CLEANPatch®

Catch the damage early!

How implementing a Mattress Inspection and Repair Program at a new hospital reinforces a strong culture of patient safety and provides significant capital savings.

A Case Study – September 2017

Background

Surfaces play a key role in the transmission of healthcare-acquired infections, and thorough cleaning of the healthcare environment is crucial to patient safety. Damaged soft surfaces such as beds, stretchers, operating tables and treatment tables cannot be properly cleaned and may harbor pathogens that pose a risk of cross contamination.[1] CleanPatch® is the first Health Canada and FDA registered Class 1 medical device specifically designed to restore damaged mattresses to an intact and hygienic state. [2]

Opportunity

Located in Calgary, Alberta, South Health Campus is one of Canada's newest and most innovative hospitals. South Health Campus has 272 inpatient beds and multiple outpatient clinics, serving a catchment area of 1.2 million people. The site offers a wide variety of medical and surgical services including Critical Care, Cardiac, Orthopedics, Single Room Maternity, Mental Health and Neurology. It is also home to a unique Rapid Access Unit.

Previous studies have shown that 26% to 44% of beds and stretchers in large hospitals are damaged.[4] The average mattress at most hospitals is estimated to be five to nine years old. The question we posed was: what would the mattress damage rate be at a new hospital where the beds are all fewer than five years old?

Method

A Mattress Integrity Assessment (MIA) is a disciplined approach to manually inspecting mattresses throughout a healthcare facility. When damage is identified, it is immediately addressed.

An MIA was conducted at the South Health Campus over a three-day period in March 2017. The project was driven by Facilities and Maintenance (FM&E), Environmental Services (EVS) and Senior Leadership at South Health Campus led by Site Director, Shelley Koch. The Assessment Team was led by Surface Medical

representatives working alongside EVS supervisors. Additional EVS housekeeping staff rotated in with the Team for training on the mattress inspection and repair process.

A total of 480 surfaces were assessed throughout the hospital including beds, stretchers, and surgical or diagnostic tables. Upholstered exam tables were also inspected for research purposes but are not included in these totals. All damaged mattresses were either:

a) Repaired with CleanPatch® according to protocol[3]

b) Flagged for replacement

The findings were recorded, and photographs were taken of all damaged surfaces and repairs. Following inspection, each bed was labeled with a coded sticker to track the assessment findings.
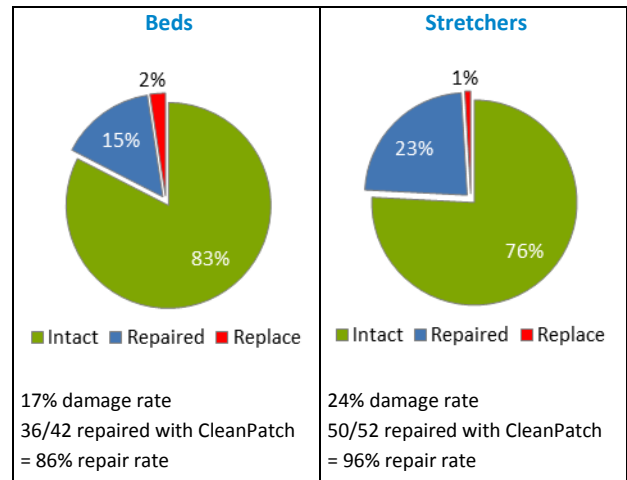
Results

The damage rate for all surfaces combined was 21.6%. Individual damage rates were:

- Beds 17%
- Stretchers 24%
- OR Tables 50%

Although OR tables had the highest percentage rate of damage, most of the damage was early surface cracking from chemical disinfectants, or minor physical damage in the form of very small holes or scratches.

Damage rates varied greatly between specific units, ranging from 0 to 63%. The lowest rates were found in endoscopy, NICU and most outpatient clinics. The highest rates were found in Emergency, OR, Diagnostic Imaging, and PACU. The inpatient units varied from 10 to 31% damage.

Figure 1: Damage Rates for Bed and Stretcher Mattresses

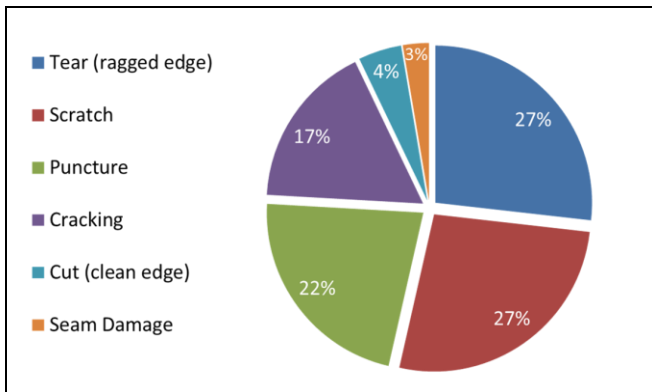| Beds	Stretchers
2% Replace, 15% Repaired, 83% Intact	1% Replace, 23% Repaired, 76% Intact
■ Intact ■ Repaired ■ Replace	■ Intact ■ Repaired ■ Replace
17% damage rate	24% damage rate
36/42 repaired with CleanPatch	50/52 repaired with CleanPatch
= 86% repair rate	= 96% repair rate

As expected, stretchers had a higher damage rate than patient beds, primarily because stretchers are constantly moving between units, generally have thinner mattresses, and are cleaned frequently. Although the overall mattress damage rate was over 21%, the majority of damage was identified early and was suitable for repair with CleanPatch.

Types of Mattress Damage

During their service life, mattresses become damaged from frequent use, mechanical injury from sharps and equipment, and from abrasive chemical disinfectants. For the purposes of this study, it was important to determine how much damage would be found in a relatively new hospital with new equipment.

The most common types of mattress damage were tears and scratches, representing 54% of all damage. Small pinholes and punctures were also very common at 22%. Cracking of the mattress cover was noted in 17% of damaged mattresses, and will likely increase as the mattresses age.

Figure 2: Frequency of Mattress Damage

Financial Savings

Significant savings were realized from repairing minor damage instead of mattress replacement. Ninety-three beds, stretchers and surgical tables were repaired with CleanPatch during the MIA which would otherwise require replacement. The total cost to repair damaged mattresses with CleanPatch was just over $2,600, compared with over $48,000 for mattress replacement. By using CleanPatch, South Health Campus saved over $45,000.

Table 1: Savings Realized

Cost of Mattress Replacement Avoided		
OR/DI Table (average $725)	7	$5,075
Stretchers (average $400)	50	$20,000
Beds (average $640)	36	$23,040
Total Cost of Replacement Avoided		**$48,115**
Cost of Mattress Repair		
Total Surfaces Repaired	93	
Total Cost of Repairs made with CleanPatch®		**$2,616**
Total Savings from Repair vs Replacement		**$45,499**

Conclusion

The Mattress Integrity Assessment identified a damage rate of 21% at South Health Campus, a relatively new hospital. Damaged surfaces cannot be properly cleaned and pose a risk to patients. Clinicians and staff need to understand this and know whom to call when damage is discovered. By repairing damaged mattresses with CleanPatch, healthcare facilities improve the safety of the patient environment, while providing significant savings relative to mattress replacement.

For more information about this case study, please contact Brenda Marks, Product Manager, at brenda@surfacemedical.ca

References:

1. FDA Safety Communication: Damaged or worn covers for medical bed mattresses pose risk of contamination and patient infection. April 19, 2013

2. Wong, et al. University of Calgary. Comparison of terminal cleaning of a medical surface repair patch on hospital mattresses. Canadian Journal of Infection Control. Fall 2015. 30(3). 165-170

3. Surface Medical Inc. CleanPatch Mattress Repair Implementation Guide. www.cleanpatch.ca

4. Based on MIA projects at four large Canadian teaching hospitals. SMI internal data, 2015-2016

Quote from South Health Campus (SHC)

"Surface Medical's CleanPatch is an example of an innovative technology that enhances patient safety, contributes to overall quality improvement and creates real opportunities for cost avoidance with respect to mattress surface replacement expenses. CleanPatch is 100% compliant with Alberta Health Services Infection Prevention and Control Standards, and is amazing with respect to its simplicity in design, application and maintenance.

The Mattress Integrity Assessment and adoption of the Repair program at the Campus has been an eye opener for our Clinical and Clinical Support Service staff members as well as Senior Leadership. Being a relatively new facility, we did not anticipate the degree of surface degradation that was discovered through the MIA process. SHC benefitted from the education provided by the Surface Medical Team with respect to mattress inspection and repair.

Going forward, SHC has a sound plan and a commitment for continuous review and repair of all mattress surfaces to ensure the program's ongoing sustainability from a patient safety, quality improvement and fiscal perspective. Critical to the successful implementation of the Program at the SHC was the broad engagement and communication with our Management Team and Staff to build awareness and understanding as well as the collaborative approach undertaken with the Surface Medical Team to complete the MIA.

We would highly recommend other acute care sites consider adopting this technology!"
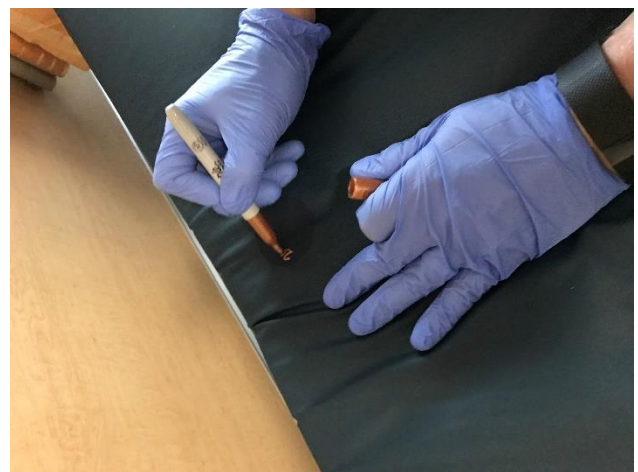
Shell Koch, Site Director, South Health Campus

Training in the OR after repairing a table

Team applying CleanPatch to a stretcher in the ER

Dating CleanPatch repair for tracking purposes