Is technology assisting?

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- Dr Dennis Velakoulis, *Consultant Neuropsychiatrist; Director;* Neuropsychiatry Unit, Royal Melbourne Hospital Melbourne Neuropsychiatry

- Sue Hunt, *Senior Nurse Advisor,* Department of Health and Ageing (Tentative)
- Susan Koch, *Principal Research Fellow,* RDNS
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- Dr Meera Agar, *Director of Palliative Care;* Braeside hospital, Hammond Care; *Conjoint Associate Professor,* UNSW
- Dimity Pond, *Professor,* Discipline of General Practice, University of Newcastle
- Glenn Rees, *Chief Executive,* Alzheimer's Australia
- David Sykes, *General Manager,* Learning and Development, Alzheimers Australia

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"It opened up a world of dementia problems, research and information on planning. It provided an opportunity to catch up on what the other states are currently engaged in"
Office for the Ageing, Department for Families and Communities, Dementia 2011

"It gave me the opportunity to hear what other areas are doing and reinforced my understanding of the issues around antipsychotics medication"
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Inside this issue…

Assistive technology: ready,

Technology is increasingly available to assist in aged and dementia care. But there must be greater awareness of what's available, the benefits and how it can be successfully implemented, writes **Jeffrey Soar**

Technology, along with innovations such as universal housing design (Demirbileka & Demirkan 2004), has the potential to meet people's needs at various stages of their lives. These can make our homes safer and reduce the need to move into a residential aged care facility in the event of illness, frailty or disability. The aged and community care sector is yet to fully embrace the wide range of technology innovations that are increasingly available for both residential and community care. This in itself may be a barrier as it can be hard to know where to start, what to choose, how to implement and whether the expected benefits will be realised.

Smart home technologies include telecare, telehealth, robotics, wearable devices and ubiquitous sensors on appliances such as microwave ovens and light switches. Technology can assist with the many and varied needs of people with dementia. This includes reminders for activities of daily living (ADL) and medications. Consumers, families and carers could access care through telehealth technologies that would provide an automated consultation, a link to a remote clinician when required and information for guided self-care.

Similarly, these and other devices can facilitate social connections and some residential care facilities already make Skype available for residents. Telecare can help keep people safe through movement detectors, out-of-bed sensors, automated lighting to guide someone to the toilet when they get out of bed in the night, sensors for extreme heat in the kitchen and flooding in the bathroom. Signals can be selectively routed, so an alert about a fall might be sent to one recipient, while a fire alert goes to another.

Assistive technology and family carers

As many people are aware, the responsibility of caring for a person with dementia can be consuming and allow little time for other responsibilities. Technology offers families reassurance that their loved one is safe. Sensors can detect if a person opens a door, uses the microwave or other appliances, has a fall, is taking medications and otherwise completing their activities of daily living. The technology may give respite to families so they may live more of their own lives or even go shopping knowing they will receive an alert in the event of an adverse event such as a fall or in the case of wandering. Technology has the potential to relieve clinicians of much of the non-clinical tasks they deal with, allowing them to focus more on the role they were trained for.

Sensor networks can be connected to Big Data tools that can analyse massive amounts of data captured by various sensors. The analytical tools can detect subtle changes in behaviour that might otherwise be missed by busy clinicians. Home-visiting care staff typically spend significant hours driving between clients. The technology can help triage and prioritise visits and also indicate when the client may not need a personal visit. Clinical staff can reduce unnecessary visits and instead focus on those needing more critical care or attention.

Where they've been used overseas, these technologies have reduced admissions, readmissions and length of stay when a client is admitted. There is also an environmental benefit in reducing client and carer travel to access services.

The most useful assistive technology

A 2012 study of assistive technology for people diagnosed with dementia, undertaken by Alzheimer's Association Queensland and the University of Southern Queensland, was funded by Home and Community Care (HACC) Queensland (Medhurst & Yuginovich 2012). It reviewed sensor mats, emergency call systems, robot vacuum cleaners, GPS systems, calendar clocks, bed occupancy and exit sensors and personal amplifying devices. The most useful and successful types of AT were identified as being: the sensor mat with remote pager, bed exit sensor with interval timer and pager, robot vacuum cleaner and hearing devices. Vacuum cleaners were seen as increasing independence and hearing devices improved communication. There was a significant reduction in the extent to which carers were worried about the client getting out of bed at night and falling, following the implementation of AT and an improvement in carer sleep patterns.

No difference was found in the ability of carers to leave the client alone at home as a result of the AT, nor any indication that AT made the clients feel safer. AT did not reduce their need for external support services (respite) or in-home care (housework and/or meals). Contrary to expectations, results also found that neither the levels of stress nor the frequency of stress reported by carers decreased significantly following the introduction of AT. This may be related to the fact that the disease progressed over the 12 month period and, as such, additional stressors were added to the caring role. Finally carers had perceived that using the AT would enable the client to remain home longer, however the project was too short in duration to determine this.

Barriers to adoption

Some of the barriers to widespread adoption of smart home technologies have been a lack of robust evidence on cost-effectiveness, a consumer market, the ability of the technology to work between service sectors, and the implications for professionals and organisations of changing their methods of practice (Goodwin 2010).

There is a need for greater awareness on the part of consumers, families, care providers and funders of what's available, what the benefits are and how to go about a successful implementation. There has been a belief that prescriptive funding of aged and community care services allowed little flexibility to include smart home technologies. Governments as funders of care are allowing greater flexibility and there is

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also the provision for some telehealth consultations to be covered by Medicare. There is still much work in developing the pathways to successful adoption in terms of promoting awareness of what's available, what technologies are robust and can be implemented with confidence of achieving the desired result. Technologies need to be suitable for the environment they are in and acceptable to people with various stages of dementia.

It may be more challenging to introduce technologies with which they are not familiar and there may be issues of compliance with a technology-supported care program.

Smart home technology has matured significantly over the past decade and there is much to learn from the way different technologies are being used successfully in different services and different countries. There is no lack of technology innovations, but there is much to be done in learning how to adopt and realise the benefits. It appears many of the smart home projects in Australia and overseas are not independently evaluated, which can mean that valuable lessons are lost. Care providers are encouraged to partner with some of the many researchers in this field who can assist in finding research grant funds and in distilling the learning for the benefit of all. ■

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Let's get serious about evaluating our buildings

Architect **David Lane** discusses the importance of dementia care environments and the need to incorporate research findings into building design

ThomsonAdsett, along with Alzheimer Education and architects Kerr Lewit Clark and Kidd, were asked by the Australian Department of Human Services and Health to develop the national *Design Guidelines for Good Practice in Dementia Design* in 1994-1995. There was a lot of optimism within the residential aged care community that at long last we would see robust foundations laid down for appropriate design that best responds to the management and care of dementia residents and people suffering from other cognitive impairments. It was hoped that the material generated by this study would encourage future research and provide for more informed choices by facility operators and design professionals alike.

The team placed importance on a holistic view of the entire care environment. This encompassed many elements within the building and its design context, and in particular the cultural relevance or sense of place that the buildings expressed. Those developing the guidelines argued that building solutions are only effective when combined with a well trained, highly skilled workforce. Equally, care workers in that environment are only fully empowered to work effectively when the building environment supports the care that they are expected to provide.

The tragedy was that this information was never published. The design guidelines document, a significant body of work, was archived and never made publicly available because of a change in government and new funding priorities.

As an architect who has been involved with more than 1200 projects within the Australian and international aged care arena, I am convinced of the value of the social model as an expression of both care delivery and building design. I remain equally convinced that we need far more rigour in accounting for the performance of the buildings and we need to be able to explain why they provide better outcomes for both residents and staff.

Unfortunately, the industry lacks rigour in its approach to the management of aged care design generally and dementia design specifically, particularly in respect to the relationship between the building and the residents who are living there. Much of our work still relies far too heavily on anecdotal feedback and trial and error.

The irony is that over the past 30 years in Australia, for the most part the architectural profession has been complicit in designing buildings that respond inappropriately within the aged care setting. Too many professionals who receive commissions in this field prefer to remain aloof from the operation and complexities of the care services being

Above and overleaf: a drawing and plans for a dementia specific unit in the Sydney suburb of Collaroy, designed by ThomsonAdsett in 2010 for the Salvation Army