Creating Safe Patient Rooms
Design that reduces falls and mitigates risks

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Francis Cauffman
Challenge the Expected; Inspire Smart Design.
Speakers

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Francis Cauffman

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Learning Objectives

1. Understand the impact of Medicare/Medicaid reimbursements for the "28 Never Events" and their effect on the Patient room.

2. Understand where the greatest risk is for patient falls and HAIs and where the opportunity for improvement can be achieved.

3. Review Traditional Patient Room designs to learn about what has and has not worked to mitigate risk.

4. Planning and Design strategies to achieve Maximum Safety in Patient Room layouts.
Why Create a “Safe Patient Room”?
A serious reportable event (SRE) is an incident involving death or serious harm to a patient resulting from a lapse or error in a healthcare facility.

These events are called “Hospital Acquired Conditions” (HACs).

CMS is no longer reimbursing for the 28 Never events.
CMS: “Never Events”

Serious Reportable Events in Healthcare

1. SURGICAL EVENTS
   A. Surgery performed on the wrong body part
   B. Surgery performed on the wrong patient
   C. Wrong surgical procedure performed on a patient
   D. Unintended retention of a foreign object in a patient after surgery or other procedure
   E. Intraoperative or immediate postoperative death in an ASA Class I patient

2. PRODUCT OR DEVICES EVENTS
   A. Patient death or serious disability associated with the use of contaminated drugs, devices, or biologics provided by the healthcare facility
   B. Patient death or serious disability associated with the use or function of a device in patient care in which the device is used or functions other than as intended
   C. Patient death or serious disability associated with intravascular air embolism that occurs while being cared for in a healthcare facility

3. PATIENT PROTECTION EVENTS
   A. Infant discharged to the wrong person
   B. Patient death or serious disability associated with patient elopement (disappearance)
   C. Patient suicide, or attempted suicide, resulting in serious disability while being cared for in a healthcare facility

4. CARE MANAGEMENT EVENTS
   A. Patient death or serious disability associated with a medication error (e.g., errors involving the wrong drug, wrong dose, wrong patient, wrong time, wrong rate, wrong preparation, or wrong route of administration)
   B. Patient death or serious disability associated with a hemolytic reaction due to the administration of ABO/HLA-incompatible blood or blood products
   C. Maternal death or serious disability associated with labor or delivery in a low-risk pregnancy while being cared for in a healthcare facility

D. Patient death or serious disability associated with hypoxiaemia, the onset of which occurs while the patient is being cared for in a healthcare facility
E. Death or serious disability (herniation) associated with failure to identify and treat hyperbilirubinemia in neonates
F. Stage 3 or 4 pressure ulcers acquired after admission to a healthcare facility
G. Patient death or serious disability due to spinal manipulative therapy
H. Artificial insemination with the wrong donor semen or wrong egg

5. ENVIRONMENTAL EVENTS
   A. Patient death or serious disability associated with an electrical shock while being cared for in a healthcare facility
   B. An incident in which a line designated for oxygen or other gas to be delivered to a patient contains the wrong gas or is contaminated by toxic substances
   C. Patient death or serious disability associated with a burn incurred from any source while being cared for in a healthcare facility
   D. Patient death or serious disability associated with a fall while being cared for in a healthcare facility
   E. Patient death or serious disability associated with the use of restraints or bedrails while being cared for in a healthcare facility

6. CRIMINAL EVENTS
   A. Any instance of care ordered by or provided by someone impersonating a physician, nurse, pharmacist or other licensed healthcare provider
   B. Abduction of a patient of any age
   C. Sexual assault on a patient within or on the grounds of a healthcare facility
   D. Death or significant injury of a patient or staff member resulting from a physical assault (i.e., battering) that occurs within or on the grounds of a healthcare facility
What is the most common HAC according to CMS?

*Patient Falls*
ROI: Never Event Prevention

In Minnesota, for example, they reported that patient falls and pressure ulcers are approx. 70% of all events reported.

According to the American Hospital Association (AHA), hospitals reported there are 941,995 beds in the US. (2012 data)
How Much is at Stake?

CMS $43,180 per occurrence and falls with injuries cost $33,894 per occurrence. According to the American Hospital Association (AHA), hospitals reported there are 941,995 beds in the US. (2012 data)

Take an average 200 Bed Community hospital for example. CMS reports a range of 24% to 68% of typical hospital beds are Medicare/Medicaid. In this example, 48 to 136 beds.

If we use those percentages, preventing Falls & Trauma alone equates to savings of $6,778/bed or a range of $325,344 to $921,808 per year in savings.
Who is at Risk for Falls?

- **Common in Elderly Patients**
  
  35%-45% of people >65 fall each year

- **Increased Risk in Nursing Home Residents**
  
  >50% of residents fall annually

- **Higher Injury Rate in Institutionalized Patients**
  
  Up to 25% result in need for hospital care
Fall Risk Precautions

When a patient is identified as a fall risk, these precautions should be taken:

- Bed rails up (as per protocol)
- Bed in lowest possible position
- Call light immediately accessible
- Patient told explicitly: “Call nurse if you need anything”
- Patient placed in area with many nurses nearby
- Bed alarm activated
Clinical Perspective on Falls

Inpatient Risk Factors

- Previous History of Falls
- Impaired Mobility
- Weakness
- Impaired Cognitive Function
- Orthostatic Hypotension
- Medications
- Visual Deficit
- Advanced Age
- Degree of Agitation
- Urinary Frequency
Clinical Perspective on Falls

External / Environmental Risk Factors

- Room Accessibility
- Visual Access to Staff
- Poor Lighting
- Flooring Conditions
- Equipment
- Staff / Patient Ratio
Clinical Perspective on Falls

**Risk Precautions Typically Taken**

- Patient Placed in Room Near Nurses Station
- Bed Rails Raised, Bed in Low Position (per protocol)
- Bed or Chair Alarm Activated
- Call Bell Placed Within Reach
- Patient/Family Oriented & Instructed to Notify Nurse
- Medication Review
- One on One Assistance at Bedside Through Shift, if Needed
- Mobility Preservation Via Physical Therapy Evaluations For At Risk Patients
- Assisting Patient to Chair Routinely
## Challenges

<table>
<thead>
<tr>
<th>Challenges</th>
<th>Environment</th>
<th>Fall Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Falling</td>
<td>Patient Bedroom</td>
<td>Getting Out of bed&lt;br&gt;Most falls occur when patients get out of bed unassisted/unobserved</td>
</tr>
<tr>
<td>Falling</td>
<td>Patient Bathroom</td>
<td>Accessing the toilet&lt;br&gt;Using the shower&lt;br&gt;Floor/Water</td>
</tr>
<tr>
<td>Falling</td>
<td>Bedroom</td>
<td>Patient Transfer&lt;br&gt;Patient transfer to/from the bed&lt;br&gt;causes 42.2% of inpatient falls when the patient is over 65</td>
</tr>
</tbody>
</table>
## Challenges

<table>
<thead>
<tr>
<th>HAI</th>
<th>Patient Environment</th>
<th>Surface Contact</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td><img src="image1.jpg" alt="Surface Contact Image" /></td>
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</table>

<table>
<thead>
<tr>
<th>HAI</th>
<th>Patient Environment</th>
<th>Exposure to Air Pathogens</th>
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</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td><img src="image2.jpg" alt="Exposure to Air Pathogens Image" /></td>
</tr>
<tr>
<td>Falling</td>
<td>Patient Bedroom</td>
<td>Getting Out of Bed</td>
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</tr>
<tr>
<td></td>
<td></td>
<td>Most falls occur when patients get out of bed unassisted/unobserved</td>
</tr>
</tbody>
</table>

**Solutions:**

- Encourage Family Presence
- Use Decentralized Nurse Stations and Technology Interface
- One study found that a combination of the above in addition to the use of a single room model cuts falls by 66%
- Bed Alarms with Technology interface
**Solutions**

<table>
<thead>
<tr>
<th>Falling</th>
<th>Patient Bathroom</th>
<th>Accessing the toilet</th>
<th>Using the Shower</th>
<th>Floor/Water</th>
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<tr>
<td></td>
<td></td>
<td><strong>In the Bathroom:</strong></td>
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<tr>
<td></td>
<td></td>
<td>• Toilet room location on headwall with continuous grab bar access</td>
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<td></td>
<td></td>
<td>• Ease of assist with larger bathrooms and double door access</td>
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<tr>
<td></td>
<td></td>
<td>• Larger Shower area</td>
<td></td>
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<tr>
<td></td>
<td></td>
<td>• Water Containment, Slip Resistance</td>
<td></td>
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<td></td>
<td></td>
<td>• Flush flooring transitions</td>
<td></td>
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<tr>
<td></td>
<td></td>
<td><strong>During Toileting:</strong></td>
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<tr>
<td></td>
<td></td>
<td>• Space for Assistance</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Slip-Resistant flooring</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Falling</td>
<td>Patient Bedroom, other patient environments</td>
<td>Patient Transfer</td>
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<td>---------</td>
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<td>Patient transfer to/from the bed causes 42.2% of inpatient falls when the patient is over 65</td>
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</table>

**Solutions:**
- Minimize transfers in the room
- Increase ease of transfers with lifts, height-adjustable beds and chairs
- Grab bars at headwall leading to key patient destinations in the patient bedroom
- Slip Resistant flooring
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<tbody>
<tr>
<td></td>
<td></td>
<td>Prevention through hand wash/gel locations</td>
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<tr>
<td></td>
<td></td>
<td>Hands free automation</td>
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<tr>
<td></td>
<td></td>
<td>Cleanable surface (eggshell finish performs poorly)</td>
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<tr>
<td></td>
<td></td>
<td>Access to protection</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Visual cues to high touch zones</td>
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<tr>
<td></td>
<td></td>
<td>Effective decontamination</td>
</tr>
</tbody>
</table>
## Solutions

<table>
<thead>
<tr>
<th>HAI</th>
<th>Patient Environment</th>
<th>Air Pathogens</th>
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<tbody>
<tr>
<td></td>
<td></td>
<td>Filtration, exchange rates, air flow direction and pressure</td>
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<tr>
<td></td>
<td></td>
<td>Ultraviolet radiation, LAF, HEPA</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Access to protection masks</td>
</tr>
</tbody>
</table>
Typical Patient Room Layouts

INBOARD

MIDBOARD

OUTBOARD
Typical Patient Room Layout Challenges

**INBOARD**

- Limited ability to assist in patient toilet room
- Route to Toilet room
- Little visibility from corridor

Inadequate Family Zone
Typical Patient Room Layout Challenges

MIDBOARD

Inadequate Family Zone

Limited ability to assist in patient toilet room
Typical Patient Room Layout Challenges

OUTBOARD

Inadequate Family Zone

Limited ability to assist in patient toilet room
Safe Patient Room Prototype
Safe Patient Room Prototype A

- Large Family Zone
- Non-slip Flooring on Bathroom route
- Double door access
- Grab bars en route to toilet room
- European style shower
- Clean/Soiled access from corridor
- Clear sight line to patient
Safe Patient Room Prototype A
Safe Patient Room Prototype A
Safe Patient Room Prototype A
Safe Patient Room Prototype A
Safe Patient Room Prototype B
Safe Patient Room Prototype B
<table>
<thead>
<tr>
<th>Planning &amp; Design Solutions</th>
<th>Impact</th>
</tr>
</thead>
<tbody>
<tr>
<td>Grab Bars Enroute to Toilet Room</td>
<td>Facilitate movement of patient when tired, disoriented, ill</td>
</tr>
<tr>
<td>Double Door Access to bathroom</td>
<td>Facilitates assist</td>
</tr>
<tr>
<td>European shower</td>
<td>Maximizes space for ease of movement, true patient assist</td>
</tr>
<tr>
<td>Large family zone</td>
<td>Facilitates family enablement</td>
</tr>
<tr>
<td>Clear Line of Sight to Patient from Hall</td>
<td>Facilitates staff observation</td>
</tr>
<tr>
<td>Clean/Soiled Access from Corridor</td>
<td>Infection control, reduces “room participants”</td>
</tr>
<tr>
<td>Patient Hoist</td>
<td>Maximizes safety in patient transfer</td>
</tr>
</tbody>
</table>
Key Elements / Safe Patient Planning

- Cushion-Backed Rubber floor is the most slip-resistant, promotes acoustic control (thus helping to reduce medical errors,) does not require chemical cleaning and is naturally anti-microbial.

- Welded Rubber Integral base – eliminates tight corners, promotes cleaning when the room is prepped for a new patient.

- Solid surface Countertops with integral sinks reduces areas for growth of bacteria. Wall mounted faucets reduce areas that support bacterial growth as well

- Motorized Solar Shades with Bedside control minimizes risk-based patient movement, mesh fabric promotes ease of cleaning

- Lighting can be zoned for staff, patient and family needs with fluorescent lighting for general illumination, exam lighting for clinical needs, task lighting and night lighting for both patient and staff safety.

- Handrails with lighting for night time safety

- Silver Infused cubicle curtains are naturally anti-microbial
Design Team’s Next Steps

Mock-up Testing with Patients/Clinicians

- Mock-up of Prototype
- Advisory Team review
- Key Findings

Actual Project Build

- Build rooms in new project
- Gather research data on new rooms vs. old rooms
Questions?

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