

## On the uses of bed alarms

Used and supported appropriately, they reduce falls and offer other advantages, as one facility discovered

When Charles Hise purchased Dunn Nursing Home in Selma, Alabama, in 1992—later relocated and renamed Park Place Nursing and Rehabilitation Center—there had been a recurring falls problem. Despite a 65% use of restraints, residents still were falling. Dunn Nursing Home had a 32% average fall rate in a population of 93 residents. However, because a patient may already have been on the floor when discovered, it was difficult to determine if an incident was an actual fall or a self-induced effort to lie on the floor.

Nevertheless, Hise felt restraints were dangerous and demeaning, and he was determined to eliminate their use at Park Place. When I joined the staff in 1994, management implemented a plan to totally eliminate the use of restraints. It took three years to accomplish this, but no restraints have been used since then.

Early in the process, staff members researched various types of alarm systems that could best monitor individuals' movements in an unobtrusive manner and alert nurses to any resident's attempt to get out of bed or a chair unassisted. The system needed to be difficult for residents to bypass, as well as minimize false alarms, provide both visual and audio cues by activating a call light outside the room and a sound at the nursing station, and activate a call light to indicate a power loss (Park Place has a backup generator to keep the alarm system operating in the event of a power failure).

Staff reviewed both battery-operated and electronic systems. The team talked with directors of nursing at other



facilities regarding the effectiveness of their systems. Following research and evaluation, staff selected an electronic monitoring and alarm system that includes a disposable, thin, heat-sealed, pressure-sensitive strip positioned under a resident's bed sheet or on a wheelchair cushion.

After the alarm system was installed, the average fall rate at our facility declined from 32% to 6%, and has remained at that level for the past eight years. Interestingly, 90% of the remaining occurrences now involve chairs, not beds. Because people move around more in chairs, false alarms can be a problem as residents shift their

weight on the sensor. To help prevent this, the chair alarm units feature delays of three or five seconds that can be set for active residents.

As a sort of reverse test of the system's efficacy, Park Place experienced a temporary increase in falls when the call light system panel failed shortly after the move into the new building. During the three months it took to correct the problem, call lights were inoperable; residents could not manually activate a room call light. The alarm sensors, connected to the same system, could not activate a light or sound an alert at a nurses' station. As a result, the monthly fall rate increased to 21% until the problem was fixed.

Alarm systems have several benefits. In 1993, a medical journal reported on a study of bed alarms conducted in the Geriatric Evaluation and Treatment Unit of the Mount Sinai Medical Center in New York: "Apart from preventing falls, bed alarms may be beneficial in other ways. They may be valuable in helping monitor clinical

change in patients. Eighty-three percent of the true alarm responses were for either toileting (frequent urination, nocturia) or acute illness (congestive heart failure, chest pain), suggesting that using a bed alarm to alert staff to changes in the patient's medical condition may result not only in more rapid interventions, but also in reduction of risk for falling."<sup>1</sup>

At Park Place, the alarm system has been adapted to various purposes. First, it is used as a planning tool. Coupled with initial and ongoing assessments, alarms inform staff about residents' habits. For example, one person may consistently attempt to arise at a certain hour to go to the bathroom, while another may get up at nonspecific times, driven simply by an urge to wander. As a result of such "history," nurses can adjust attention and care to each individual's habits.

Second, it serves as an ultimate safety mechanism. The odds of survival are enhanced when nurses are alerted that a resident is attempting to arise from a bed or chair. If it weren't for the alarm, the resident may already be on the floor for some period of time before anyone knows it. With the alarm, staff can know about a pending incident before a resident reaches the floor.

### System Support

Staff training and accountability are vital to the successful application of an alarm system. Valarie Maxwell, LPN, head of Park Place's training and quality assurance, conducts one-on-one orientation with new employees using a video, demonstrations, and verbal instruction on appropriate use. She also conducts periodic meetings with nurses and assistants to evaluate ways to improve procedures, and is responsible for explaining to families the alarm's purpose and resident benefits.

Nurse supervisors check the system on a scheduled basis to ensure that it functions properly and that sensing devices are positioned correctly on beds and chairs. Sensing units are tested to verify they will send an alarm if a patient arises.

### Conclusion

Park Place's results show that fall rates can be held to a minimum with appropriate technology, but accountability is necessary. When management and staff accept that

falls are a fact of life and work to deliver care on an individualized basis using all the tools available, the incident rate will decline. ■

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### Reference

1. Tideiksaar R, Feiner CF, Maby J. Falls prevention: The efficacy of a bed alarm system in an acute-care setting. *Mount Sinai Journal of Medicine* 1993;60:522-7.

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