

# Innovation in patient assessment - A four month trial and clinical evaluation of the effectiveness of the Monitor, Alert, Protect (M.A.P™) system



Berkshire Healthcare

NHS Foundation Trust

Authors: Anita Rush (Clinical Lead and Nurse Specialist Equipment Berkshire) & Sarah Deal (Ward Manager)

## Introduction

Reducing the prevalence of pressure ulcers plays a vital role in improving patient outcomes and reducing the costs associated with treatment – estimated at between £1.4 and £2.1 billion per year for the NHS. Whilst the development of dynamic therapy mattress systems has already made an important contribution, nursing staff do not currently have a tool capable of distinguishing accurately between high and low pressures, or assessing the effectiveness of their interventions.

West Berkshire Community Hospital (WBCH), Berkshire Healthcare NHS Foundation Trust embraces its values: Compassionate | Aspirational | Resourceful | Excellent. Current NICE and EUPAP guidelines recommend repositioning patients in bed in order to relieve or redistribute pressure. WBCH wished to evaluate how visual feedback of continuous interface pressure between the body and support surface could inform clinicians on repositioning strategies and play a key role in interventions for the prevention and management of pressure ulcers.

The chosen settings were Highclere Ward and Donnington Ward at WBCH. These wards having a broad range of patients with complex care needs were identified as an ideal setting to assess the effectiveness of pressure redistribution protocols guided by M.A.P™ which improve clinician's knowledge that repositioning interventions are actually relieving or redistributing pressure.

## Method

The trial was conducted over a three month period and captured data from patients nursed on both static and dynamic mattresses. Nursing staff were asked to continue their standard pressure ulcer preventative practice and patients' Skin Bundle records were reviewed at the end of the evaluation period against the M.A.P™ Pressure areas chart.

### Inclusion criteria:

- Waterlow Score over 20
- Pre-existing tissue damage
- Bed bound patient reduced mobility/ unable to independently reposition

### Exclusion criteria:

- Patients with a high risk transferable virus
- Patients on end of life care plan
- Patients with dementia
- Moisture lesion

Conducted over a three month period.

Clinicians stated that as the system identifies high peak pressure points, this prompts repositioning and agreed that utilising the M.A.P™ had a positive contributing factor to the patient's well-being.



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Visual feedback of continuous interface pressure between the body and support surface.

## Results - Quantitative Data

### Patient Feedback:

- 72% of patients were nursed on an alternating mattress surface
- 91% of patients could not reposition independently
- 0% of patients developed Pressure Ulcers during the trial period
- 45% of patients had skin damage. Three patients had existing PU, two patients had existing moisture lesions
- 100% of the existing PU were identified as improved
- 50% of moisture damage was identified as improved

### Clinical Feedback:

- 81% agreed that the system enabled them to redistribute pressure effectively
- 72% agreed that the system increased their knowledge of pressure distribution
- 72% agreed that the information provided by the system improved patient comfort
- 72% agreed using M.A.P has assisted current practises in maintaining patients skin integrity and managing skin breakdown

## Results - Qualitative Data

Clinicians stated that as the system identifies high peak pressure points, this prompts repositioning and agreed that utilising the M.A.P™ had a positive contributing factor to the patient's well-being.

- Promoted and improved patient concordance.
- Encouraged the proper use of the profiling beds.
- Questioned the need to nurse patients on a dynamic mattress.
- Helped the night staff identify whether a patient required moving. If no red areas of concern they were able to leave the patient to rest and sleep.

## Discussion

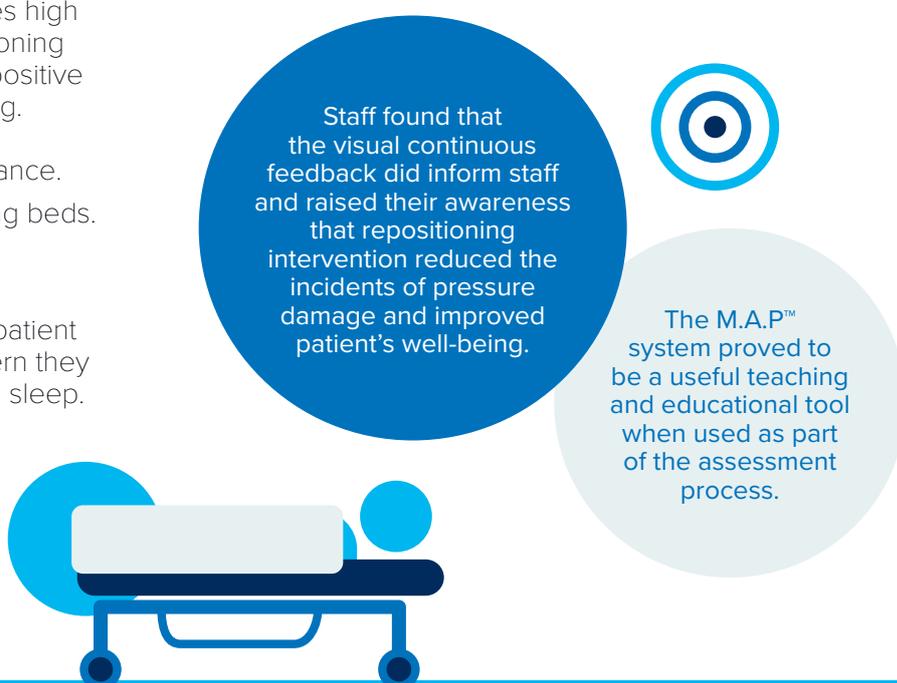
The Trust identified that if there was also an ability to form a printed baseline assessment providing pictorial evidence for patient notes the additional benefits would be to promote best practice and enhance the products value as an assessment tool.

## Conclusion

Feedback was positive, staff found that the visual continuous feedback did inform staff and raised their awareness that repositioning intervention reduced the incidents of pressure damage and improved patient's well-being. The visual information prompted staff to undertake the offloading tasks required to reduce the pressure points and key to the prevention strategies.

The use of the M.A.P™ system also benefitted patients by placing the visual screen to face them it prompted them to reposition and move in bed. They realised the importance of repositioning and independent moving in bed contributed to reducing pressure ulcer and also improved their comfort and well-being.

The M.A.P™ system proved to be a useful teaching and educational tool when used as part of the assessment process. It enabled good clinical reasoning, identified the correct equipment provision and reduced the patients risk of developing tissue damage.



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NICE Pressure ulcers Quality standard [QS89] Published date: June 2015

The European and US National Pressure Ulcer Advisory panels (EPUAP and NPUAP), along with the Pan Pacific Pressure Injury Alliance (PPPIA) International Pressure Ulcer Published September, 2014.

# Technology, collaborative working and patient engagement - The perfect combination for success



North Bristol  
NHS Trust

Author: Fiona Hammond (Infection Prevention & Control and Tissue Viability)

## Introduction

The increased acuity of patients with existing pressure injuries admitted to acute healthcare organisations, means there are many conflicting care priorities with multiple comorbidities and the need to ensure high quality care is delivered.

North Bristol Trust is a Regional Trauma and Vascular Treatment Centre caring for highly complex and compromised patients. The Tissue Viability team is at the forefront of the Trust-wide patient centred care strategy based on the belief there should be “no decision about me, without me”. Embracing innovation and technology that promotes a patient centred approach is a key objective.

This case study patient was admitted to North Bristol Trust (NBT) in January 2017 following a fall at home sustaining a complex supracondylar fracture to his right femur. Admission assessment identified two pressure injuries. A chronic grade 4 to the right trochanter and a grade 2 to the right buttock. An individualised care plan was implemented combining two innovative Drive DeVilbiss Healthcare technologies. The Monitor, Alert, Protect (M.A.P™) system and the Acclaim Flow Hybrid mattress.

## Method

Following a discussion with the community Tissue Viability Team a medical plan for conservative treatment was developed utilising the Drive DeVilbiss Healthcare technologies, a leg brace to stabilise the fractured femur and negative pressure wound therapy to the grade 4 pressure injury.

Initially as part of the pressure injury management plan a static foam mattress surface was selected based on patient preference. However, following further skin assessment the patient was ‘stepped up’ to a dynamic surface to provide increased pressure redistribution. The patient found this compromised their ability to maintain independent movement in bed and asked clinical staff to investigate alternative support surfaces. The support surface required would need to provide a higher level of pressure redistribution but be less restrictive on independent movement.

The Trust had commenced utilisation of the Acclaim Flow non-powered hybrid mattress across its clinical areas. This non-powered hybrid works on the principle of air displacement and features automatically adjusting valves across ten individual latitudinal air cells. These cells respond to the patient’s weight and movements to achieve optimum pressure redistribution.

The Tissue Viability team identified the potential use of the Acclaim Flow mattress for this patient, but highlighted that close monitoring would be required due to the site of the grade 4 pressure injury. As part of the risk assessment a decision was taken with the patient’s consent, to combine the Acclaim Flow mattress with the M.A.P™ system.

The M.A.P™ system provides the clinician with continuous bedside data on pressure levels developing between the patient and the support surface. Visual feedback of continuous interface pressure between the body and support surface informs both clinical staff and the patient of high interface pressure episodes. This in turn enabled them to adjust the patient’s individual repositioning strategies accordingly.

The Tissue Viability team is at the forefront of the Trust-wide patient centred care strategy based on the belief there should be “no decision about me, without me”.

An individualised care plan was implemented combining two innovative Drive DeVilbiss Healthcare technologies.



The support surface required would need to provide a higher level of pressure redistribution but be less restrictive on independent movement.

## Results

It was reported that the Acclaim Flow mattress met both the clinical and comfort needs of this patient. The M.A.P™ system provided reassurance to clinical staff that the support surface and repositioning schedules met the patient's needs. Using a combination of these two technologies resulted in maintaining patient safety whilst enhancing the patient experience.

## Discussion

Patient empowerment is often seen as a feel good initiative. However, the key to a successful pressure injury prevention plans is to "Treat the whole patient, not just the hole in the patient". The Tissue Viability team believes a key focus of pressure injury prevention strategies is to recognise the patient as "an expert in their life". All stakeholders in the process must buy into the aim of better patient outcomes. Technology provides valuable information but does not replace individualised, compassionate, evidence based care.

## Conclusion

This innovative combination of support surface and continuous pressure monitoring provides a replicable care model that is evidence based. This case study demonstrates that a patient with restricted movement can be nursed effectively on the Acclaim Flow mattress. The M.A.P™ system identified that small movements reduce interface pressures to within tissue tolerance levels. Both products were effective for this patient where full body repositioning and turning was restricted.

The frequency of repositioning should be appropriate for the individual, their wishes and needs. For safety reasons, repositioning is recommended at least every 6 hours for adults 'at risk', and every 4 hours for adults at 'high risk'<sup>1</sup>. Systematic reviews have found insufficient evidence to recommend any specific repositioning regimens for patients with impaired mobility.

Real-time, ongoing pressure measurement using a pressure-sensing mat is a useful tool to help care providers effectively reposition patients within the context of existing standardised protocols for the prevention and management of pressure injury. Continuous bedside pressure monitoring is a useful tool as part of a larger programme of education and commitment to better patient outcomes.



The M.A.P™ system provided reassurance to clinical staff that the support surface and repositioning schedules met the patient's needs.

Maintaining patient safety whilst enhancing the patient experience.

Real-time, ongoing pressure measurement using a pressure-sensing mat.



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