

# Healthcare Professionals Perceptions of Home Monitoring Technology to track recovery in Older Adults with Traumatic Brain Injury

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## INTRODUCTION

Traumatic Brain Injury (TBI) is the most common fall-related injury among adults 65 and older, despite the high incidence there is a paucity of research to guide management of older adult TBI. Passive sensors offer an attractive solution, free of compliance issues for detecting early changes in health and function in vulnerable patient groups and can be used to enhance clinical decision making in community-based care models, such as 'hospital at home'.

There are few studies to-date examining healthcare practitioners (HCPs) views on this technology. We aimed to explore HCPs insights on how to best develop the technology and examined barriers and facilitators to the adoption of passive remote monitoring in the community to track health and function in older adults following TBI.

## METHODS

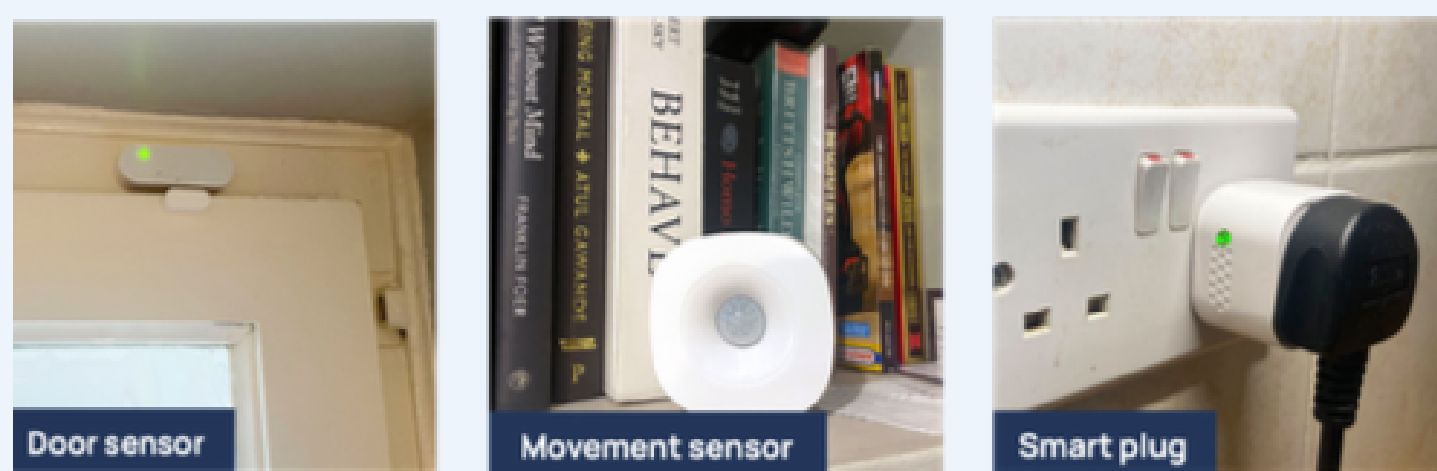


Figure 1: Some of the sensors used in our study.

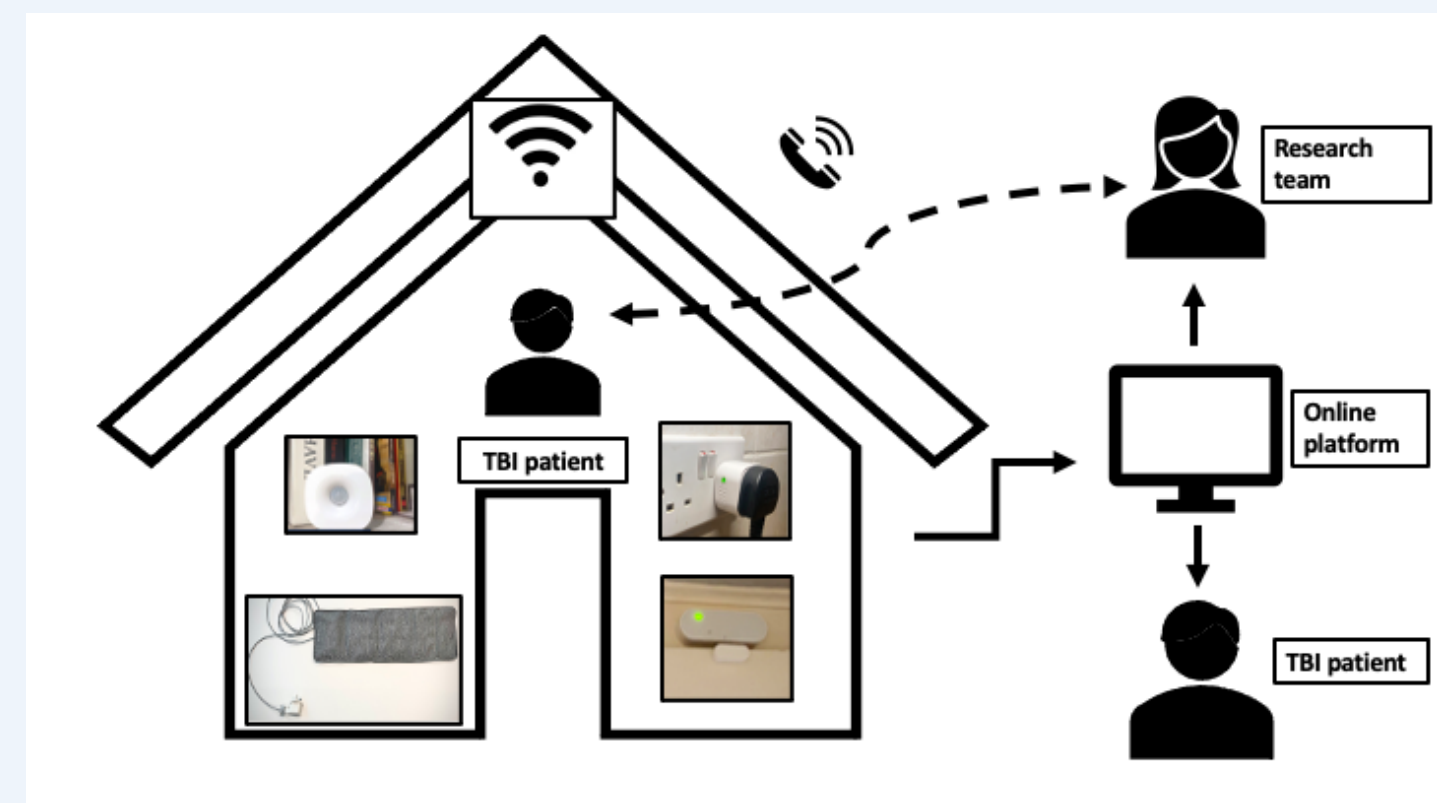


Figure 2: Schematic of the home monitoring set up. The system used was a pared down version of Minder the Dementia Research Institute Care Research and Technology Center, used to monitor the health of older adults living with dementia. Study contacts had access to the participants data on an a mobile application. The system was not live monitored.

The HCPs were naive to the home monitoring systems, a short presentation was provided showing how our studies passive sensor system would be used, to monitor health and function.

This was a multi-center mixed methodology qualitative study, conducted alongside a feasibility study using monitoring equipment to study the effects of TBI in older adults. HCPs opinions were explored during and online focus group and individual interviews.

Participants were eligible if they had worked in their post for more than a year and had experience caring for older adults with TBI. Purposive sampling was used to provide balanced representation of healthcare professionals (physicians, nurses and therapists) from both community and acute multidisciplinary teams. Data were analysed using the framework approach.

## RESULTS

The perspectives of 6 HCPs were analysed. There was seen to be a clinical need for novel technologies such as passive remote monitoring. The main barriers and facilitators to the use of passive remote monitoring technology in older adults with TBI are shown in the figure below.

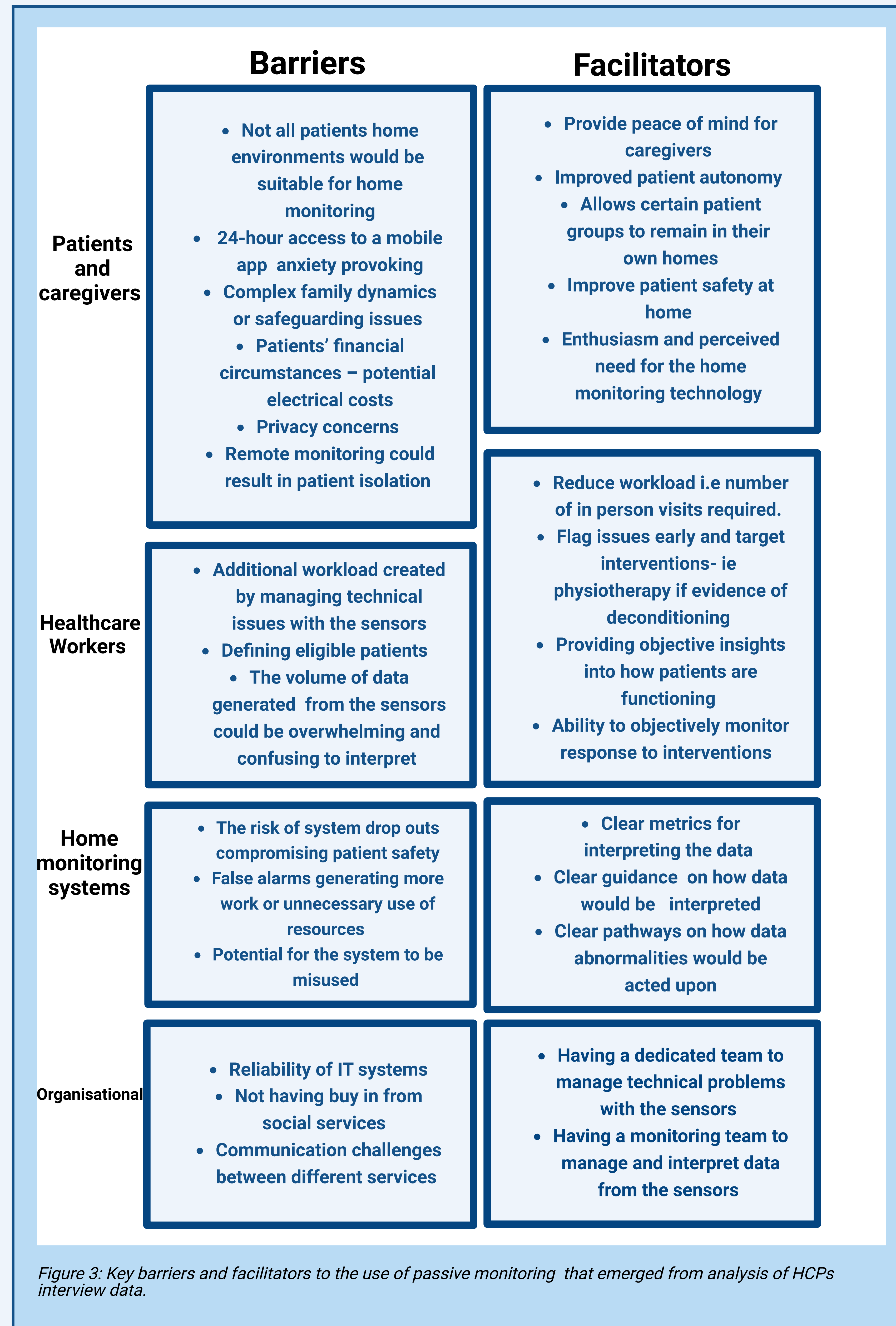


Figure 3: Key barriers and facilitators to the use of passive monitoring that emerged from analysis of HCPs interview data.

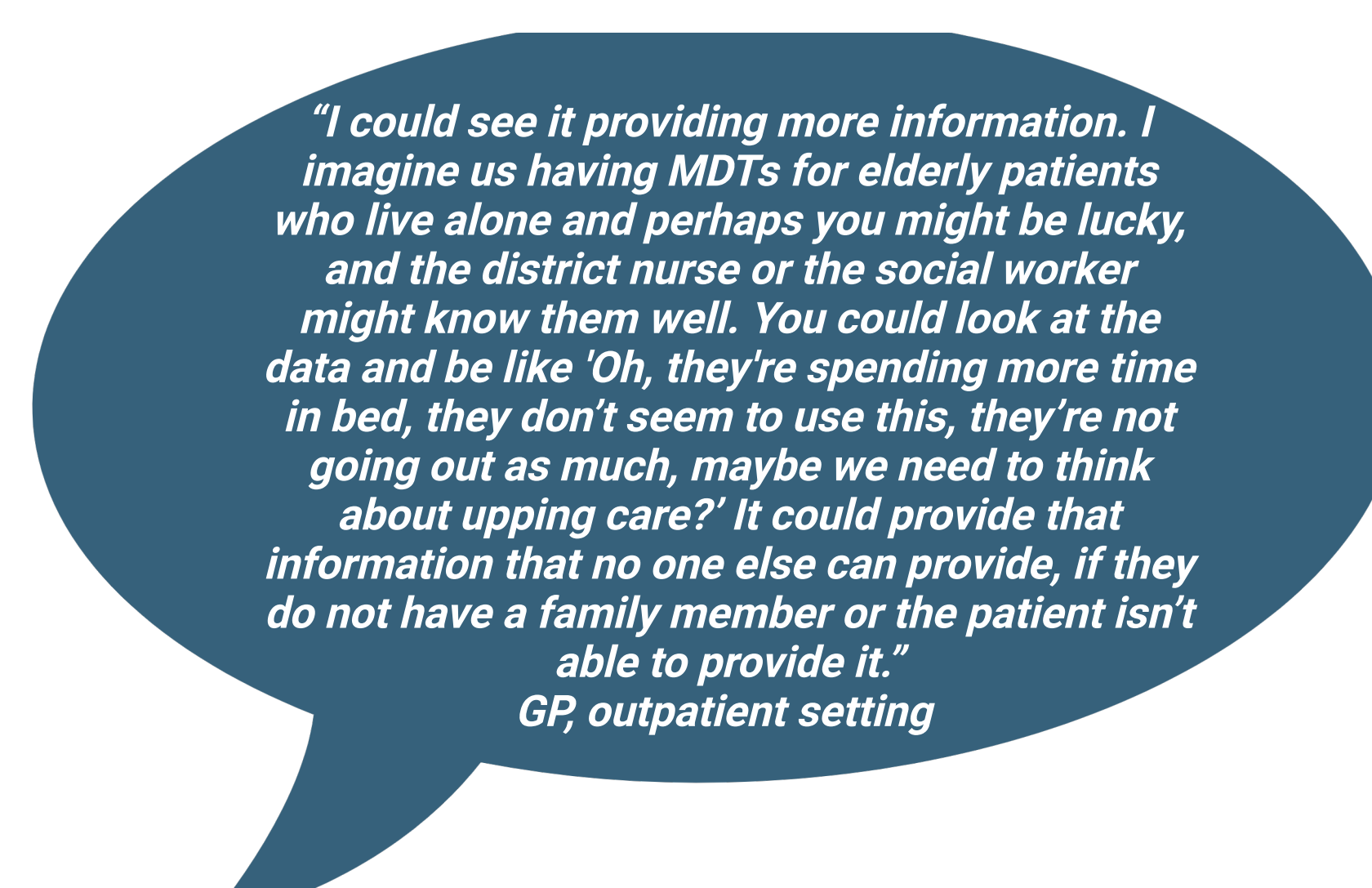


Figure 4: Example quotation from the HCPs focus group, suggesting the potential clinical uses for the system.

### Key Themes

- Technical considerations e.g how reliable is the technology
- Operational e.g how will data from home monitoring be acted upon
- Social and environment considerations
- Maintaining privacy and independence
- Ethical considerations and appropriate uses for the system
- The clinical need for home monitoring in older adult TBI patients

Figure 5: Key themes that emerged from analysis of the interview data

## Conclusions

- HCPs felt that passive remote monitoring holds potential to improve care for older adults following TBI.
- Clinical use of passive home monitoring demands thoughtful planning and clear guidelines for indications and interpretation of data.
- Iterative development of these systems, incorporating HCPs insights will be key to successful and sustained use of passive monitoring in research and clinical practice.