

## **Dementia, Community Care and Innovative Technology**

A research project has been undertaken by the University of Southern Queensland and its partners on the use of innovative technology in the management of dementia patients and community carers

This project was the result of research carried out by the Queensland Smart Home Initiative, a collaboration of ten organisations concerned with the welfare of the ageing population both in residential care and in the home

A number of workshops were held with the stakeholders to identify and prioritise the problems and structure the rectification actions

The main priorities were:

### **1. CarerCall**

CarerCall is a system designed to assist in the management of community care. Major deficiencies have been identified in the rostering and security of community based carers, particularly in remote areas

CarerCall uses a SmartPhone or GPS enabled PDA to track carers and to transmit and receive information in real time

The CarerCall system also comprises a powerful back end program which rosters staff and provides accurate summaries of activities for the preparation of reports for government funding

The stakeholders have identified CarerCall as being the single most important project which will provide immediate benefits to the community care fraternity

The back end system will provide a sophisticated program which will roster carers and cater for all eventualities. If for example a carer reports in sick, the system will automatically schedule another carer to the roster and reassign appointments.

The system will identify mileage and calculate the most efficient routes. In the event of a longer than scheduled appointment, reminders will be sent to the carer and in the event of any delay, the system will reassign a carer to the next call and redesign the call pattern for the rest of the shift for the initial carer

This will work by incorporating a GPS system linked to an external server which will manage the whole program. One of the biggest concerns to carer organisations is the security of the carer. A device will be placed in the patient's home that will be automatically activated when the carer enters and leaves the home. This information will be sent back to the server to populate the report

Another major concern to carer organisations is that in many cases the patient suffers from some form of dementia. This can quite often result in the patient not recalling a visit by a carer. This creates a problem when the patient tells their family members that they have not had a visit. This problem is endemic and causes a great deal of issues for the organisation

In order to eliminate this problem, CarerCall will automatically send a SMS to a designated family member once the carer has left the patient's home. This action alone will provide a not inconsiderable return on investment to the organisation

The device placed in the patients home will enable medical information such as medication dosage details etc., to be transmitted to the carer in a secure environment

This project will be phased in a structured manner to enable a simple transition from the present paper based systems. It will be designed to interact seamlessly with existing systems and an important component will be a comprehensive training program. It is a fact of life that the present age group of carers will not have a high literacy in IT. It is therefore necessary to give comfort to the workforce in the implementation stage of the program

Privacy concerns will arise with an element of 'Big Brother' being perceived. This can be counteracted by the fact that the system provides two major benefits to the carer; the first being security. Carers can work in both remote and heavy populated environments. Both have their inherent dangers. A 24/7 monitoring system will provide a far safer working environment than is presently enjoyed

The second point is that the streamlining of paperwork is just one factor that will improve job satisfaction. It is estimated that 50-70% of all Healthcare workers time is spent doing paperwork.

CarerCall presents an opportunity to reduce risk management. The establishment of an electronic pedigree of all visits and important functions can provide a safety net which can be programmed to alert staff before a crisis occurs

## **2. Patient Location System**

The consensus of the group was that the locked door was one of the main barriers to the wellbeing of the dementia patients. One solution to this problem was the establishment of an 'electronic fence' around the high security area. This could be achieved by using a combination of two technologies

### **a) Radio Frequency Identification**

This technology uses a passive or active tag which emits a radio wave when in the proximity of an antenna. The placement of the antennas would provide the parameters of the area under surveillance

The system is administered by a back end software program known as middleware. The patient would carry a tag which would be activated when they left a prescribed area. Notification would then be made to a web browser in the nursing station or via a SMS to designated personnel

### **b) Infra Red Cameras**

Infra red cameras would be installed in the secure area which would be programmed to interact with the RFID tag. This would enable alerts to be sent when a patient who had removed the tag could be identified

## **3. Establishment of a nursing regime**

The establishment of the technology to monitor the dementia patients would provide an added benefit. By utilising the hardware and by writing a specific program, it would be possible to monitor the movement patterns of the patients. This could be done on a single or group patient basis. The cameras would monitor the regular patterns and a nursing regime could be designed to cater for the critical nursing requirements

In an environment when nursing resources are scarce, this will be a valuable tool in making the best use of a limited asset

#### **4. Assistive Technology Educational Module**

This stage of the project is the design of an educational module which will be made available for inclusion in nursing degree and certificate courses. This module will be a dynamic program which will be updated on a regular basis to incorporate the technologies currently being used in aged care both in nursing homes and in the community

Whilst students are given practical segments, it is important that they are not faced by technology in the workforce that confrontational. This module will be a useful tool in preparing graduates for the interaction with the latest assistive technology and techniques in aged and community care

#### **5. Electronic monitoring of patients**

This project is in response to the following media release from the Federal Minister for Ageing:

**THE HON JUSTINE ELLIOT MP**

**Minister for Ageing**

**MEDIA RELEASE**

**Embargoed until 5am - June 2, 2008**

**Minister for Ageing announces measures for residents who go missing from aged care facilities**

The Australian Government will require nursing home services to report any case of missing residents – a measure to further protect and enhance safety for residents, particularly those with a diagnosis of dementia.

**Under the plan, approved providers delivering services, such as residential aged care, respite services, transitional care and flexible services will be required to report missing residents to the Department of Health and Ageing. This is expected to apply to about 3,600 services.**

The approved provider would be required to notify the Department when they decide that the person is missing without explanation. As a matter of principle, this should be as soon as possible after they alert police.

**And in a separate measure, the Minister for Ageing, Mrs Justine Elliot has asked the Office of Aged Care Quality and Compliance to consult on the use of medi-tag bracelets to support the safety of residents with dementia.**

These consultations will take into account research recently completed by Alzheimer's Australia for the Department of Health and Ageing to test the feasibility of a national symbol for cognitive impairment. It will also consult the Minister's Dementia Advisory Group.

The proposed bracelet, engraved with a symbol for cognitive impairment and other relevant information could be very useful as long as informed consent can be obtained from the resident and/or family. However, providing technology is never a replacement for quality care.

Mrs Elliot said aged care services have a responsibility and a duty of care to ensure that residents are safe at all times.

**The measures follow reports of a number of missing persons from aged care services. In recent weeks, including:**

- **A North Queensland resident died after wandering;**
- **A Canberra resident found in bushland; and**
- **A NSW Central Coast man disappeared for four days but was found dehydrated and suffering hypothermia and eventually died.**

Mrs Elliot said she would like to see the reporting measures in place later this year.

"I believe that the issue is not primarily about whether someone has dementia or not, but whether appropriate action is taken by the aged care provider when any resident

is identified as missing without explanation," Mrs Elliot said.

"This is a complex matter; it is about ensuring providers are fulfilling their duty of care to residents, while supporting residents' rights to come and go - which is part of maintaining their quality of life."

Mrs Elliot said she had an open mind on the debate of medi-tag bracelets for dementia residents, but she understood that there were civil liberty concerns which had to be balanced with harm minimisation.

In Canada, there is some discussion about extending tags on newborns' blankets for ID purposes to residents with dementia and the New Zealand Red Cross is examining a discrete tracking watch or necklace pendant.

NSW Police and Alzheimer's Australia have a joint project – the Safely Home Project – which provides a personalised stainless steel bracelet, designed to worn at all times by the person with dementia.

Research from the United Kingdom has found that one in six people wander unintentionally as a result of Alzheimer's Disease, dementia, other mental health problems, accident or miscommunication. (Biehal, Mitchell & Wade 2003).

The Australian Institute of Criminology says that 32 per cent of missing people reported are from psychiatric or general hospitals, facilities for the aged and disabled. (There is no individual break-down for aged care facilities.)

In NSW, last year, more than 6,500 people over the age of 65 were reported missing – accounting for 40 per cent of all missing persons. A major proportion of this older group were considered to have dementia.

**The Queensland Police say that about 30 per cent of all land searches are for people with Alzheimer's or dementia.**

It is estimated that more than 200,000 Australians are affected by dementia. It is more prevalent in older Australians, with almost one in four people aged 85 years and over having the condition. In the next 20 years, the number of people with dementia is expected to more than double.

An increase in missing residents – even temporarily - may give the Department of Health and Ageing an indication about the standard and staffing of the service.

To reduce the incidences, the Department of Health and Ageing recommends aged care providers have adequate management practices in place to ensure the safety of residents.

The Department of Health and Ageing says management strategies and harm minimisation plans can include, but are not limited to:

- Ensuring adequate staff on every shift;
  - Good design that ensures residents who wander are encouraged towards doors that lead to internal rather than external areas;
  - Alerts on external doors to notify if doors have remained open for extended periods;
- and
- Sensor mats to monitor particular residents, who may have a tendency to wander and cause harm or discomfort to other residents. This enables staff to monitor the resident with minimal intrusion for both the resident and other residents who may be affected.

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***Most of the reasonable requirements in the above can be catered for by the establishment of an electronic pedigree of Healthcare as outlined in the above proposed projects. All that is required for implementation is the release of government funding to facilitate the implementation***

## **Summary**

The stakeholders have identified CarerCall as being an urgent implementation requirement. Consequently the initial efforts will be directed at this project. To date, the project plan has been formulated and negotiations are presently underway with hardware suppliers. The software will require a considerable amount of funding and further research. The target for this funding will initially be government sources with industry contributions.

There have been expressions of interest in CarerCall from several international organisations as communications in remote areas is a global concern. The group hopes to contribute to the easing of this worldwide problem with the commercialisation of a system such as CarerCall which can be provided as a component of trade agreements with Australia's trading partners as well as being a product which could be provided via an AusAid contribution and instrumentalities such as the World Health Organisation

### **The Barriers**

The major barrier to the adoption of this technology is **Change Management**

Fortunately, the stakeholders in the project have identified the need for change and others will follow once a Proof of Concept has been established. The social impact of these projects will be a powerful argument for their adoption.

A great deal of research is required to take these products to market but this research will revolve around the modification of existing and emerging technologies rather than inventing new ones

Another example of the challenges of these projects can be illustrated in the **Patient Location System Project**. Once the locked door has been removed and replaced by a RFID enabled 'electronic fence' the resources required to return the patients to the secure area once they have roamed need to be identified. A pilot program will establish the requirements and the success or otherwise of this concept

### **Stakeholders**

The stakeholders wish to remain anonymous at this stage but they include the University of Southern Queensland and several leading Australian Aged Care providers. The delivery of the technology will be by a network of Healthcare Innovation Specialists with many years experience in the field

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