Real-Time Video Detection of Falls in Dementia Care Facility and Reduced Emergency Care

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**METHODS**

After institutional review board approval from the University of California, Berkeley, participants were enrolled in a pilot study to test the feasibility and acceptability of using SafelyYou Guardian in 6 residential care facilities from June 1 to August 31, 2018. Previous work had shown a reduction in falls at 1 care facility over a 3-month period through video incident review. This specific pilot study was supported in part by a National Institutes of Health, National Institute of Aging Small Business Innovation Research Grant (1R43AG058354-01).

From a potential population of 193 residents in 6 communities, 55 participants enrolled in the study. However, fall data for both participants and nonparticipants were treated equally by the facilities. For participants, falls were detected and recorded by the AI-enabled camera system. Due to administrative and regulatory requirements, data about fall incidents and outcomes were routinely recorded for facility residents. Facility staff were able to review the falls in real time, immediately after each incident, for study participants.

With the exception of video review for study participants, staff had to rely on routine protocol to manage each fall. The assigned shift manager would decide when to activate the EMT with support from the surrogate decision maker for the resident with dementia. Using Stata version 15 (StataCorp; College Station, Texas), χ² tests were performed to examine the difference in the numbers of EMT and ED visits in those residents who benefited from SafelyYou Guardian (intervention group) versus those who did not (control group).

**RESULTS**

Among 147 falls in the control group, 52 (35.4%) resulted in EMT visits and 36 (24.5%) resulted in ED visits (Figure). In contrast, the intervention group had 83 falls, with 13 (15.7%) and 7 (8.3%) resulting in EMT and ED visits, respectively. There were relative reductions of 75% ($P = .001$) in EMT visits and 80% ($P = .003$) in ED visits.

**FIGURE.** Comparison of EMT Visits and ED Visits Among Residents Benefiting From SafelyYou Guardian (intervention) Versus Not Benefiting From SafelyYou Guardian (control)

ED indicates emergency department; EMT, emergency medical medical team.
DISCUSSION

We observed a robust reduction in unnecessary EMT and ED visits in this pilot study by providing better understanding of unobserved falls. The AI-enabled camera fall-detection system coupled with staff review of fall videos led to more accurate identification of serious falls and incidents compared with less serious falls, such as when a resident intentionally moved to the ground but did not fall. The reduction in use of emergency services will likely lead to lowered healthcare costs and stress among residents, families, and facility staff. Larger randomized controlled studies matching baseline facility and resident characteristics are needed to validate and confirm the results from this pilot study.

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REFERENCES


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