PAPER

Sensors and Monitoring

Purpose Sensor systems have been designed to monitor older adults' activities within the home[1-3], including assessing disease progression and intervention efficacy[4]. Persons with dementia (PWD) are at significant risk of night-time wandering and elopement[5]. The purpose of this project was to determine if an "off the shelf" smart home product could be adapted to monitor night time wandering and redirect a PWD as required, reducing the stress of the Care Partner (CP). **Method** In this pilot, Samsung Smart Things pressure sensors, motion sensors, contact sensors, hub, smart socket and speakers were deployed in the home of a PWD and CP. The system was programmed to: 1) turn on a hall light if the PWD exits bed, 2) give an auditory cue to "go back to bed" if the PWD approaches the front door, and 3) trigger an alarm on the CP's phone if the PWD opens the front door. The system was tested for 12 weeks. **Results & Discussion** Data collected shows that the PWD typically went to bed between 8 and 10 PM, usually 1 – 2 hours before the spouse. He typically got up between 8 and 10 AM, usually 1 – 2 hours after the spouse – slightly later on Sunday mornings. Typically the PWD got up 1-2 times per night and went to the bathroom. Once early on, the PWD did wander towards the front door and the voice reminder was activated. The PWD did not elope during the pilot. There were some technical challenges. The pressure sensor did not work consistently under the mattress. A power failure affected data collection but not functioning of the system in the home. And smart sockets can be affected by light switches and light bulb types. This pilot suggests that economical, available home monitoring systems can be adapted for use in monitoring and redirecting wandering in PWD. This pilot will continue using different sensors and located in different home types.

References
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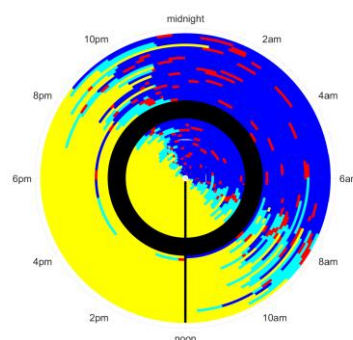
Figure 1. Sensor data: light blue: PWD alone in bed, dark blue: both in bed, red: PWD out of bed, yellow no one in bed