IMPROVED PATIENT EXPERIENCE AND OUTCOMES USING THE DYNA–FORM™ MERCURY ADVANCE MATTRESS

The Royal Wolverhampton NHS Trust

A six month study examining a measurable difference in improved patient outcomes.

Lorraine Jones, Tissue Viability Lead Nurse, The Royal Wolverhampton NHS Trust, The Chestnuts, New Cross Hospital, Wolverhampton.
lorraine.jones12@nhs.net

Introduction

"Grade three or four pressure ulcers can develop over short time periods. For example, in susceptible people, a full-thickness pressure ulcer can sometimes develop in just one or two hours"

NHS choices http://www.nhs.uk/Conditions/Pressure-ulcers/Pages/Causes.aspx

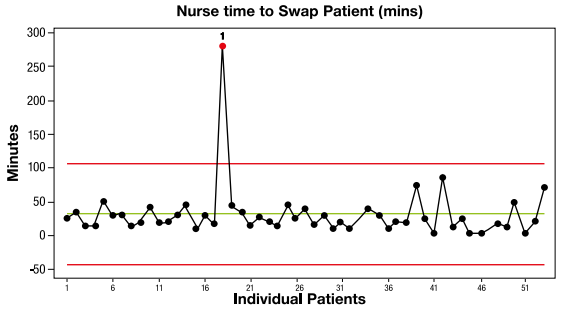
This study investigates patient outcomes when using hybrid mattresses on six wards in The Royal Wolverhampton NHS Trust.
All patients were nursed on the Dyna-form Mercury Advance mattress from Direct Healthcare Services and monitored for a six-month period. Previously statistical process control (SPC) had been used to demonstrate robustly how patients could wait over 6 hours before being transferred onto a dynamic mattress despite the mattress being delivered within the recommended 4 hour standard. This paper has concentrated on demonstrating improved patient outcomes by eliminating patient transfers and having the ability to 'step up' patients who are deemed clinically to need a Dynamic surface immediately.

Examining the previous system to get a Dynamic Mattress in Wolverhampton, the flow chart outlines the steps that would normally be required once the requirement has been identified to provide a patient with a Dynamic support surface.

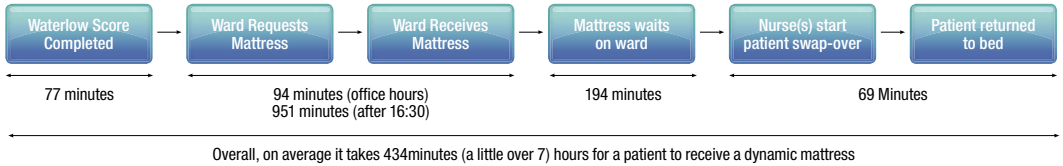
Data relating to the time taken to complete each step was collected over a three week period in the Summer of 2013, this was supported by three months' worth of equipment library data, detailing all loans of mattresses across the Trust.

For example, the analysis of the data collected by the ward based staff, on the time taken to complete a mattress transfer, shows that the patient transfer takes 69 minutes. This is the time from beginning to swap the patient from the static to the dynamic mattress (80% = 1.5 sigma above the average).

Similar SPC charts were created for the data measured for each step of the process.



Once all of the individual SPC charts have been created, they are combined with process mapping to understand cycle times in the delivery of Dynamic mattresses to wards. To understand what usually happens, the 80% variation (1.5 sigma above the average) is being employed from the SPC charts and added to the process map (see below).

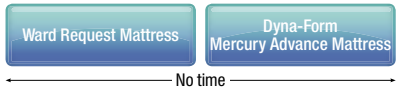


Method

The Royal Wolverhampton NHS Trust equipped six wards with the Dyna-Form Mercury Advance mattress from Direct Healthcare Services. The 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 "step up" to that of a dynamic mattress when clinically required. Similarly, the mattress's function can be downgraded as the patient's condition improves. The system is clinically proven to reduce grade 4 pressure ulcers.

Sue Mason - Clinical Nurse Specialist Tissue Viability:
Staffordshire and Stoke-on-Trent Partnership NHS Trust http://directhealthcareservices.co.uk/wp-content/uploads/2013/01/C14946-DynaForm-Mercury-Advance-Clinical-Study.pdf

Every patient that is admitted to the ward with the Mercury Advance mattresses in place is likely to only wait the initial assessment time, 77 minutes. This is the time for the completion of the Waterlow score. The potential benefit for the patient is immediate, including comfort and safety by preserving their future skin integrity, without having to wait the six hours as identified in the study.



The NHS Safety Thermometer is a local improvement tool for measuring, monitoring and analysing patient harms and 'harm free' care. From July 2012 data was collected using the NHS Safety Thermometer as part of the Commissioning for Quality and Innovation (CQUIN) payment programme.

The data collected for the period Jan 2013 – 12th June 2013 when the six wards were using the conventional static and dynamic mattress approach, was compared to the same data collected for the period Jan 2014 – 12th June 2014 after the hybrid mattresses had been installed.

JAN 2013 – 12TH JUNE 2013	
Grade 2 (Clear blister / superficial skin break / no slough)	306
Grade 3 (SDTI /Blood Blister/ Slough / Necrosis)	114
Grade 4 (Bone / Tendon / Muscle Exposure)	5

JAN 2014 – 12TH JUNE 2014	
Grade 2 (Clear blister / superficial skin break / no slough)	205
Grade 3 (SDTI /Blood Blister/ Slough / Necrosis)	50
Grade 4 (Bone / Tendon / Muscle Exposure)	4

Results

The data above clearly shows a 39% reduction in pressure ulcers on the six trial wards.
The pressure ulcer productivity calculator was developed to help NHS organisations and commissioners understand the productivity and cost elements associated with treating patients with pressure ulcers. These calculations were applied to the collected data.

2013	Central	Lower	Higher
Grade 2	£1,830,000.00	£1,483,000.00	£2,215,000.00
Grade 3	£1,133,000.00	£918,000.00	£1,371,000.00
Grade 4	£72,000.00	£58,000.00	£87,000.00
TOTAL	£3,035,000.00	£2,459,000.00	£3,673,000.00

2014	Central	Lower	Higher
Grade 2	£1,226,000.00	£993,000.00	£1,484,000.00
Grade 3	£497,000.00	£402,000.00	£601,000.00
Grade 4	£57,000.00	£46,000.00	£69,000.00
TOTAL	£1,780,000.00	£1,441,000.00	£2,154,000.00

Estimated cost of PU care at 2008/9 prices according to the Pressure Ulcer Productivity Calculator

Discussion

The Royal Wolverhampton NHS Trust equipped six entire wards with the Dyna-Form Mercury Advance mattress from Direct Healthcare Services. The 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 "step up" to that of a dynamic mattress when clinically required. If this approach was adopted across the entire hospital this model would result in huge cost savings across the Trust whilst improving patient outcomes as demonstrated by this six-month study.

Conclusion

This case study clearly identifies opportunities to improve safety and patient experience, by taking advantage of new technological advances in mattress design and thus reducing the cost associated with treating pressure ulcers and also reducing the length of patient stays.

Intelligent® Pressure Care Management