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Cognitive assistive technology: The case for resource centres

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ABSTRACT

Dementia and brain injury remain pressing areas for innovation and treatment that can improve the lives of those with such conditions. Every USA state has an assistive technology centre that includes aids for dementia and brain injury, and such centres are federally funded. In the Republic of Ireland, there are 22 "Memory Technology Resource Rooms', nationally funded, and they specialise in supporting conditions such as dementia and brain injury. In the UK, no such centres exist. The 10-year Health Plan for England has as its key goals applying advances in technology to healthcare and establishing neighbourhood health centres. We propose that the UK follow the examples of the USA and Ireland, and that each UK county has a Cognitive Assistive Technology centre, with a focus on cognitive aids and related smart home technologies for patients with dementia and other brain disorders that impact cognitive function.

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The number of patients with dementia continues to rise with the ageing population, and there are currently no treatments which can cure this condition (Frisoni et al., 2025). For those with dementia, such as Alzheimer's disease, and also for those with other brain conditions that impact cognitive functioning, there is therefore a pressing need for tools and strategies that help patients cope with their cognitive limitations. The last 20 years have seen major advances and increased availability of new technologies, which can potentially help manage cognitive issues arising from a neurological or psychiatric condition (Polgar et al., 2026). In the UK, recent guidance from the National Institute for Health and Care Excellence (2025) relating to the rehabilitation of chronic neurological disorders has highlighted the importance of assistive technology, such as Recommendation 1.21.3: "Teach and support the person to use compensatory aids to improve or maintain independence with activities of daily living".

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Two significant proposals for healthcare provision that were outlined in the UK government's 10-year Health Plan for England consisted of a shift "from hospital to community", with the setting up of Neighbourhood Health Centres, and the use of advances in technology to improve healthcare and make its delivery more efficient (Department of Health & Social Care, 2025). The Review of Patient Safety by Dr Penny Dash, published shortly after the 10-year Health Plan, has one of its key recommendations that "technology (data and analytics) should be playing a far more significant role in supporting the quality of health and social care" (Dash, 2025). It has been shown that the use of assistive technology can enable people suffering from dementia to be supported in their own homes for longer rather than requiring early admission to a hospital or care home (Lariviere et al., 2021). Most people with dementia would prefer to remain in the familiar environment of their home (Leverton & Pui Kin Kor, 2023), and this option can also dramatically cut care costs.

Allowing for earlier studies which found limited benefits of assistive technology in dementia (Howard et al., 2021), and the fact that challenges and gaps remain in this field of research (St Clair-Sullivan et al., 2026), there is now increasing evidence that aids can benefit patients with cognitive limitations, including those with dementia (Cheng et al., 2024; Peres & Campos, 2024). Patients find it helpful to have stationery tools like sticky notes, memory notebooks, calendars and detailed diaries to help everyday memory (Greenaway et al., 2013; McKerracher et al., 2025; Zencius et al., 1991). Altering the environment, both personal and external, can help everyday memory by providing cues/triggers. Smartphones have generally been of major benefit for memory-disordered patients (Maggio et al., 2024; Scullin et al., 2022). They offer intrinsic features like reminders, alerting systems, information storage, diaries, and navigation assistance. Most smartphones have accessibility features for specific disabilities and have voice command features like Apple Siri.

Smartwatches are convenient as they are attached to the individual and require minimal effort to operate. Bluetooth-enabled smartwatches enhance their usefulness through connectivity with smartphones and dedicated applications. Studies show that smartwatches improve prospective memory and everyday memory functioning (Kapur et al., 2020; Smits et al., 2022). Voice assistants such as Amazon Alexa, Google Home Hub, and Apple Siri are popular in medical settings; they offer features like prompts, task sequences, and enjoyable activities (Hassoon et al., 2018; Kapur et al., 2019). Voice assistants can also be linked to smart home devices. Assistive technologies like wearable cameras, digital clocks, and electronic tags help everyday memory, especially for those with dementia. Wearable cameras enhance autobiographical memory by capturing images that act as cues to retrieve other memories (van Teijlingen et al., 2021). Digital clocks often have reminder systems, and these can therefore be beneficial for patients (Quittre et al., 2005). Electronic tags help trace confused patients who may wander and get lost (Neubauer et al., 2022). It is

likely that artificial intelligence will integrate with assistive technologies to have a major impact on helping everyday cognitive functioning (Huq et al., 2024).

In the USA, every state has an assistive technology centre that has a display of aids for a range of conditions, including those with neurological disorders. Such centres are federally funded (https://www.at3center.net/state-at-programs) and cover a range of domains, including sensory, motor, and cognitive functions. In the Republic of Ireland, there is an assistive technology centre resource that primarily focuses on cognitive disorders such as dementia. They are termed "Memory Technology Resource Rooms", also nationally funded, and have been found to be of value (Cullen, 2020). There are 22 such centres, and they specialise in supporting conditions such as dementia and brain injury (https://short-link.me/16lHK). However, in Great Britain and Northern Ireland, no such centres exist, though most major hospitals may have specific resources for motor and communication equipment/aids. While the focus of research and development has often been in Western countries, a wider perspective needs to be borne in mind, as outlined in the 2022 Assistive Technology report by the World Health Organisation (WHO, 2022) and articles relating to assistive technology use in countries such as India (Senjam & Mannan, 2023).

Bearing in mind the limitations that the USA and Irish assistive technology centres have faced, there is a case for the UK to broadly follow the examples of the USA and Ireland, with each UK county having a Cognitive Assistive Technology (CAT) centre. The CAT centre could be located close to a Neighbourhood Health Centre, a facility outlined in the 10-year Health Plan. A CAT centre would have a focus on cognitive aids and related smart home technologies for patients with dementia and other brain disorders that impact cognitive function. In addition, they would include assistive technology for secondary factors such as hearing support, vision aids, fall prevention technologies, psychological well-being and sleep, as these can also impact cognitive function. Trained staff, including psychologists and/or occupational therapy staff, should be in place in the CAT centres, and devices could be borrowed to try out at home, or be recommended for permanent provision by social services.

While the creation of technology centres is valuable, we need to acknowledge the practical issues likely to arise both during the setting up of a centre and in its long-term operation. A study of the impact of assistive technology centres in Ireland (Cullen-Smith et al., 2024) found that they enhance the quality of life for individuals with disabilities by fostering independence, improving communication and enabling participation in various aspects of life. However, challenges remain, and these include environmental factors (e.g., how to support individuals living long distances from a centre), and issues such as training of staff and how assistive technology can integrate with other forms of intervention. Access to assistive technologies for cognition is only one step; individuals with dementia and their family members must also learn to use the technologies effectively and incorporate them meaningfully

into daily routines. We propose that the cognitive assistive technology centres would not only recommend or loan technologies, but also play an active role in training, implementation, and ongoing support, as well as establishing how effective they have been in making significant differences to the well-being of patients and reducing any carer burden. It is also important to keep in mind that many technologies are likely to be used by caregivers or family members, and that this may help to reduce the caregiver burden (Marasinghe, 2016). For example, technologies such as bed exit sensors or door sensors to detect nighttime wandering, or some scheduling and reminder technologies, are often implemented and managed by caregivers.

We have a duty to provide the highest quality of care for those with dementia and other conditions that have a major impact on everyday cognitive functioning. The technologies to provide such care are now readily available. It is only right that we provide resource centres where patients and/or their carers can come and try out the devices, and borrow them for a while if need be. Where appropriate, they should be provided free, just like any medication to which the patient is entitled. CAT centres will help to enhance patient care for conditions such as dementia. They may also reduce costs to the NHS by enabling patients to stay at home for longer rather than requiring admission to a hospital or a care home.

There remains a need for further research in this field to target issues such as the implementation of assistive technology and details of the most effective service design/delivery. We do not yet know how artificial intelligence may impact the benefits of assistive technology, and whether it can help to identify which patients will benefit from which technologies and how best the technologies can both be implemented and integrated with other treatments and support systems.

Disclosure statement

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