Changing ICT for client/patient management and clinical information in residential and community aged care services in regional Australia: structured interviews with service managers

Soar J
School of Information Systems, Faculty of Business,
University of Southern Queensland, Australia

Eley R
Centre for Rural and Remote Area Health
University of Southern Queensland, Australia

Abstract
Aims: To determine the degree of change in investment in ICT (Information and Communication Technologies) in residential and community aged care services in regional Queensland.
Methodology: a convenience sample using structured telephone interviews of senior executives or managers of service providers
Findings: Aged care providers were found to have made significant recent investment in ICT. A major driver was to improve patient care. There were investments in clinical systems and systems for administration.
Summary: Aged care is not generally seen to be a sector that has taken advantage of ICT; that appears to be changing and there is now significant investment in clinical systems and other systems to assist staff in providing care.

Key Words: information technology, computing, aged care, seniors, workforce

1. Introduction

The interest internationally in the adoption of ICT to assist in the delivery of care for the frail elderly [1] is shared in Australia. The aged and community care sector in Australia is facing many challenges including those related to rising consumer demand, workforce availability and skill levels, and providing services across the vast geographical spread of the aged care population and location of services. These challenges promote the need to investigate and implement new models of care delivery through ICT.

In 2009 a telephone survey was undertaken of residential and community aged care service managers across regional Queensland, a geographically large state with particular challenges of distance for serving remote communities. The aim of the research was to explore the level of use of ICT and recent changes that may have occurred in greater availability and adoption. A baseline for the survey was a national survey of nurses and ICT that was previously undertaken by the same authors [2] [3]. There was

interest in refreshing this previous work to get an understanding of changes that may be occurring in ICT in aged care.

2. Ageing

Australia shares the concerns of most countries regarding the impact of an ageing population. Increasing pressures on health and aged care services are associated with the interest in new solutions for care planning and delivery.

Technology is anticipated to offer significant potential for equipping societies to respond to these pressures [4], [5]. Applications include assisting aged people in extending active and independent lives, maintaining consumer productivity, better managing and supporting the care workforce and in delivering and increasing the quality of care in home, community and residential care settings. Globally there is an increasing level of activities, strategy development, research projects, and adoptions of telecare, telehealth, smart homes and assistive technologies by consumers and care provider organisations [6]. Technologies offer an array of benefits including a reduction in hospital admissions and length of stay. [7], [8].

3. Technology

There is interest in better supporting aged care services to meet increasing challenges. There are particular issues of workforce availability and skilling. Few carers are supported by ICT tools for sharing of client information, communications with other members of the care team and for enhancing workforce productivity.

There is recognition of the potential for technology to enhance the safety and independence of frail older people, enable access to care services and to extend their ability to remain in lower levels of care such as their own home or other independent living arrangements. Intelligent monitors can keep a continuous watch on vital signs, activity patterns, their safety and security. The technology can monitor indicators of their state of health, provide alerts to events such as falls, and give early warnings of potential problems. The technology can notice changes in activities and alert a carer. Monitoring devices can be more accurate guides to the health risks such as a heart attack than are the patient's symptoms, providing advance warnings and reducing unnecessary emergency callouts [9]. Automation is expected to enhance security, safety and independence [10]. This could help maintain quality of life and decrease the demand for carer support hours.

There is much research or demonstration models with the aim of promoting the adoption of ICT for care [11], [12]. In a state of Australia a system of referrals away from hospital admission to community aged care is in use [13]. There are similar initiatives around most Australian health

jurisdictions for managing Emergency Department demand. Aged and Community Care service providers are actively investigating the use of assistive technologies to ensure effective service delivery.

Research into adoption issues, return on investment, realisation of benefits, integration and interoperability is required to ensure a sustainable system. Current evidence indicates that the level of adoption of technology in aged care services remains low. There appears to be many factors influencing this and these are seen to include awareness, attitudes to technology, design issues, telecommunications capacity, technical support, overall cost and uncertainty that benefits will be realised.

An indication of the extent of new technologies available to ageing services and related research is available from the web-site of the Center for Aging Services Technologies [14]. A new centre in Ireland, Technology Research for Independent Living (TRIL) is using ethnographic approaches to better understand seniors' attitudes to technology [15].

4. Residential and community aged care services

In Australia the frail aged can be supported in their own homes or in institutional settings. The latter include retirement villages which may provide minimal support such as security, social activities and some other services. RACFs (Residential Aged Care Facilities) or nursing homes offer two levels of care – low care for residents capable of some independence and high care for people needing help with many of the basic activities of daily living. The latter includes dementia wards. People needing support may also receive services in their own homes. RACFs and some aged care services in people's homes funded mostly by the federal Department of Health and Ageing subject to assessment of the individual. RACFs can be one of several owned by a large organization or can be independent. They can be for profit or not-for-profit. Major for profit operators include BUPA and Tricare; NFP includes Blue Care, RSL Care, Baptist Care, Lutheran Care and Spiritus.

5. Methodology

A purposive sample design was employed and a convenience sample of 50 aged care facilities were invited to participate with the aim of achieving a 50% or better response. Starting with facilities in and around the Queensland regions city of Toowoomba (pop 100,000) the area was broadened to encompass most of rural and regional southern Queensland to achieve this desired number.

The project officer telephoned facility managers who were invited to participate in a 10 minute semi-structured telephone interview. Managers who agreed to participate were then sent the consent form by email or fax for signature and return. Of the 50 facilities that were contacted three

declined. Of the 47 who agreed 30 were interviewed at their convenience. Data collection was stopped at 30 when data saturation had been reached.

6. Findings

Participants were asked about the use of IT applications for patient/client management. Responses to this question are given in Table A. All but two facilities use their computers to generate care plans for patient management. Four of these had made no changes; the two facilities that did not use computers for patient management offered no further comment.

Table A. Changes in patient/client management

	Type of Care Facility				Independent		Financial Status	
Change	High	Low	Both	Total	Yes	No	Profit	NFP
Yes	4*	2	18	24	6	17*	4	19*
No	0	1	5	6	2	4	0	6
Total	4	3	23	30	8	22	4	26

* Indicates the location of public facility response

One facility noted their recent utilisation of "internet-based programs". Two that indicated partial use of the client management software commented "*to a certain extent*" and "*don't use resident care site; only [the] finance [part]*". One facility indicated that care plans were prepared on the computer but kept in hard copy. The one public facility contributing to the study also indicated partial use of their computerised patient management systems.

Use of IT applications for clinical use

Only four facilities did not use this type of software and one of those had purchased the software but had not implemented it yet. Changes in IT applications for clinical use are given in Table B. Of the 26 facilities that used the software 23 had implemented change. This also includes the one public facility interviewed. One respondent indicated that "*all carers have access*" to this system.

Table B. Changes in clinical use

	Type of Care Facility				Independent		Financial Status	
Change	High	Low	Both	Total	Yes	No	Profit	NFP
Yes	3	3	17	23	10	13	4	19
No	1*	0	6	7	3	4*	0	7*
Total	4	3	23	30	13	17	4	26

* Indicates the location of public facility responses

Five further comments were recorded from those using the software. One facility indicated they utilise incontinence software only and another indicated the use of eMIMS. Improvement in the use of clinical software

was noted with three comments can be summed up by one respondent who noted *"Computers are now a big part of our clinical care"*.

Requirement of nursing staff to use computers

Of the 30 facilities 17 stated that their staff were required to use computers (Table C). One offered the comments that "*everybody has to use a computer as nothing is handwritten*". Two facilities noted that the requirement of nursing staff to use computers is dependent on the staff position. Both indicated that while registered staff (registered and enrolled nurses) were required to use computers this was not expected of the unregistered staff at assistant in nursing or personal carer level.

Table C. Facilities requiring nursing staff to use computers

	Type of Care Facility				Independent		Financial Status	
Change	High	Low	Both	Total	Yes	No	Profit	NFP
Yes	1	2	14	17	7	10	2	15
No	3	1	7	11	5	6*	2	9*
Unsure	0	0	2	2	1	1	0	2
Total	4	3	23	30	13	17	4	26

* Indicates the location of public facility responses

What is the driving force (if any) for increased adoption of IT?

Respondents were asked what is the driving force (if any) for increased adoption of IT. Four options were provided to this question with the opportunity also to add others. Comments were also solicited. Responses are tabulated in Table D. In many cases more than one driving force for the increased adoption of IT was offered resulting in 68 responses from the 30 respondents. The public facility manager indicated all options.

Table D. Driving force for the increased adoption of IT

	Type of Care Facility				Independent		Financial Status	
Change	High	Low	Both	Total	Yes	No	Profit	NFP
Patient	3	2	11	16	7	9	2	14
Patient administration	2	0	10	12	2	7	0	12
General administration	2	0	9	11	5	9	0	11
Parent Organization	1	1	11	13	0	13	0	13
Other	3	2	11	16	7	9	2	14

Patient care
Eight comments supported the 16 responses to this area and included improvement of systems whilst reducing paperwork which therefore enabled more hands on care to be administered. One respondent proposed that whilst patient care is the current driving force, originally IT was

adopted in their facility to look more professional. The adoption of IT has enabled all patient records to be kept together and it was also suggested that could also be increased if computers were available on trolleys to instantly record information as it is measured. One facility indicated that demands to better support patient care came from the medical professionals.

Patient administration
Of the twelve respondents who indicated they believed this was the driving force for IT, only one offered an additional comment. This comment reported that the introduction of IT has facilitated the ability to easily access patient notes and reports as well as referring to reports prepared by the patient's doctor. In addition adoption of IT enables the facility to get online and retrieve other important patient information.

General administration
Eleven respondents believed that general administration was a factor in the driving force for the increased adoption of IT. Two very different comments highlighted two areas of improvement that the adoption of IT has offered their facilities. One facility indicated it has reduced the amount of paperwork being produced which in turn has reduced the amount of storage space required to store this paperwork. The other facility proposed to use IT in their facility to monitor data for accreditation purposes.

Directives from parent organisations
Of the 17 facilities interviewed that were representative of a larger organisation, 13 believed that the increased adoption of IT was the initiative of their governing body. One of these facilities however indicated that the directive from the parent organisation was not solely responsible for their improvement in IT. They noted that staff time management had been improved as there is no longer the need for manual reporting. One interviewee felt that if parent organisations did not promote advances in IT then facilities would not effect changes.

Other
A total of 16 other responses were recorded and presented in Table 15. In addition to presenting a professional appearance, one respondent also believed that in future the level of IT adopted in the workplace may be a determining factor in where staff decides to seek employment. In addition this respondent also indicated that IT may provide an 'edge' for facilities to promote themselves. One individual proposed that IT will be used to keep up-to-date with current advancements in aged care. It was also indicated by one respondent that having staff that are confident as well as proactive in the use of IT is integral to its implementation within a facility. One facility described their initial integration of IT into their facility was a direct result of government funding, and that despite this the adoption of IT is now centred on clinical care.

Table EOther comments described as the driving force for the adoption of IT

Comment description	Number
Efficiency or time management associated with better provision of professional care services.	6
Provides the ability to link with other organisations or health care professionals.	2
Facilitates communication between accrediting bodies regarding current compliance and regulatory directives.	2
Keeping informed of constant advances in technology in aged care and other related industries.	2
Present a professional appearance.	2

7. Conclusion

Most people have become familiar with and have adapted to technologies that are now pervasive across industries. This research set out to refresh previous research and to determine the degree of change in investment in ICT in residential and community aged care services in regional Queensland. A convenience sample using structured telephone interviews of senior executives or managers of service providers was undertaken.

The research found that aged care providers have made significant recent investment in ICT. A major driver was to improve patient care. There were investments in clinical systems and systems for administration. Aged care is not generally seen to be a sector that has taken advantage of ICT; that appears to be changing and there is now significant investment in clinical systems and other systems to assist staff in providing care.

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