The Implementation of Remote Video Monitoring for Patient Safety in Inpatient Care

Min Seo MSN, RN, PCCN & Dale Winnike MSN, RN, OCN
The University of Iowa Health Care

BACKGROUND
- Between 700,000 and 1,000,000 people fall during the hospitalization in the United States every year and the range of fall incidents in US hospitals reported from 3.3 to 11.5 falls per 1,000 patient days (Agency for Healthcare Research and Quality [AHRQ], 2013; Bouldin et al., 2013).
- Fall rates vary by unit type (Bouldin et al., 2013).
- Accidental falls are significantly associated with patient care costs, length of stay and mortality (Bouldin et al., 2013).
- According to Centers for Disease Control and Prevention (CDC) (2016), average hospital cost for a fall injury is over $530,000.
- Approximately one-third of accidental falls can be prevented (AHRQ, 2013).

PURPOSE
To design and implement a program that utilizes a video monitoring system for improving patient safety and reducing bedside sitter-related staffing costs.

SYNTHESIS OF EVIDENCE
- The Denver Health, a 525-bed acute care hospital, utilized centralized video monitoring technology for patient safety. Within the first 3 months of the centralized video monitoring operation, 57 falls were prevented and in 2 years, the overall trend for falls per 1,000 patient day had decreased (Jeffers et al., 2013).
- The UC San Diego Health System (UCSDHS), a 595-bed academic health system, implemented video monitoring technology as an alternative to sitter use and it significantly reduced not only sitter staffing costs but also fall rates with injuring in 18 months of operation (Burston & Vento, 2015).
- A 115-bed inpatient rehabilitation facility in upstate New York operated a video monitoring system to the 31-bed brain injury unit. After 12 months, fall rate on the unit significantly decreased from 10.26 falls per 1,000 patient-days to 6.87 falls per 1,000 patient-days. It also results in a significant reduction in sitter usage and cost and improvement of patient, family, and staff satisfaction (Cournan et al., 2018).

DEVELOPMENT AND IMPLEMENTATION

Phase 1: Development
- Identify key stakeholders
- Identify the project’s scope
- Establish timeline
- Develop the policy including inclusion and exclusion criteria and standardized workflows

Phase 2: Equipment
- Purchase 36 cameras
- Install the hardware and software by the Hospital IT team and the vendor

Phase 3: Training
- Hire 14 FTEs Video Monitoring Technicians (VMT)
- Provide education including all aspects of the monitoring equipment, the hospital policy, documentation, and communication strategies with nursing staff
- Provide mobile awareness of the video monitoring unit (VMU) for nursing staff on the units
- Develop an online compliance course about the VMU for nursing staff

Phase 4: Implementation
- Set the go-live date
- Provide video monitoring service to four pilot units which are general medicine, neuroscience, medical-surgical cardiology, and respiratory specialty units

Phase 5: Analysis
- Assess program structure, workflows, communication with nursing staff
- Review fall incident data and VMU utilization

OUTCOME

UIHC Fall Rate

<table>
<thead>
<tr>
<th>Percentage Change in UIHC Fall Rate</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>-150</td>
<td>-100</td>
<td>0</td>
</tr>
<tr>
<td>50</td>
<td>100</td>
<td>150</td>
</tr>
<tr>
<td>200</td>
<td>300</td>
<td>400</td>
</tr>
</tbody>
</table>

Neuroscience  General Medicine  Cardiology  Respiratory  UIHC

UIHC Sitter Usage

<table>
<thead>
<tr>
<th>Sum of Sitter FTE</th>
<th>VMU UTILIZATION</th>
</tr>
</thead>
<tbody>
<tr>
<td>25</td>
<td>140</td>
</tr>
<tr>
<td>20</td>
<td>120</td>
</tr>
<tr>
<td>15</td>
<td>100</td>
</tr>
<tr>
<td>10</td>
<td>80</td>
</tr>
<tr>
<td>5</td>
<td>60</td>
</tr>
</tbody>
</table>

EVALUATION
- The video monitoring program was implemented in January 2018.
- The initial focus of the video monitoring program was on four inpatient units including General Medicine, Neuroscience, Medical-Surgical Cardiology, and Respiratory Specialty care units.
- In fact, analysis showed there was a significant reduction in fall incident rate after the program initiated.
- The program resulted in a 25.1% reduction after implementation compared to previous six months from July 2017 to December 2017.
- More data is needed over a longer period of time to assess more accurately the effectiveness of video monitoring.
- Further evaluation is also required regarding other uses of video monitoring besides fall prevention and sitter cost reduction to assess overall effectiveness of video monitoring.

POSSIBLE FOR SUCCESSFUL APPLICATION
- The VMU program could have a significant impact at the University of Iowa Health Care by improving patient safety, maintaining needed privacy, improving staff resource allocation by more efficiently monitoring patients at risk for falls, while freeing up staff to care for all of their assigned patients in their traditional role of nursing staff.
- The video monitoring camera is mobile and equipped with a 2-way audio, which allows video monitor technicians to immediately and directly intervene for safety. Since the system works via Wi-Fi network, it can be easily implemented in any other settings including home and long-term care facilities for improving patient safety.

REFERENCES