An information model for coordination of referrals to Community Care

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Abstract

Health systems are under the stresses of rising demand and restricted funding. Health authorities have the challenges of managing demand and delivering services whilst staying within budgets. This research found that many admissions of the frail elderly can be avoided if processes and supporting systems are in place to facilitate diversion to appropriate care in the patient's own home, or residential care facility.

This paper reports on a case study of the ACCA (Advanced Community Care Association) single entry point model of community care referral and reporting, using the eCare™ application. The study reported on in this paper indicates that this type of system and technology can provide the following benefits:

- makes the referral process easier,
- improves coordination with community-based services,
- improves the accuracy of clinical information communications,
- better enables community care service providers to plan and provide care through improved availability of information,
- improves patient outcomes, and
- delivers financial benefits.

Introduction

In 1992 the proportion of the Australian population 65 years and over was around 13 per cent (ABS). By 2051 this is projected to rise to 27 per cent. Governments have responded with a range of strategies and policy initiatives such as abolition of the compulsory retirement age, promoting productive ageing and enhancing the capacity for home-based care. The greatest rate of growth is projected in the population aged 85 years or over. This cohort is expected to expand from 1 per cent in 2002 to between 6 and 9 per cent by 2051. In June 2002 almost 30 per cent of this cohort was receiving an aged care package.

There has been increasing interest in patient safety with research suggesting alarming levels of permanent disability and deaths of patients caused at least in part as a result of their healthcare. Many of these events have been assessed to be preventable (Wilson et al 1995) and better provision of timely information is a key to quality and safety. Adverse are of particular concern with the elderly as many are on high and complex medication regimes which are managed using manual documentation. The elderly are more prone to various other risks that might be reduced or better managed with improved communications and management of resident information through ICT adoption.

Research under the Clinical IT in Aged Care Strategy (Department of Health and Ageing 2003) found there was a low level of adoption of ICTs (Information and Communication Technologies) in residential aged care facilities (RACFs). Current studies by the researchers involved with this paper provides further indications of frustration, a considerable time spent in documentation to meet regulatory requirements, inefficiencies due to paper-based record keeping, a heavy load of documentation and paperwork, and a perception that the sector is failing to take advantage of benefits offered by ICT. Even when there are systems in place to manage patient information within a health or aged care facility, there is often not provision for effective transfer of detailed, quality information when patients are referred.

A key strategy of both Federal and State governments is to provide better health care for frail/aged people and chronic illness sufferers in their place of residence (own home, nursing home, and so on). There is a strong incentive for this -- to reduce the demand on hospitals as well as often being the preference for patients themselves. The strategy of hospital avoidance (substituting community-based care for hospital care) is consistent with other countries facing similar increases in demand for their services due to ageing and the growing incidence of chronic illness. Shepherd and Illiffe (2005) in their review of published research found that some evidence exists that admission avoidance schemes can provide a less costly alternative to hospital care.

Hospital emergency departments are busy and time-pressured and consultations with elderly patients can sometimes be time-consuming. This current research indicates that the elderly may be admitted when there is not the time to fully explore options and the patient's suitability, elderly patients often present with multiple conditions requiring careful assessment, and admission may be seen as the most prudent course of action.

Although this is excellent as a concept, there are numerous practical barriers that prevent the efficient referral of hospital patients to community care service organisations that can provide health care support for people in their homes. These barriers include:

- the multitude of systems used by hospitals, GPs, RACFs and service providers that have been independently developed and are unable to share data,
- difficulties in consistently and reliably identifying candidates for hospital avoidance and home care, especially in time-pressured emergency departments,
- inefficient manual processing of referral requests, reporting and billing,
- manual processes of organising services with hundreds of service providers, and
- difficulties in tracking service delivery to ensure patients, especially those with high-risk conditions, have been attended to in a timely manner.

This paper reports on a case study of the ACCA (Advanced Community Care Association) single entry point model of community care referral and reporting, using the application. The study reported on in this paper indicates that this type of system and technology can provide the following benefits:

- makes the referral process easier,
- improves coordination with community-based services,
- improves the accuracy of clinical information communications,
- better enables community care service providers to plan and provide care through improved availability of information,
- improves patient outcomes, and
- delivers financial benefits.

Background

The Advanced Community Care Association (ACCA) is funded by the Government of South Australia to coordinate short-term community based services. A primary aim of the service is to

reduce avoidable hospital admissions. In the past three years, ACCA has been providing a single entry point for the referral and coordination of care. In that time ACCA has handled more than 17,000 short-term community care services. ACCA's single entry point model currently saves approximately $4.00 in the state's health system for every $1.00 spent on ACCA's coordination programs through diversion of patients from acute care to community care (van Konkelenberg).

A Web-based community care management system, eCare™, was developed by Nexus eCare, as a technology platform for ACCA's ability to deliver these outcomes. eCare™ is a business-to-business application that enables referrals from hospitals, general practitioners, and residential care facilities to be electronically received by ACCA's contact centre and then coordinated with a wide range of community based service providers.

This paper is based upon analysis of data provided by:

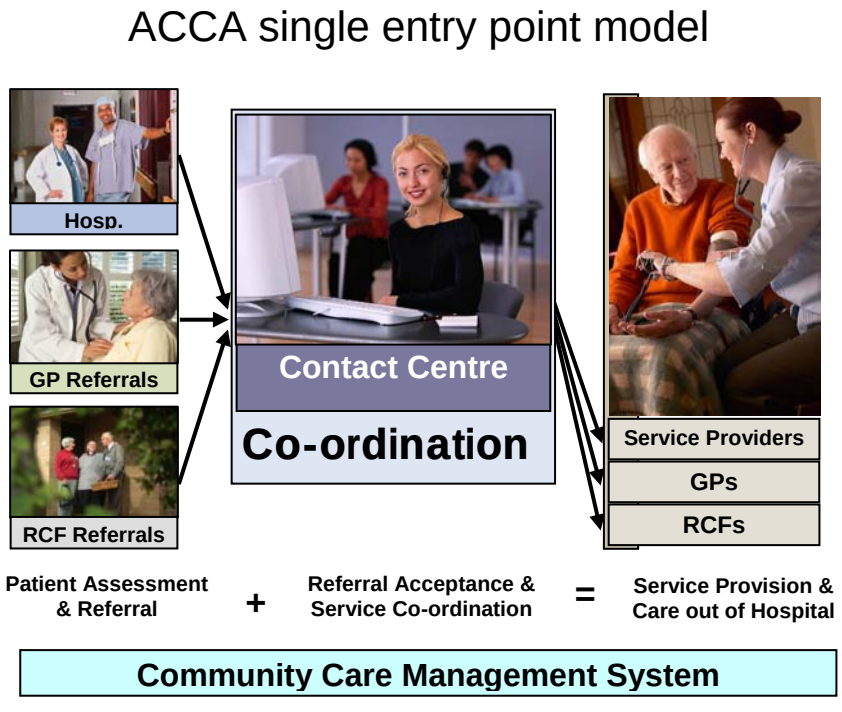
- eCare™ database of transactions
- Royal Adelaide Hospital (RAH)
- Nexus surveys

Description

In South Australia, barriers to reducing inappropriate admissions of the elderly have begun to be explored by the formation of a coordinating organisation that brings together key community care service organisations. Advanced Community Care (ACCA) is funded by the State Government of South Australia to coordinate short-term community based services aimed at avoiding and reducing hospitalisation.

A Web-based community care management system, eCare™, developed by Nexus eCare, provided the technology platform for ACCA's ability to deliver this programme. eCare™ is a business-to-business application that enables referrals from hospitals, general practitioners, and residential care facilities to be electronically received by ACCA's contact centre and then coordinated with a wide range of community based service providers.

The following diagram illustrates the flows between the referrers and service providers, with eCare™ providing the platform for each step of the process.



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The ACCA single entry point model incorporates a Contact Centre and eCare™ to provide a streamlined process for the referral of patients and delivery of care.

The Contact Centre engages 2nd and 3rd level nurses who are responsible for receiving, coordinating and monitoring services.

eCare™ provides specialised interfaces that enable hospitals, GPs, RACFs, the Contact Centre and Service Providers to electronically

share patient information.

Coordination of the referral process for primary, secondary and tertiary healthcare providers.

ACCA's single entry point model enables primary, secondary, and tertiary healthcare service providers to make referrals through a single point of contact using:

- Phone: one number to call
- Fax: one number to fax
- Web: one integrated online database for electronic referrals and reporting.

The major obstacle in making referrals to community based services, as an alternative to hospital admission, is the difficulty to identify the most appropriate service provider and program. (Nexus survey of GPs, 2004).

The total growth in referrals to ACCA has increased substantially over the past 2 years as shown in table 1.

Table 1 Quarterly growth of referrals to ACCA from July 04 to Dec 05

Jan - Mar 04 Qtr	Jul - Sep 04 Qtr	Jul - Sep 04 Qtr	Oct - Dec 04 Qtr	Jan - Mar 05 Qtr	Apr - Jun 05 Qtr	Jul - Sep 05 Qtr	Oct - Dec 05 Qtr
685	740	920	1,366	1,314	1,314	3,214	3,225
685	1,425	2,345	3,711	5,025	6,339	9,553	12,778

This represents an increase in referral volumes of 471%. (eCare™ database)

The technology used achieves a wide range of functions, including:

- identifying candidates for hospital avoidance,
- mapping services to patients,
- automating communication between hospitals and community service providers, and
- tracking service delivery by agencies.

The technology simplifies and reduces the cost of the current complex and resource intensive referral process. This is achieved through the extraction of data from the hospital's legacy systems, which is used to pre-populate a browser based referral form that can be electronically submitted.

A user comment collected during research was:

> "The major obstacle to making referrals to ACCA programs is the time that it takes to make the referral. Currently it takes at least 5 minutes to make a referral and often involves a number of follow up phone calls" (Transitional Care Nurse Royal Adelaide Hospital – prior to the implementation of electronic referrals).

Early discharge referrals to ACCA from the Royal Adelaide Hospital increased from 15 in January 05 to 104 in December 05, an increase of nearly 700%. (eCare™ database). The technology integrates with the hospital's legacy data systems to extract patient specific data and then applies selection algorithms to identify inpatients that are potential candidates for referral to community services. Although still in development, when completed, this module will highlight the most important conditions and risks for the clinician using intelligent filtering, including:

- analyses of laboratory results,
- drug history, and
- co-morbidities (ICD-10 codes).

Coordination of community-based services

The system addresses a key barrier to the efficient referral of hospital patients to community care service organisations, namely the predominantly manual process of organising services with hundreds of service providers. ACCA reduces the complexity of making a referral to community service organisations, by providing a single point of referral for all referrers. The Contact Centre provides centralised clinical support to referrers, coordinates services required for the patient and monitors progress. The technology provides a fast and low-cost link between institutional health-care providers such as public and private hospitals, nursing homes and other residential care facilities and a wide array of community-based health-care providers. This enables patient information, subject to client consent, to be transferred electronically without the need to re-key data.

Services are currently coordinated with approximately 180 different community care organisations, ranging from large institutions, such as the Royal District Nursing Service, to small cleaning and gardening services operated from home. (eCare™ database). A costing analysis was undertaken by Nexus eCare™ in October 2005 to determine the full cost of coordination services through the programme. Two snapshots were undertaken, one for the August 2005 period and one for the comparative previous year. The results of this analysis are shown in table 2 below.

Table 2. Coordination Costs

Period	Full Cost	Unit Cost
Aug 04	$115,722	$383
Aug 05	$139,549	$148
Change %	+21%	-61%

Although the costs of providing coordination services increased in real terms by 21%, this increase actually represented a decrease in the cost per episode of care of 61%. Note that the costs shown above do not include the costs of providing services to patients, or any service provider administration costs.

Through electronic referrals and reporting, standardised data formats, and standard procedures and policies, patient information can be securely shared amongst health professionals, reducing the need for re-keying, misinterpretation and errors.

Impacts on efficiencies of community care service providers

The technology used in the study incorporates a web based interface for community care service providers that have the ability to accept electronic referrals and to automatically generate electronic service reports and invoices back to the referrer. With the growth in referrals to community service organisations of approximately 250% over the past 2 years, the need to minimise manual data entry and inefficiencies throughout the whole supply chain is pertinent. (eCare™ database and Nexus surveys of service providers – March 05).

The current average time taken to enter a manual referral and schedule services is 05:40 mins. The current average time taken to receive an electronic referral and schedule services is 03:25 mins

Assuming 1,000 referrals per month this equates to 2,250 minutes, or 38 hrs per month

(Nexus surveys of service providers – March 05). In addition to the ability to receive electronic referrals, the technology also enables electronic reporting and billing by service providers to the referrer and, or funding organisation. The provision of timely feedback from community service organisations, to the referrer, of the services provided is pertinent to ensuring that the appropriate care has been delivered to the patient.

The system incorporates an automated checking procedure that regularly interrogates the database and notifies the appropriate personnel if a procedure has not been completed, i.e. the giving of clexane injection. Larger organisations have established sophisticated and expensive systems that enable their services to be tracked in real time. However, due to the manual processes that take place by many of the smaller service providers, it is not currently possible to check, in a timely manner, whether the appropriate services have been delivered. This area of inefficiency is currently being analysed to determine the potential for a centralised brokered service that would provide real time tracking on a cost effective basis for smaller organisations.

Impact on patient outcomes

The programme supported by the technology enables patient care management plans to be shared, subject to patient consent, privacy legislation and internal policies, between clinicians and community service providers. This improved co-ordination of services between service providers and a reduction in data keying errors.

Stringent service standards have been built into the model to ensure that patients referred` are followed up and services provided. These standards include:

- the patient referred is contacted within 1 hr of referral
- assessments, where applicable, are undertaken within 2 hours of referral

In the Oct to Dec 05 qtr, 93.3% (71) of clients received services within 24 hrs of initial contact. Of these, 21 clients were delayed due to client/referrer request, 4 were unable to be contacted and 5 were delayed in being discharged from hospital. (eCare™ database)

Impact on health care costs

To manage the pressure on hospitals current practice in health care is to (a) reduce the inflow of patients via the Emergency Department (ED), and (b) reduce the length of stay for inpatients by improving discharge times and practice. However, even if hospitals have the time and skills to target hospital alternatives the complexity of the logistics involved in communicating, tracking and monitoring community services limits widespread adoption of this process.

The system connects large organisations such as hospitals to lower cost service providers (community service organisations) who are able to significantly expand their service capacity. It aims to facilitate the fast and effective transfer of workload thereby enabling the hospitals to better manage the demand on their services, whilst shifting large workload volumes to more appropriate and lower cost providers at the community level.

It is probable that referrals are made to larger organisations that are known to the coordinator making the referral, or to those organisations where the referral process is the easiest. This project will make smaller organisations more visible to the referrer and standardise the process for making referrals. This may in turn lead to increased industry competitiveness.

Summary

This paper suggests that making it easier for referrals of the elderly, who might otherwise be admitted, indicates the value of expanding ACCA's single entry point model, and Nexus eCare's online application, to provide a single system-wide application for all hospitals and community-based health care enterprises to use. It shows the benefits of these systems to the efficient and cost-effective provision of health care services, enabling community-based health care enterprises to expand, and the workload pressures on hospitals to diminish.

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