Standardization of Patient Equipment: A Quality Improvement Project
Kelley Blackburn, DNP, RN
UnityPoint Health Des Moines

Introduction

- Patient safety has become increasingly important in health care.
- Accidental patient injury is caused by faulty systems, not careless health care workers.1
- To prevent failure and improve patient safety, systems should be redesigned.1
- A systems failure was identified at UnityPoint Health Des Moines when a shower chair collapsed, resulting in patient injury.
- The patient exceeded the weight capacity of the shower chair; no barriers in the system were found to prevent such an injury from reoccurring.
- Falls with serious injury can cost hospitals $13,000 or more and cause an increased length of stay of 6.3 days or longer.2

Purpose

The purpose of this quality improvement project was to eliminate systems failures, improve patient safety, and reduce potential risk of patient injury occurring when using equipment such as shower chairs and/or commodes.

Objectives:
- Analyze systems failures using Failure Modes and Effects Analyses (FMEA) to improve processes for safety and create efficiency through hospital-wide standardization.
- Increase staff satisfaction.
- Revise hospital policy to standardize purchasing processes for patient equipment.
- Reduce unit expenditures related to rental equipment.

Methods

The University of Iowa Human Subjects Office IRB granted this project exempt status.

Evaluation

- Reduction in the risk of patient injury occurred due to identification of failure modes in equipment products and processes.
- Standardization of equipment reduced the amount of variance in equipment including: models, weight capacity, age, condition, and quantity on each inpatient unit.
- Measurement of increased staff satisfaction is ongoing. Staff now have the equipment they need to safely care for patients.
- Sustainability of process changes continue to be maintained one year after implementation due to policy changes for purchasing equipment.
- Savings in equipment rental occurred due to a deceased demand for renting bariatric equipment.

Results

<table>
<thead>
<tr>
<th>FMEA Type</th>
<th>Failure Mode Identified</th>
<th>Pre-Intervention RPN</th>
<th>Post-Intervention RPN</th>
</tr>
</thead>
<tbody>
<tr>
<td>Product FMEA – Commode</td>
<td>Caster broke during transportation</td>
<td>60</td>
<td>4</td>
</tr>
<tr>
<td>Product FMEA – Shower Chairs</td>
<td>Weight capacity of equipment is unknown</td>
<td>60</td>
<td>8</td>
</tr>
<tr>
<td>Product FMEA – Commode</td>
<td>Stability - chair could loose screw, no extra stability features</td>
<td>60</td>
<td>4</td>
</tr>
<tr>
<td>Process FMEA - Commodes &amp; Shower Chairs</td>
<td>Equipment repair &amp; inspection process</td>
<td>60</td>
<td>24</td>
</tr>
<tr>
<td></td>
<td>Equipment not labeled with weight capacity</td>
<td>48</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>Equipment doesn’t meet pt. needs</td>
<td>48</td>
<td>4</td>
</tr>
</tbody>
</table>

Policy Revision: “Equipment, Acquisition, and Control Policy”
- Nurse managers make all equipment purchases through central purchasing.
- Central purchasing maintains a list of standardized equipment for the hospital.
- Central purchasing documents the location of equipment delivery. All new commodes and shower chairs delivered to maintenance where they are stenciled with wt. capacity prior to delivery to the floor.

Practice Implications

- Process improvement (PI) techniques such as FMEA can (a) save money by improving efficiency and reducing costs, (b) improve patient safety, and (c) increase staff satisfaction.
- Nurses have the opportunity to change systems processes and improve patient care using PI methods such as FMEA.
- Bariatric equipment with higher weight capacities is needed to meet the safety needs of today’s larger and heavier patients. Having the correct types and quantities of equipment can ensure patient safety and reduce costs related to bariatric equipment rental and patient falls.
- Replacing equipment with the correct quantities in relation to patient use and unit storage capabilities means nursing units can save space, insuring the right amount of equipment, and reduce costs of excess inventory.

Conclusions

- Utilizing FMEA provided the information needed to make decisions on new equipment and process changes to proactively prevent system failures from occurring.
- Standardizing equipment and purchasing equipment that best fit patients’ needs has reduced the risk for injury throughout UnityPoint Health Des Moines.
- Revising the “Equipment Acquisition and Control” policy maintained sustainability of equipment standardization.

References


Acknowledgements

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