Uniting NSW/ACT and the University of Technology Sydney (UTS) have joined the Australian Research Council Industrial Transformation Hub for Digital Enhanced Living which is hosted by Deakin University’s Applied Artificial Intelligence Institute. This fact sheet provides a summary from a literature review conducted by UTS on Falls and Technology in Residential Aged Care and analysis conducted by Uniting’s Centre for Research Innovation and Advocacy on Uniting’s Falls data.

Summary

The rate of falls in nursing homes (1.7 falls per person-year (range 0.6–3.6)) is higher compared to the rate observed among older people living in the community (weighted mean: 0.65 falls per person per year)(1). A first step in fall prevention is fall risk assessment. Sensing technologies may provide “objective, low-cost and easy-to-implement fall risk assessment”(2). While overall these sensing technologies point towards potential fall prevention, more research is required to develop a clinically-meaningful fall risk diagnosis(2). We reviewed 14 articles published between 2010-2020.
What we discovered

There is conflicting evidence regarding the capacity of sensing technologies to accurately predict falls. Some studies suggest sensing of gait is a way to predict falls, while other studies suggest the technology is insufficiently sensitive to make such accurate predictions. Studies also advocate for exercise as a method of fall prevention. Wearable fitness trackers can be used as motivation for exercise. Among groups of older persons, some are amenable to the idea of wearable and ambient sensors for falls, acceptability is a key component of the successful use of sensors.

How might that help Prevent Falls in Uniting?

There are several different approaches to using technology to address falls:

- Detection of falls themselves: there are several options, but the evidence for each is only emerging (accelerometers, bed exit, activity monitoring). Moreover, while detecting falls that have happened is important as an emergency response, predicting and preventing them is arguably better.

- Prediction. Analytics to predict risk is an important foundational capability. Gait and levels of exercise are important factors to consider, which implies the utility of wearable monitors of some kind.

- Among the fourteen articles in this review, there is conflicting evidence. This suggests that sensing technology for falls detection and prevention in residential aged care is not well understood, and presents a field for significant further investigation.

Falls in Uniting Residential Aged Care

Between 1st July 2014 and 24th May 2020 there were 15,912 fall incidents identified (when recorded as ‘fall,’ ‘slip’ or ‘trip’) among 10,762 residents across Uniting Aged Care Homes. Certain groups are at a higher risk of falling than others (males, people classified as high care and those with dementia). Most falls occur in the bedroom and bathroom. This is important information as it may help to tailor and target interventions.

What happens next?

During 2021 UTS will work with Uniting to investigate how digital technologies may be used to mitigate falls risk and overall decline in the wellbeing of the residents.

References
