

# Implementing a Mattress Inspection and Repair Program



Presented By:  
Brenda Marks, BN, MBA  
Clinical Educator  
Surface Medical, Inc.



# Disclosures

- Clinical Educator for Surface Medical, Inc.
- Teaches sharps safety courses for AORN and OSHA

# This Webinar Will Cover:

- Frequency and causes of mattress damage
- Implications of damaged mattresses to infection prevention and control
- How to reduce the risk to patients in your facility
- Mattress Inspection and Repair Program
  - ✓ Inspection
  - ✓ Intervention
  - ✓ Tracking
- Financial benefits
- Regulatory compliance
- Getting started
- Successful implementation
- Q&A

# Damaged Mattresses Are Common





- Twenty to 47 percent of bed and stretcher mattresses in healthcare facilities have visible damage
- In acute care hospitals, rates tend to be highest in the OR, ER and medical inpatient units
- Similar findings in ambulatory surgical centers, long-term care and EMS
- Damage can range from small punctures or tears...to large areas of damage with little to no protection of the inner core

# Damaged Mattresses Are Common

Inspection of 656 mattresses on adult med/surg units revealed 26 percent damage rate:

Contents lists available at [ScienceDirect](#)

 American Journal of Infection Control 

journal homepage: [www.ajicjournal.org](http://www.ajicjournal.org)

Brief report

Potential bloodborne pathogen exposure from occult mattress damage

Susan L. Bradbury MSPH, RN, CIC\*, Deborah Mack BSN, CIC, Terri Crofts MS BME, Richard T. Ellison III MD

University of Massachusetts Memorial Medical Center, Worcester, MA

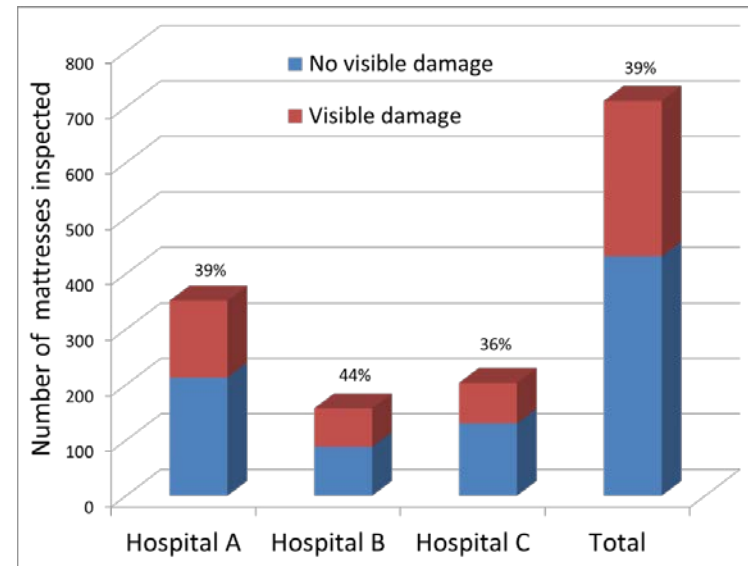
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**Key Word:** Fluid

A near-miss patient incident involving body fluid seeping from a mattress led to a visual inspection of 656 hospital bed mattresses of which 177 were contaminated because of occult damage to mattress covers.

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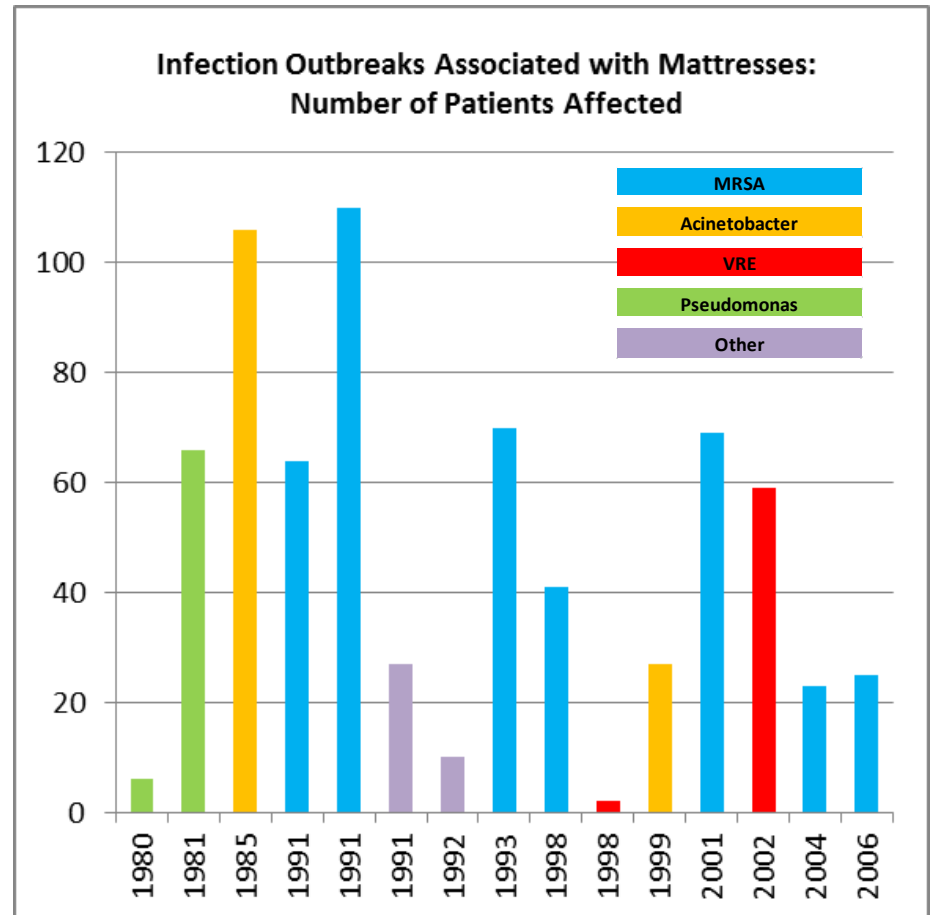
Results of Mattress Integrity Assessments at three large teaching hospitals in 2015:



# Damaged Mattresses Can Cause Infection

## Multiple studies have shown

- Hospital mattresses harbor dangerous pathogens like MRSA and C. difficile
- Outbreaks have been traced back to damaged and contaminated mattresses
- Mattress interventions, such as improved cleaning and/or returning mattresses to an intact state, have been shown to terminate outbreaks



*Reference: Adapted from Creamer and Humphreys (2008)  
Journal of Hospital Infections 69:8-23*

# FDA Safety Communication

Issued April 2013

- Damaged mattress covers pose risk of cross contamination
- 458 reports of fluid ingress of blood and body fluids
- Recommend that every mattress be regularly checked for any visible signs of damage including cuts, tears, pinholes, snags and stains

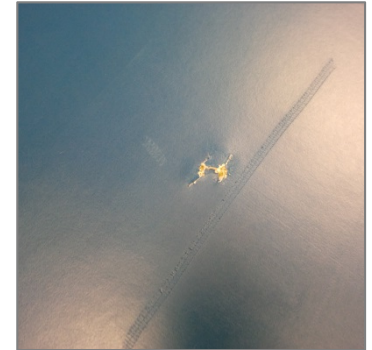


The screenshot shows the FDA website's medical devices section. The header includes the FDA logo, the text "U.S. Food and Drug Administration Protecting and Promoting Your Health", and navigation links for "A to Z Index", "Follow FDA", and "En Español". A search bar is also present. Below the header, a navigation menu lists various product categories: Home, Food, Drugs, Medical Devices, Radiation-Emitting Products, Vaccines, Blood & Biologics, Animal & Veterinary, Cosmetics, and Tobacco Products. The "Medical Devices" section is active, with a breadcrumb trail: Home > Medical Devices > Medical Device Safety > Safety Communications. A sidebar on the left contains a "Safety Communications" menu with options for "Information About Heparin" and "Preventing Tubing and Luer Mismatches". The main content area features the title "Damaged or Worn Covers for Medical Bed Mattresses Pose Risk of Contamination and Patient Infection: FDA Safety Communication" and social media sharing options (Share, Tweet, LinkedIn, Print, Email, Print). Below the title, it states "Date Issued: April 19, 2013". The "Audience" is listed as "Nurses, Caregivers, Infection Control Professional Staff, Risk Managers, Materials Managers, Housekeepers, Biomedical Engineers, Directors of Purchasing, and other health care providers and staff responsible for the purchase, inspection, use, or maintenance of medical bed mattress covers". The "Medical Areas" are listed as "Any patient care setting where medical bed mattress covers are used. These include Intensive Care, Diagnostic Care, Emergent or Urgent Care, Ambulatory Care, Specialty Care, General Care, Long Term Care, and Home Care."

# Causes of Mattress Damage

## Mechanical abrasions

- Damage from scraping against walls, doors, etc.
- Equipment being placed on the bed
- Improper storage
- Patient transfer devices such as sliding boards or hoists
- Sharp objects such as needles, buckles, jewelry



## Damage from cleaning and disinfection

- Frequent and prolonged exposure to high concentration disinfectants
- No rinsing of disinfectant as per manufacturer instructions
- Failure to allow the surface to dry before handling
- Use of abrasive cleaning supplies

## Weakening of material from aging

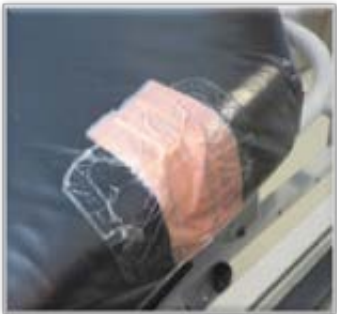


# Previous Solutions



## Premature Replacement of Mattresses

- Significant replacement costs
- Disposal costs and clinical downtime
- Increased waste going to landfill



## Ad-hoc Repair Methods

- Not validated
- Not durable
- Adhesive residue is a magnet for pathogens



## Do Nothing

- Puts patients at risk of cross contamination
- Minor damage may become severe

# Reducing the Risk to Patients

- Every patient deserves an intact and fully cleanable surface throughout their hospital stay
- Damaged mattresses cannot be properly cleaned, and they pose a break in the chain of environmental cleaning—hand hygiene and a clean bathroom may not help if the patient is literally sitting on the source of contamination
- As per the FDA recommendations, all patient mattresses need to be regularly inspected and maintained

# Reducing the Risk to Hospitals

## Medicare Cuts Payments To 721 Hospitals With Highest Rates Of Infections, Injuries

By Jordan Rau | December 18, 2014



In its toughest crackdown yet on medical errors, the federal government is cutting payments to 721 hospitals for having high rates of infections and other patient injuries, records released Thursday show.

Medicare assessed these new penalties against some of the most renowned hospitals in the nation, including the Cleveland Clinic, Brigham and Women's Hospital in Boston, the Hospital of the University of Pennsylvania in Philadelphia and Geisinger Medical Center in Danville, Pa.

One out of every seven hospitals in the nation will have their Medicare payments lowered by 1 percent over the fiscal year that began Oct. 1 and continues through September 2015. The health law mandates the reductions for the quarter of hospitals that Medicare assessed as having the highest rates of "hospital-acquired conditions," or HACs. These conditions include infections from catheters, blood clots, bed sores and other complications that are considered avoidable.



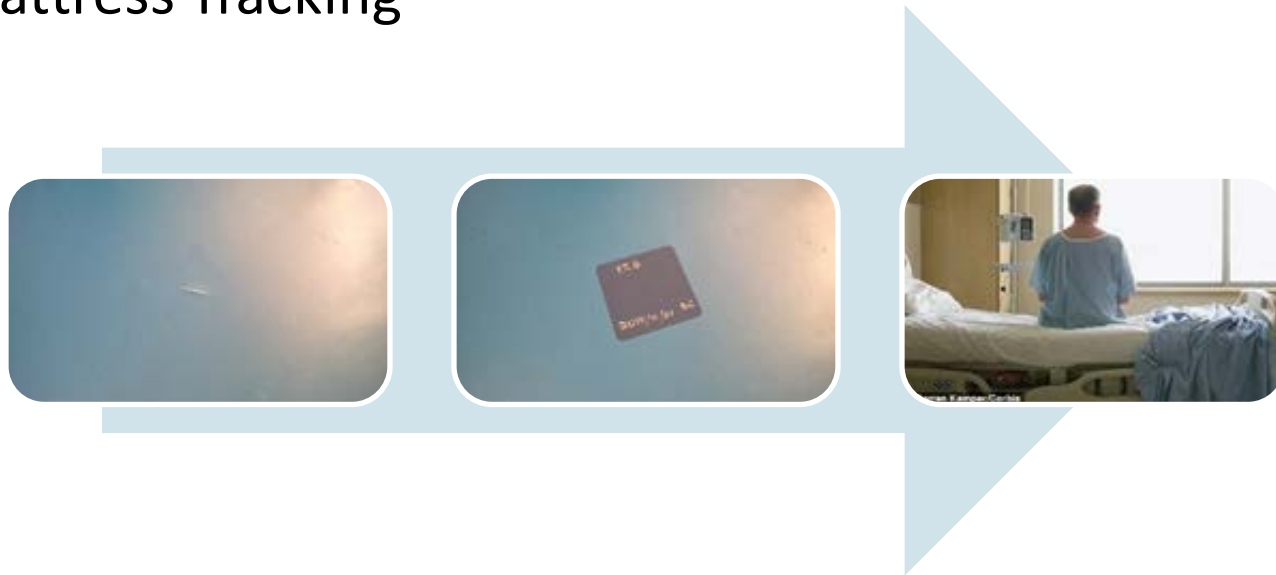
The penalties, which are estimated to total \$373 million, are falling particularly hard on academic medical centers: Roughly half of them will be punished, according to a Kaiser Health News analysis.

*Being faced with penalties for high infection rates, healthcare facilities are more and more incented to adopt infection prevention initiatives*

# Mattress Inspection and Repair Program

A three-step process to reduce the risks from damaged mattresses

1. Mattress Inspection
2. Intervention – repair or replace
3. Mattress Tracking



# Step 1: Mattress Inspection

## Bedside Mattress Inspection

Should be performed during each terminal cleaning:

1. Clean the mattress per hospital protocol and let completely dry
2. Inspect the cover for any rips, tears or abrasions
3. Look for signs of fluid ingress such as staining or warping
4. If unsure, perform the Paper Towel Test
5. If any signs of fluid seen, send mattress for secondary inspection or immediately replace
6. If no fluid seen, assess and measure the damage for repair



# Mattress Inspection

## Paper Towel Test

- A simple method to determine fluid ingress
  - Fold a paper towel into four layers
  - Press down over the damaged area
  - If paper towel looks or feels wet, the mattress has failed
  - If no fluid seen, the mattress has passed

*Adapted from Aziz (2012) and Dudley and Walsall (2010)  
UK National Health Services mattress audit procedure*



# Mattress Inspection

## Secondary Mattress Inspection

Should be performed outside of patient areas every six to 12 months

1. Inspect the cover for stains, tears, warping or cracking
2. Inspect the zippers to ensure they close properly
3. Remove the mattress cover and inspect the inner core. If there is staining or an odor, it should be replaced
4. Follow the mattress manufacturer's recommendations to validate the impermeability of the cover
5. Assess the condition of the mattresses to ensure it provides adequate support to the patient



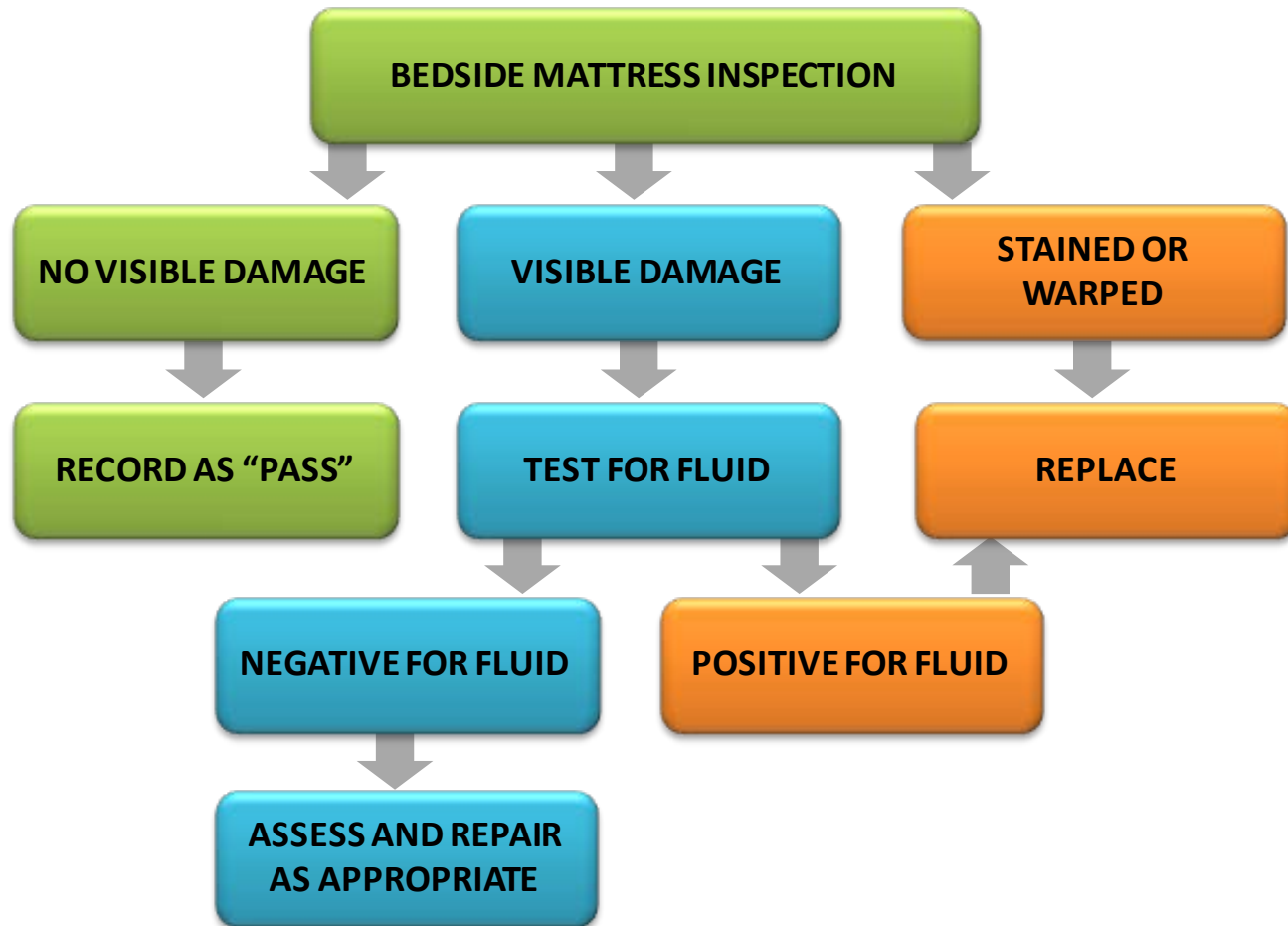
Mattress with obvious cracking and staining: Removed from service and the cover cut away...



Visible staining to the inner core. The mattress cover is no longer impervious to fluids and should be disposed of.



# Step 2: Intervention



All repairs should be performed with an approved repair product according to manufacturer instructions and hospital protocols

# Appropriate Repair

- Repairs should only be performed on mattresses that are otherwise suitable for patient use
  - ✓ Within expected life span
  - ✓ Provide adequate patient support
  - ✓ No signs of fluid ingress
- Mattresses may have more than one area of damage, but each area should be repaired separately and fully covered
- Repairs must be performed according to manufacturer guidelines and hospital protocols

# Step 3: Tracking

- Hospital mattresses are medical devices and should be monitored accordingly
- Labelling and tracking mattresses helps to monitor:
  - ✓ Age and warranty
  - ✓ Expected remaining life span
  - ✓ Type of mattress cover material and cleaning instructions
  - ✓ Current condition
  - ✓ Ownership
- Mattresses tend to migrate. Repairs should be performed at the point of damage discovery...otherwise they may disappear

# Tracking

- A simple mattress inspection checklist may be used
- Alternatively include mattress inspection on existing EVS cleaning checklists

Mattress Inspection Checklist (example)				
Mattress Location:		Mattress # or Description:		
Date:		Inspected by:		
			YES	NO
<b>Is there any visible damage to the mattress cover? (circle as applicable)</b> <i>Tear    Cut    Puncture    Cracking    Scratching    Other</i>				
<b>Is there any visible staining or warping?</b> If YES the mattress must be replaced				
<b>Does the damaged area feel wet when tested with a paper towel?</b> If YES the mattress should be replaced				
<b>Was the damage repaired with an approved repair method?</b> If YES, please describe type and number used.				
<b>If not repairable, was the mattress replaced?</b>				
<b>Comments:</b>				

# Tracking

- A simple spreadsheet may be used to keep track of mattresses and inspection results
- May also track the costs of replacement or the savings from repair for budget purposes

Mattress Tracking Spreadsheet (example)					
Date	Mattress # / location	Bedside Inspection		Intervention	
		Pass	Fail	Repaired	Replaced
2014-03-14	ER bed 5		✓	✓	
2014-11-10	Unit 544, bed B	✓			
2015-10-08	Unit 542, bed A		✓		✓
Etc.....					
<b>TOTAL NUMBER OF MATTRESSES INSPECTED</b>		<b>300</b>			
<b>TOTAL NUMBER DAMAGED MATTRESSES:</b>			<b>100</b>	<b>70</b>	<b>30</b>
Number of mattresses replaced					
				<b>Total Costs of Replacement</b>	
Number of mattresses repaired					
				<b>Total Cost of repair</b>	

# Financial Benefits

- Appropriate repair of damaged mattresses offers significant savings vs. premature replacement
- Reduced labor to remove and replace mattresses
- Reduced 'downtime' waiting for replacement
- Reduced costs of disposal
- Potential reduction in HAI via contaminated mattresses



# Regulatory Compliance

## CDC

CDC will recognize a mattress repair product if it is impervious to fluids

*“If the FDA-cleared patch is intended specifically for mattress/mattress cover repair and if there are instructions for use and you can test in your laundry whether or not the patch effectively seals the tear or hole, it should be suitable for use provided the repair is truly impermeable.”*

## Joint Commission

Joint Commission does not endorse products and focuses on processes. SIG is comfortable with mattress repair as long as it is done with a clinically validated product under a protocol

*“The Joint Commission standard EC.02.06.01 EP 26 requires that furnishings and equipment are safe and in good repair. The organization is to develop a program through assessment to maintain on-going compliance. This can be done by processes such as regular surveillance during environmental tours, focused inspections, or by environmental services staff feedback when performing their duties. There should be criteria to determine whether a mattress is cleaned, repaired or replaced.”*

# Getting Started

When implementing a mattress inspection and repair program, consider the following:

1. Who reports damage, and how is this communicated?

2. Who performs bedside mattress inspections?

3. Who performs the repair or replaces the mattress?

4. Who pays for repair or replacement (owns the budget)?

5. Who keeps track of the repairs or replacements?



# Implementation Scenarios


- Mattress inspection and repair protocols will vary for every facility
- Program may be unit based, hospital wide or a combination of both
- Generally, the mattress budget owner should pay for repairs

	Environmental Services Driven	Facilities/ Maintenance Driven	Nursing / Clinical Driven
<b>Step 1: Inspection</b>	<ul style="list-style-type: none"> <li>• All front line staff report damage to EVS staff</li> <li>• Trained terminal cleaners do bedside mattress inspections</li> <li>• Record on EVS checklist</li> </ul>	<ul style="list-style-type: none"> <li>• All front line staff report damage to their manager or facilities staff</li> <li>• Trained facilities staff perform mattress inspection (at the bedside or bed sent to maintenance dept.)</li> </ul>	<ul style="list-style-type: none"> <li>• Front line staff report damage to their manager or equipment lead</li> <li>• Trained Clinician performs bedside mattress inspection</li> </ul>
<b>Step 2: Intervention</b>	<ul style="list-style-type: none"> <li>• <b>Mattress can be repaired:</b> Trained EVS staff performs repair; dates and initials repair</li> <li>• <b>Mattress needs replacing:</b> EVS staff arranges for mattress replacement as per hospital protocol</li> </ul>	<ul style="list-style-type: none"> <li>• <b>Mattress can be repaired:</b> Trained facilities staff performs repair; dates and initials repair</li> <li>• <b>Mattress needs replacing:</b> Facilities staff arranges for mattress replacement as per hospital protocol</li> </ul>	<ul style="list-style-type: none"> <li>• <b>Mattress can be repaired:</b> Trained clinician performs repair; dates and initials repair</li> <li>• <b>Mattress needs replacing:</b> Clinician notifies manager who calls for mattress replacement as per hospital protocol</li> </ul>
<b>Step 3: Tracking</b>	<ul style="list-style-type: none"> <li>• EVS checklist submitted to EVS admin staff</li> <li>• Data is recorded on mattress tracking spreadsheet</li> </ul>	<ul style="list-style-type: none"> <li>• Facilities staff complete mattress inspection checklist</li> <li>• Data is recorded on mattress tracking spreadsheet</li> </ul>	<ul style="list-style-type: none"> <li>• Nurse Manager or Equipment Lead records data on mattress tracking spreadsheet</li> </ul>

# Successful Implementation


- Start with priority areas first
  - Areas with highest damage rates
  - Units with highest HAI rates
- Train the appropriate staff
- Unit by unit inspections may be helpful to start with
- Increase awareness of front-line staff
  - Damage happens all the time
  - Let them know who to call

**IF YOU SEE SOMETHING  
SAY SOMETHING**



Damaged patient mattresses cannot be properly cleaned and pose a risk of cross contamination.

Early intervention is needed to ensure appropriate repair or replacement, *before* it becomes a patient hazard



**PLEASE REPORT MATTRESS DAMAGE TO:**  
[FILL IN CONTACT NAME HERE](#)

# Questions

Thank you for your time.

Please feel free to contact me anytime:

Brenda Marks

Tel: 1-403-560-9056

[brenda@surfacemedical.ca](mailto:brenda@surfacemedical.ca)