DO YOU REALLY KNOW HOW SOON YOUR PATIENT IS ON AN ALTERNATING MATTRESS IN A HOSPITAL SETTING?

The Royal Wolverhampton NHS Trust

A study examining opportunities in Safety, Effectiveness and Improved Patient Experience.

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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 patients in The Royal Wolverhampton NHS Trust who are on a static mattress, and deemed clinically to need a dynamic mattress. Statistical process control (SPC) is used to demonstrate robustly how patients can wait over 6 hours before being transferred on a dynamic mattress despite the mattress being delivered within the recommended 4 hour standard There are many potential benefits to reducing this time; this paper has concentrated on improved patient outcomes, exploring how the elimination of patient transfers reduces a 6 hour wait for a mattress, thus preventing unnecessary harm from potential pressure ulcers.

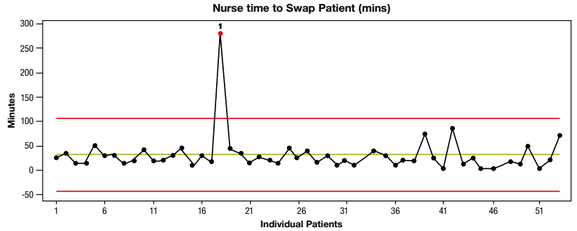
Method

SPC is a practical statistical approach that enables systems to be more effectively understood. The technique accepts that variation is inherent in every process. It allows robust 'maths' to be applied to that variation, allowing the user to understand what is usual and what is not. SPC can be used as a predictor of future activity, and is often used to plan theatre capacity in the NHS.

Examining the current system to get a Dynamic Mattress in Wolverhampton, the flow chart outlines the steps 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.

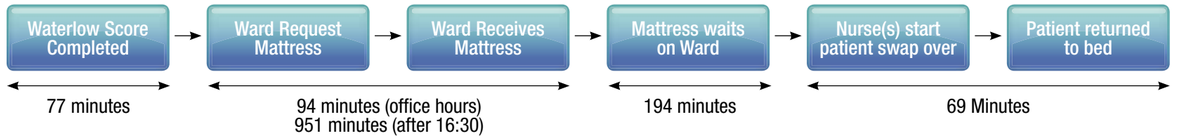
For example, the analysis of the data collected by the ward based staff, on the time taken to complete a mattress transfer, shows that the patient transfer takes 69 minutes. This is the time from beginning to swap the patient from the static to the dynamic mattress (80% = 1.5 sigma above the average).



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

Results

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 (Opposite, top).



The Royal Wolverhampton NHS Trust equipped an entire ward with the Dyna-Form Mercury Advance mattress from Direct Healthcare Services. The mattress is a "High / 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 6 hours identified in the study.

"Pressure Ulcer Audit Data for wards with Dyna-Form Mercury Advance mattress – 3 month study results". Mercury advance was available on the wards from 29th June 2013.

Incidents by Grade of pressure ulcer and Incident date (Acq on a busy medical ward)

UNAVOIDABLE	Apr	May	Jun	Jul
Grade 2 (Clear blister / superficial skin break / no slough)	4	3	2	1
Grade 3 (SDTI /Blood Blister/ Slough / Necrosis)	1	2	0	0
Totals:	5	5	2	1

AVOIDABLE	Apr	May	Jun	Jul
Grade 2 (Clear blister / superficial skin break / no slough)	2	0	0	0
Grade 3 (SDTI /Blood Blister/ Slough / Necrosis)	0	0	0	0
Totals:	2	0	0	0

This data clearly shows not only a reduction in avoidable pressure ulcers but also a reduction of unavoidable pressure ulcers since the mercury advance mattresses were installed.
Nb: further data is required to substantiate the effectiveness

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 improving the effectiveness of nursing staff by releasing time to care.

The NHS choices website highlights that a grade 3 or 4 pressure ulcer can develop in just one or two hours. With this study showing that it usually takes over 6 hours to be transferred to a dynamic mattress, the potential to stop pressure ulcers is available to the NHS.

There are other benefits that have not been quantified in this study that could be explored in future studies.

Intelligent® Pressure Care Management