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:

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
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
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

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

BEDSIDE MATTRESS INSPECTION

- NO VISIBLE DAMAGE
  - RECORD AS “PASS”

- VISIBLE DAMAGE
  - TEST FOR FLUID
    - NEGATIVE FOR FLUID
      - ASSESS AND REPAIR AS APPROPRIATE
    - POSITIVE FOR FLUID
      - ASSESS AND REPAIR AS APPROPRIATE

- STAINED OR WARPED
  - REPLACE

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

<table>
<thead>
<tr>
<th><strong>Mattress Inspection Checklist (example)</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Mattress Location:</strong></td>
</tr>
<tr>
<td>Date:</td>
</tr>
<tr>
<td></td>
</tr>
</tbody>
</table>

Is there any visible damage to the mattress cover? (circle as applicable)

- Tear
- Cut
- Puncture
- Cracking
- Scratching
- Other

Is there any visible staining or warping?
If YES the mattress must be replaced

Does the damaged area feel wet when tested with a paper towel?
If YES the mattress should be replaced

Was the damage repaired with an approved repair method?
If YES, please describe type and number used.

If not repairable, was the mattress replaced?

Comments:
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)

<table>
<thead>
<tr>
<th>Date</th>
<th>Mattress # / location</th>
<th>Bedside Inspection</th>
<th>Intervention</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Pass</td>
<td>Fail</td>
</tr>
<tr>
<td>2014-03-14</td>
<td>ER bed 5</td>
<td></td>
<td>✓</td>
</tr>
<tr>
<td>2014-11-10</td>
<td>Unit 544, bed B</td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>2015-10-08</td>
<td>Unit 542, bed A</td>
<td></td>
<td>✓</td>
</tr>
</tbody>
</table>

**Etc...............**

**TOTAL NUMBER OF MATTRESSES INSPECTED:** 300

**TOTAL NUMBER DAMAGED MATTRESSES:**

- Number of mattresses replaced
- **Total Costs of Replacement**
- Number of mattresses repaired
- **Total Cost of repair**
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
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

<table>
<thead>
<tr>
<th>Step 1: Inspection</th>
<th>Environmental Services Driven</th>
<th>Facilities/ Maintenance Driven</th>
<th>Nursing / Clinical Driven</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>All front line staff report damage to EVS staff</td>
<td>All front line staff report damage to their manager or facilities staff</td>
<td>Front line staff report damage to their manager or equipment lead</td>
</tr>
<tr>
<td></td>
<td>Trained terminal cleaners do bedside mattress inspections</td>
<td>Trained facilities staff perform mattress inspection (at the bedside or bed sent to maintenance dept.)</td>
<td>Trained Clinician performs bedside mattress inspection</td>
</tr>
<tr>
<td></td>
<td>Record on EVS checklist</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Step 2: Intervention</th>
<th>Environmental Services Driven</th>
<th>Facilities/ Maintenance Driven</th>
<th>Nursing / Clinical Driven</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mattress can be repaired: Trained EVS staff performs repair; dates and initials repair</td>
<td>Mattress can be repaired: Trained facilities staff performs repair; dates and initials repair</td>
<td>Mattress can be repaired: Trained clinician performs repair; dates and initials repair</td>
<td></td>
</tr>
<tr>
<td>Mattress needs replacing: EVS staff arranges for mattress replacement as per hospital protocol</td>
<td>Mattress needs replacing: Facilities staff arranges for mattress replacement as per hospital protocol</td>
<td>Mattress needs replacing: Clinician notifies manager who calls for mattress replacement as per hospital protocol</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Step 3: Tracking</th>
<th>Environmental Services Driven</th>
<th>Facilities/ Maintenance Driven</th>
<th>Nursing / Clinical Driven</th>
</tr>
</thead>
<tbody>
<tr>
<td>EVS checklist submitted to EVS admin staff</td>
<td>Facilities staff complete mattress inspection checklist</td>
<td>Nurse Manager or Equipment Lead records data on mattress tracking spreadsheet</td>
<td></td>
</tr>
<tr>
<td>Data is recorded on mattress tracking spreadsheet</td>
<td>Data is recorded on mattress tracking spreadsheet</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
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

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