KEY POINT SUMMARY

OBJECTIVES

This study compares patient falls in medical-surgical units with and without the use of the CareView system, and assesses the use of the Morse Risk Assessment (MRA) for effectiveness in identifying fall risks.

Inpatient fall prevention: Use of in-room webcams

Key Concepts/Context

The National Database for Nursing Quality Indicators (NDNQI) maintains data on patient falls nationally. Reported fall rates have ranged from 2.2 to 7 per 1000 admissions; 10% to 25% of falls result in an injury, depending on patient population. Falls adversely impact hospital costs as well as patient costs and overall well-being. The California HealthCare Foundation reported that technological innovations in the field of fall prevention, such as wireless patient monitoring systems, resulted in faster nurse response times and increased satisfaction for both patients and staff. A combination of Webcams (known in this study as NurseView) and virtual bedrails create a system called CareView, which is a new system in the fall prevention market. These devices connect patients to the nursing station for continual day and night observation without constant back-and-forth trips. This new system has not yet been studied for effectiveness in decreasing patient falls.

Methods

This quantitative study was conducted in 10 different hospitals drawn from a national health system of 56 hospitals. All 56 hospitals kept track of falls on monthly scorecards. These fall counts were compared with NDNQI benchmarks, and the 10 participating hospitals were selected from the 17 hospitals that had more than 2.7 falls per 1000 patient days for the last three of four quarters. Bed sizes (under 100 beds, 100-249 beds, over 249 beds) and hospital location (rural versus urban) were also considered in this selection process.

The medical-surgical units in each of the 10 hospitals were randomly divided between an intervention and control group (five in each group).

Patients who were 18 or older and cognitively able to provide consent could enroll in the study. Patients with an MRA score of over 25 were considered moderate risk for falling, while scores over 50 were considered high risk for falling in all 10 hospitals.

A vendor donated and installed all Webcams (NurseView) and Virtual Bed Rails (both systems combined are called CareView) in each intervention unit and trained hospital staff members in how to maintain the equipment. A 3-month trail of data collection was used to ensure reliability of the process.

Once the CareView system was installed, patients who moved across a designated invisible motion- sensitive border would trigger screen visuals and audible alarms to alert nurses of potential falls before they occured.

Patients were permitted to opt out of the CareView intervention at any time. Routine fall prevention measures were continued at all hospitals during the study.

Data were collected over a period of 6 months. 80% occupancy was estimated in all hospitals, resulting in a sample of 26,352 patient days for the intervention units and 25,483 patient days for the control units. Out of the 5 hospitals using the CareView system, 5871 patients consented to using CareView.

Data was collected daily on MRA scores, patient daily census, number of falls, count of patient eligibility and consent, use of Webcams of bed alarms during falls, and characteristics associated with each fall.

Data was analyzed using recursive abstraction in which datasets were summarized and validated by the four researchers involved in the study.
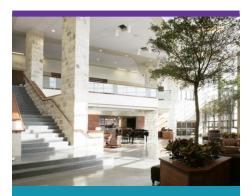
Findings

185 falls were recorded over the 6-month study period, with 101 occurring in the control units and 84 occurring in the intervention units. No significant difference was found between the intervention and control groups in the frequency of falls by MRA score. Individuals with an MRA score of over 50 experienced significantly more falls. These findings suggest that the MRA is a valid tool for identifying fall risk. Fewer falls occurred at all risk levels in the intervention hospitals. There were three serious injuries in the control hospitals as opposed to 1 in the intervention hospitals, all involving patients with MRA scores of over 50. Most falls occurred in both groups of hospitals while no bed alarms of CareView products were being used. There were no falls while both NurseView and the virtual rails were being used in the intervention hospitals. Overall, the CareView system was correlated with a decrease in average monthly falls.

Design Implications

The author notes that Webcams, sitters, two or more beds in a room, and glass walls similar to those found in critical care units could all help increase surveillance without hindering mobility. The author also notes that it could be economical to place high-risk patients in designated Webcam/virtual rail rooms. Rooms with Webcams should pose minimal potential for obstruction to camera visibility.

Webcams and virtual rails could be relatively easy to install and low maintenance when compared to ceiling-mounted lifts. Webcams and virtual rails could replace more restrictive fall prevention measures such as nets or straps. Careful placement of the Webcam itself could minimize feelings of overbearing surveillance while still capturing the appropriate image for safety.

Limitations

The authors describe a low consent rate at intervention hospitals, especially in one particular unit, resulting in a smaller sample size than anticipated. The author also notes that a confounding variable may have been the heightened focus placed on fall prevention in the control hospitals due to their awareness of the study.

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