcers at a hospital level, ward level and amongst CBPM users. The highlighted periods in the tables represent the evaluation period when CBPM was available. Note, the duration of the evaluation differed across the two sites.

Pressure Ulcer Incidence

Pilgrim Hospital	Month 0	Month 1	Month 2	Month 3	Month 4	Month 5	Month 6
Hospital	37	44	41	46	43	26	28
Ward	7	8	8	6	6	1	2
CBPM Users	-	0	0	0	-	-	-

Walsall Manor Hospital	Month 0	Month 1	Month 2	Month 3	Month 4	Month 5	Month 6	Month 7
Hospital	20	18	19	25	17	13	11	8
Ward	2	0	3	3	0	0	0	0
CBPM Users	-	0	0	0	0	0	0	-

Qualitative Outcomes

Both the ward leadership and staff considered the CBPM system to be easy to use and reported that it enhanced their approach to repositioning patients to minimise risk of pressure ulcers occurring. Although not significant, patient and family visitor engagement seemed to increase as a result of the visual impact of the CBPM system.

Staff	Yes	No
The control unit helped me to provide effective repositioning?	100%	0%
The system helped remind me to re-position	100%	0%
Did the system help with adherence to the repositioning schedule?	100%	0%
Did the patient develop pressure related tissue damage whilst using the CBPM system?	0%	100%
Overall was the CBPM system beneficial in helping to reposition the patient?	100%	0%

Patient/Family	Positive	Indifferent	No View	Negative
What view did the patient have?	33%	11%	57%	0%
What view did the family/visitors have?	78%	0%	22%	0%

Key Impacts/Observations

- CBPM helped staff optimise patient position for increased comfort and reduced pressure.
- Instantaneous visual feedback from the bedside control display increased efficiency of nursing/carer time by prioritising repositioning requirements.
- Some patients reported improved sleeping patterns as a result.
- The system helped patients and families understand the importance of repositioning and enabled them to be more involved in this process.
- In both sites, CBPM was evaluated alongside the hospital wide implementation of the SSKIN bundle / comfort rounds which has resulted in a significant reduction in total pressure ulcer incidence over the evaluation period.
- The evaluation suggests that CBPM can be effectively implemented alongside the SSKIN bundle/comfort rounds. Much larger scale research is warranted to identify how best to position the CBPM.

Conclusions

The CBPM system provided immediate visual feedback to the nurse or carer as to the best position for the patient to minimise potentially harmful pressure, as well as determine a safe and timely repositioning schedule. The outcomes suggest that CBPM can be effectively integrated into the SSKIN bundle/comfort rounds.

This is the first device designed for routine use in a hospital ward/long-term clinical care environment that provides visualisation of pressure points demonstrating the effectiveness of a repositioning intervention at the point of care.

This work was supported by an unrestricted educational grant from Wellsense USA, Inc.

**The M.A.P.™ System, by Wellsense, USA, Inc., Nashville, TN*

Presented at: Wounds UK Annual Meeting, Harrogate, UK, 2012