

# **APPENDIX A**

## **LITERATURE REVIEW**

**VICTORIAN DEPARTMENT OF HUMAN  
SERVICES**

**Literature Review**

**EVALUATION OF THE INTERIM CARE PROJECT**

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# 1 INTRODUCTION

## 1.1 PURPOSE

The aim of this literature review is to:

- Examine the national and international literature on Interim Care, and similar models of care. The models of care will be examined from the perspective of the driving factors that lead to the development of the models. Interim Care is one of the many policy initiatives that has been simultaneously developed by the Victorian Department of Human Services in response to the demand on acute services and emergency departments. These concurrent policy initiatives are briefly described in this paper;
- Describe the quality of care principles that are relevant for Interim Care, which may be derived from the acute, subacute, and residential care sectors;
- Detail the outcomes of post acute care models in terms of length of stay, readmission rates, and other parameters; and
- Investigate the utility of parameters that have been employed in studies of post acute care in the relevant evaluation research. This will inform the evaluators' capacity to interpret the validity of their findings.

## 1.2 BACKGROUND

The information in this section of the document has been extracted from the Evaluation of the Interim Care Project tender documents.

Interim Care commenced as a pilot program in 5 Metropolitan Health Services in the 2001/02 financial year in response to the reduction of access to acute beds. One cause is seen to be a group of older people, who have completed their acute or sub-acute treatment, and are waiting in hospital to return to the community. The Interim Care program provides active management of those patients to secure more appropriate accommodation.

The objectives of Interim Care are:

- At the Patient Level:
  - To work actively with families, carers, service providers and patients themselves to find appropriate accommodation;
  - To provide an appropriate level of care to patients, who are waiting to move to residential or similar care; and
  - To maintain the patients' functional abilities while in Interim Care.
- At the Health Service Level:
  - To provide quality care during the patients' temporary stay in interim care; and
  - To improve patient "flow" from acute and sub-acute care through the system.

The five Health Services involved in the pilot are:

- Northern Health;
- Southern Health;
- Eastern Health;
- Melbourne Health; and
- St Vincent's Health, formerly known as the Sisters of Charity.

The first four Health Services have received additional funds to provide Interim Care, while the St Vincent's Health is providing the program from existing resources by reconfiguring GEM and rehabilitation beds. Interim Care is being offered in three ways:

- inpatient service;
- bed-based services in external facilities; and

- community based program with brokered services.

Eastern Health and Northern Health are operating more than one Interim Care model. Considerable variations exist between the health services' models of Interim Care.

### 1.3 REVIEW METHODOLOGY

This report is based on information collected by three main methods. First, published reports in peer reviewed journals relating to residential aged care concepts and care delivery models were identified via a Medline search. Key search items included:

- Interim Care;
- Transitional care;
- Post-acute care;
- Discharge Planning;
- Quality measurement / aged care;
- Quality measurement / acute care.

Secondly, general internet searches for relevant subject matter were made using a variety of search engines. Key search items included the above terms. In addition, focused searches of the Department of Human Services and the Commonwealth Department of Health and Ageing web sites were undertaken.

Thirdly, the above sources were supplemented by identification and review of State and National government reports. Relevant documents were identified via consultation with the project steering committee.

The following report presents a synthesis of selected literature obtained via this strategy.

Apart from literature relating to services such as the Hospital in the Home or similar concepts, there is little publicly accessible research on services such as bed brokering, or models that are directly comparable to the models being currently evaluated in this project. For this reason, the internet search and review of internal government documentation has supplemented the peer-reviewed literature search.

The report is structured in five main sections, Sections 2 – 6. Section 2 describes the historical, political and supply/demand forces that influence the Interim Care program. Section 3 discusses the types of models in the literature that have similarities to Interim Care. Section 4 examines the evidence base pertaining to primarily 'in home' models of care, as an alternative to acute or residential care, whilst Section 5 investigates the types of outcome and performance measures that have been utilised in the development, monitoring and evaluation of models of care. The final section of the report will inform the current evaluation, especially relating to the development of evaluation research questions and identification of evaluation parameters.

## 2 HISTORY, CONTEXT AND IMPACTS ON INTERIM CARE OPERATIONS

There are a number of factors that have influenced the development of the Interim care program, and a number of issues that continue to guide and affect its operation. Broadly, we view these issues as sitting within demand, supply or care pathway domains. These issues are explored below.

### 2.1 DEMAND DRIVERS

Demand is influenced by a variety of factors, at both the individual and population level. Client choice, morbidity and mortality trends, demographic indicators and changes in family structure are all contributors to demand for acute and aged care services. Some of these issues are addressed below.

#### 2.1.1 DEMOGRAPHIC INDICATORS

##### AGEING

Changes in population age structure are determined by the demographic factors of fertility, mortality and migration<sup>i</sup>. Australia's level of fertility has declined since 1971 and has been below replacement level since 1976. This decline has contributed substantially to population ageing by increasing the proportion of older people in the total Australian population<sup>ii</sup>.

In the meantime, the Australian population experienced a decline in mortality and an increase in life expectancy among older people during the 1970s and 1980s. The low level of fertility and the decline in mortality rate among older people have resulted in a higher proportion of older people in the total population.

Life expectancy assumptions are important to projections of the proportion of the aged population, and in particular for projections of the number of the very old (aged 85+). This group is particularly important to expenditures on aged care and health<sup>iii</sup>. Reflecting increased life expectancy, the proportion of the population aged more than 85 years is expected to rise from 1 per cent today to around almost 5 per cent by the year 2051<sup>iii</sup>.

A demographic decomposition study was carried out as part of a comparative analysis of the three consecutive ABS disability surveys (1981, 1988, 1993) to clarify two factors, population ageing and changing age-specific prevalence rates (which underlies the trends in reported overall prevalence of disability and handicap)<sup>iv</sup>.

The analysis also demonstrated that the overall age-standardised prevalence rates of severe handicap were quite stable during the 1980s and early 1990s, remaining at a level of slightly over 4% for the population overall, about 2.5% for people aged 15 to 64 and around 17% to 18% for people aged 65 and over. In contrast, the age-standardised prevalence of disability and overall handicap increased substantially between 1981 and 1988, although they levelled out between 1988 and 1993<sup>3</sup>.

The analysis showed that the influence of changing prevalence rates within specific age groups was equal to or greater than that of population ageing in the early 1980s. However, the influence of changing prevalence rates within specific age groups diminished and actually fell below zero during the late 1980s and early 1990s. In contrast, the influence of the changing age structure was evident throughout the 12-year period. The influence of the ageing population was greater between 1988 and 1993, particularly affecting reported overall prevalence rates of severe handicap<sup>3</sup>.

Decomposition analysis confirms that age structure is the dominant factor in changing reported prevalence of severe handicap. Between 1981 and 1993 increases in reported prevalence of severe handicap were largely accounted for by the ageing of the population rather than by changes in age-specific prevalence. <sup>3</sup>

## AGE AS A COST DRIVER

Compared to the rest of the population, persons aged over 65 years, have per capita health expenditure around four times higher, are admitted to hospitals more often and stay longer and have expenditure on pharmaceuticals some 2.5 times higher<sup>v</sup>. Moreover, the health costs of the aged group tend to be concentrated on the over-75 years age group, projected to be the most rapidly growing. In 1993-94, according to McIntosh (1998)<sup>vi</sup>, 35 per cent of the total expenditures of the health system was on people over 65, at a time when this group comprised less than 12 per cent of the population.

The average costs of nursing home care are around \$30,000 a year for each nursing home place (Department of Health and Family Services, 1998)<sup>vii</sup>.

One estimate that has been produced is that in 1997-98 aged care services accounted for 0.7 per cent of GDP, with residential care accounting for 76 per cent of this<sup>viii</sup>. However, this figure does not capture the provision and cost (in terms of money, time and effort) of aged care services provided by families, friends and other unpaid carers.

The Commonwealth Department of Health and Aged Care (1999)<sup>ix</sup> provides projections of the effects of population growth and ageing on acute care costs (hospital admissions). According to the model, the ageing population profile has the effect of raising the annual rate of increase of hospital costs from around 0.5 per cent in 1997 to a peak of 1.3 per cent in 2015, but thereafter a decline to 0.2 per cent in 2051 occurs. The model says ageing will increase real hospital costs by around \$4 billion (in current dollars) a year by 2051, mainly due to the increase in the number of people over 65 years. Although expenditure on acute care will increase, the projected annual rates of increase are below the projected annual rate of growth in real GDP. In this sense, the costs due to population increase and the ageing population appear to be sustainable.

The major specific or targeted items of Commonwealth Government funded benefits and services available to the aged include pensions, rent assistance, residential services, public housing, medical and pharmaceutical benefits, acute care hospital services and home and community care programs. Although this discussion has centred on the cost implications of ageing on health and aged care, major areas of public funding growth will also occur in age pensions, and housing. State Governments also provide a range of health, housing and welfare services for the aged. It is also recognised that significant private expenditures are incurred by the private sector, including the families and voluntary supporters of the aged.

Access Economics<sup>x</sup> estimates suggest that demographic effects (and resultant rising per capita utilisation) may add to health care costs the equivalent of 1.78 per cent of national output (\$11.6 billion in 2000 dollars) by 2031.

### 2.1.2 DEMAND FOR INPATIENT/ ACUTE /SUBACUTE SERVICES

The Medical Inpatient Study found that the ALOS for a medical inpatient in the five Melbourne metropolitan hospitals in their study was 7.2 days. Patients who were discharged to home, have an ALOS of 6.1 days. Patients who are discharged to nursing homes, however, have an ALOS of 15.5 days. These patients, who are discharged to nursing homes, comprise only 1.7% of total separations, but make up 3.6 % of the total bed days at the hospitals.

Millard et al (2000)<sup>xi</sup> highlighted that indicators such as average length of stay, average occupancy and average admissions are misleading and demonstrated this by comparing two groups of surgical patients, the simple and the complex. Simple surgical patients are those with shorter lengths of stay (ALOS 4.8 days) and less use of resources, complex are those patients with longer lengths of stay (ALOS 20.4 days) and a higher demand on resources. These two groups demonstrated two streams of bed flow. Deriving ALOS from their combined length of stays provided misleading results but by separating and analysing the groups separately, it enabled the flow model to demonstrate different resource use and provided focus for how to improve the quality of patient care. This is understandable given that LOS is influenced by many factors including: individual characteristics of the patient; range and quality of hospital services; and availability of community care. It would be of benefit to explore the transferability of this model to studying acute medical patients.

Millard et al (2000, op cit) used the data for these two groups of surgical patients to analyse the bed flow and then manipulated the flow model to evaluate the effect increasing bed capacity and changes of LOS would have upon the overall throughput of the hospital. They demonstrated that energy focused on decreasing the length of stay of

the simple acute patients and increasing the bed capacity only provided short-term gains, whereas concentrating on the prevention and management of complexity is both more effective in reducing length of stay and sustainable over the longer term.

Millard et al (2000) also discussed the use of flow models to compare different medical units but cautioned the need to consider some key factors prior to this, namely, that speed (LOS) does not indicate quality of care, rather, quality is gauged by the impact of the medical or surgical intervention. In addition, any performance comparison has to take into account degrees of difficulty.

Menec et al (1999) and Blatchford and Capewell (1997, in DHS 2001 – 1) systematically analysed peak periods of demand in public hospital Emergency Departments, and found that high pressure periods were unrelated to the absolute number of beds in the system, but were rather strongly correlated with predictable peaks in demand during winter months. Recommendations to reduce hospital overcrowding include preventative influenza inoculations targeting at risk groups, timely discharge of elderly inpatients to more appropriate treatment settings when they no longer required acute care, and the institution of procedures and guidelines to standardise and facilitate patient management and flow.

Hider et al (2000)<sup>xii</sup> in Anderson et al (2001) concluded that the increase in medical admissions in hospitals is due to three types of factors: patient mediated, gatekeeper related and health care organisation related. The main factors associated with an increase in medical admissions to hospitals are an increasing number of elderly people, a reduction in socio-economic status for some groups, and changing patterns of societal care, notably a decreasing ability of families to provide residential care for elderly family members. These factors are largely outside of the control of health services.

Fullerton and Crawford (1999)<sup>xiii</sup> found that a significant winter peak occurred for general medicine and orthopaedics. Geriatric Medicine had a high and fairly constant occupancy, with some seasonal effect. They concluded that seasonal trends in bed occupancy are predictable, and that more effective bed management would make a very significant contribution to avoiding bed crises.

From around mid-1998, there has been an increase in the number and proportions of people waiting for long periods (ie > 12 hours) for a hospital bed (ie those admitted via the emergency department) in Victoria. There has been a declining availability of critical care (ICU and CCU) beds in Victoria from around January 1998 onwards. The overall pattern is one where 'open' critical care beds have remained constant, and 'available' critical care beds have declined<sup>1</sup>.

The Metropolitan Ambulance Service and the Department routinely report ambulance performance using a number of variables<sup>2</sup>. From around March 1999, ambulance by-pass incident frequency began to rise, after a long period of relative stability. The increase between June 1999 and September 2000 has been steep (rising from well below 200 cases per quarter to around 1,100 cases per quarter). The Department notes that the additional acute and sub-acute beds opened from April 2000, as part of the Winter Emergency Demand Strategy resulted in a temporary reduction of 30% in ambulance bypasses between April and May 2000<sup>xiv</sup>.

Cameron et al (1999)<sup>xv</sup> found that the effect of bonus payments made to public hospitals to improve access to care for patients attending emergency departments was to significantly reduce the number of occasions of ambulance bypass and number of times spent waiting longer than 12 hours in an emergency department.

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<sup>1</sup> The rate of decline is slight, but the significance of this decline cannot be assessed from the available data. 'Available' beds are those which are functioning, are staffed, and unoccupied. 'Open' CCU beds have steadily declined (from between 75-80 beds to around 70 beds) since 1996, whereas 'open' ICU beds have steadily increased (from 85-90 to around 95) since 1996. In this context, 'open' beds refer to all 'functioning and staffed beds, regardless of whether they are occupied'.

<sup>2</sup> The Department has adopted the 'hospital by-pass' indicator as a key performance measure. This indicator is intended to indicate when hospital emergency departments have 'reached maximum capacity and the treatment of patients already in the emergency department could be significantly compromised by the ambulance arrival of an additional patient requiring treatment. Each individual period of ambulance by-pass is for two hours or less' (As defined in 'Quarterly Hospital Services Reports', Department of Human Services).

## **PATIENT FLOW MODELLING**

Bagust et al (1999) examined the daily bed requirements arising from the flow of emergency admissions to an acute hospital, to identify the implications of fluctuating and unpredictable demands for emergency admission for the management of hospital bed capacity, and to quantify the daily risk of insufficient capacity for patients requiring immediate admission. They utilised a discrete-event stochastic simulation model, which reflects the relation between demand and available bed capacity to model the dynamics of the hospital system.

They found that risks of having no bed available for a patient requiring immediate admission are minimal so long as the mean bed occupancy remains below about 85%. Above this level the risks become substantial (at 85%, a hospital can expect to be short of beds for admissions on four days in a year), and above a mean bed occupancy of 90% the system is regularly subject to bed crises.

Furthermore they found that a hospital that experiences a day on which no further admissions can be accommodated can expect to recover its long term demand-capacity balance in a period approximately equal to twice the mean length of stay. This implies that even a relatively low risk of failure can disrupt the operation of the hospital for a considerable time: at 85% mean occupancy, a hospital that runs out of beds for four days in a year may be disrupted for up to eight weeks in total.

The authors acknowledge that the study has limitations in that it does not consider the complex organizational and psychological behaviours that are likely to occur as the hospital approaches maximum capacity.

However, the study does have implications for the metropolitan health services in Victoria. The Medical Inpatient Study Report (op cit) found that five Melbourne major hospitals had bed occupancy rates of around 99%. This study included three of the hospitals that feed into hospitals which are piloting the Interim Care Project – Monash Medical Centre, St Vincent's and Royal Melbourne Hospital.

The probability of access block is shown to increase exponentially as occupancy increases above some critical level (eg, 90%). It may be that the Melbourne public hospital system passed a 'breakpoint' in the curve of risk of access block during recent winters, such that a modest increase in demand caused a dramatic increase in performance failure. The implication for Victorian hospitals is that efforts to improve performance on access block will only succeed if they can be successful in bringing the system back to a point of equilibrium, where there is some spare capacity to cope with peak demand (Department of Human Services 2001 -3)<sup>xvi</sup>.

## **EMERGENCY DEMAND MANAGEMENT**

Emergency Demand Management A New Approach (Department of Human Services 2001<sup>xvii</sup> – 3) points out that historically, the management of health services has centred on the management of supply rather than demand. Demand management is about ensuring the development of the most cost-effective, appropriate and equitable health system possible.

The key issues, identified by the Emergency Demand Management document, faced by the Victorian health care system include:

- The nursing staff shortage which is limiting capacity to increase acute bed numbers;
- Reduction in the number of nursing home beds leading to difficulties in discharging patients to residential care;
- Socio-economic changes including increasing numbers of older people presenting to public hospitals with more complex health care needs and requiring longer hospital admissions; and
- Health services in the metropolitan region are inappropriately configured to meet the changing demand.

On any one day, approximately 350 beds are occupied by people waiting for nursing home and hostel placement. This is an equivalent of a major suburban hospital is not available for people needing hospital care (DHS 2001 – 3, opcit).

The Department has recognised the need to address the opportunities for systematic and collaborative solutions through a strategy to achieve short and medium term benefits. The approach has resulted in the formation of:

- The Patient Management Task Force; and
- The Emergency Demand Coordination Group.

Interim Care is one initiative emanating from the work of the Emergency Demand Coordination Group.

#### **WINTER EMERGENCY DEMAND STRATEGY**

The Winter Emergency Demand Strategy (WEDS) was implemented in April 2000 specifically to address this issue. It takes a multi-faceted approach to managing increases in demand for hospital services. As part of this strategy, major public hospitals have been provided with additional funding to improve co-ordination of care both within the hospital and with other services, and to enable participation in a quality improvement program for emergency services. Each of the twelve major metropolitan hospitals participating in this project is funded under this care co-ordination initiative.

The aim was to improve the response time of hospitals to emergency department patients and establish better linkages between emergency departments and other service systems. The underlying principle is that through the introduction of a care coordination function in emergency departments patients are ensured that they receive appropriate and timely care and are discharged from the emergency department in an effective and appropriate manner. By referring patients to appropriate services in a timely way the need for initial presentation, admission to an inpatient bed or future presentation can be reduced. For patients who are admitted to hospital, the provision of improved care co-ordination can also enable discharge planning to begin on presentation at the emergency department. Funding for this initiative began in the fourth quarter of 1999/2000 and each hospital was provided with \$100,000 per quarter.

#### **2.1.3 RESIDENTIAL AGED CARE SERVICE DEMAND**

During the 12-month period from 1 July 1999 to 30 June 2000, 49.1 million place-days were used in aged care homes in Australia, consisting of 48.2 million days for permanent care and just under 1 million days for respite care. Overall, about 2% of occupied place-days were used for respite purposes. The average occupancy rate, excluding services provided under community aged care packages, was about 96% during the reporting period and this was slightly higher than the previous rate reported.

Nearly half of those residents in aged care homes at 30 June 2000 were aged 85 and over. This pattern was very similar across the States and Territories, with the exception of the Northern Territory where only 26% of residents were aged 85 and over. Nationally, there were 6,151 residents aged under 65 accommodated in aged care homes, comprising about 4.5% of all residents.

These data, coupled with the demographic indicators presented above, indicate that demand for aged care places is likely to increase in the short to medium term.

#### **2.1.4 NATIONAL HEALTH SERVICE**

In the United Kingdom, the National Health Service 'National Beds Inquiry Consultation<sup>xviii</sup>' invited members of the public and professionals to inform the Government what pattern of services the NHS should provide in the future, focusing on services for older people as the main users of hospital services. Responses were received from a wide range of sources including individuals, primary care groups, health authorities, trusts, royal colleges, doctors, nurses, other health service professionals, academics, local councils, community health councils, unions, charities, private companies and other representative organisations.

Respondents envisaged a service that would be more 'joined-up' with patients moving along tailored care pathways and no discernible divide between the different elements of the health and social care system. In particular:

- there was near universal support for development of 'care closer to home';
- in the short- and medium-term, however, the majority felt that there was a need to at least maintain adequate numbers of acute beds;

- there was a need to radically integrate the way the NHS works with social services;
- the majority of the respondents wanted to create a 24-hour a day 7 day a week 365 day a year integrated health and social service system focused on the patient;
- this new service should be based around the key themes of patient empowerment and education of the public; and
- prevention of disease and early intervention in the community would be of fundamental importance.

Respondents saw the use of intermediate care as central to this more joined-up approach. It should concentrate on maintaining and restoring independence, and on rehabilitation. It would act as a bridge between community and hospital care. Both staff and patients would experience new ways of working which would blur the boundary between primary and secondary care. Specific elements of this new service would include:

- non-appointment 'drop in' facilities;
- fast access to diagnostics and pathology leading to effective interventions;
- multi-disciplinary teams focused on particular groups and conditions;
- a mix of nurse, therapist, consultant and GP led services;
- fast access to acute settings where needed;
- access to non-acute inpatient settings where appropriate; and
- timely discharge into appropriate settings.

Within this new service a new generation of staff including specialist GPs, multi-skilled workers, geriatricians, nurses, social workers and professions allied to medicine would apply their particular skills in both acute and community settings. The private and voluntary sector would have important roles to play. This new environment would be supported by electronic patient records and a fuller use of new technologies.

Although much of the National Beds Inquiry was focused on the particular needs of older people, the majority of respondents also felt that other patient groups would benefit from a similar joined up approach.

The NHS response to the Inquiry has been to commit to:

- 7,000 extra NHS beds by 2004;
- of these around 2,100 extra beds will be in general and acute wards. This will be the first increase of its kind in 30 years;
- 5,000 extra intermediate care beds, some in community or cottage hospitals, others in specially designated wards in acute hospitals. Some will be in purpose built new facilities or in redesigned private nursing homes;
- 1,700 extra non-residential intermediate care places; and
- a 30% increase in adult critical care beds over the next 3 years as a result of resources allocated this year and to follow over the next three years.

These increases in beds and places, especially for older people, should help improve bed availability levels in hospitals.

The National Beds Inquiry Consultation and the subsequent NHS response reflect the growing realisation that the answer to the scarcity of acute hospital beds is not purely to increase the supply of the acute hospital beds only. The acute hospital sector now should be viewed as one of a part of a spectrum of care types that cater to a spectrum of needs of people. These needs encompass a variety of health, aged and social problems. A response to the variety of health, aged and social needs that mainly involves acute beds is not only expensive, but is uni-dimensional and does not offer the diversity of care required by people with mainly non-medical and especially complex needs.

The role of the institutions in fostering links between the different types of care should also be highlighted. There needs to be internal structures in place to allow for appropriate and timely transition between care types as the patient's needs change and evolve. Planning processes need to include the appropriateness of admission to the all services including the acute setting, and the role of discharge planning.

## 2.2 SUPPLY DRIVERS

### 2.2.1 SUPPLY OF COMMONWEALTH AGED CARE PLACES

Because aged care places and community aged care packages (CACPs) are intrinsically linked, they are usually combined to present an indication of the provision of aged care against the planning ratio. The planning ratio target is 100 combined places and packages per 1,000 persons aged 70 years and over. The provision ratio declined in the late 1980s and early 1990s but stabilised in the mid 1990s at around 93 places and packages per 1,000 persons aged 70 years and over<sup>xix</sup>. Recently the ratio has begun to rise as a consequence of new aged care places and packages being made available<sup>xx</sup>. Table 2.1 shows the number and ratio of operational aged care places and community aged care packages in Australia from 1994 to 2000.

**Table 2.1 Combined operational residential aged care places and community aged care packages provision ratio per 1,000 persons aged 70 years and over, 1994 to 2000 (Australia)**

Year	Combined Ratio
1994	93.5
1995	93.9
1996	93.5
1997	93.3
1998	93.7
1999	93.9
2000	94.5

Based on Australian Bureau of Statistics (ABS) population estimates released in December 2000. (Note: The data in this table were extracted from residential aged care service datasets provided to the Australian Institute of Health and Welfare by the Department of Health and Aged Care).

Residential aged care provision nationally increased in absolute terms from 140,651 places at 30 June 1999 to 141,162 places at 30 June 2000. In addition, the provision of community aged care packages increased substantially from 13,753 at 30 June 1999 to 18,149 at 30 June 2000. The combined ratio of residential aged care places and community aged care packages per 1,000 persons aged 70 years and over increased from 93.9 at 30 June 1999 to 94.5 at 30 June 2000.

Dependency levels, of clients in the aged care system, as measured by the Resident Classification Scale<sup>3</sup> (RCS) were continuously rising among both nursing home and hostel populations over the years preceding the introduction of the single system in 1997. As was expected, this trend toward increasing dependency levels was continued with the amalgamation of the two systems into one single system. Between 30 June 1998 and 30 June 2000, the proportion of residents classified as high care (RCS 1 to 4) rose from 57.8% to 61.8%, while those classified as low care (RCS 5 to 8) fell from 42.2% to 38.3%. This decline has been most marked in RCS 8, reflecting an increasing emphasis on providing services to those with personal care needs, rather than primarily accommodation needs. Available residential care places have thus been targeted to a progressively more dependent group of people. This pattern is in keeping with established government policy which aims to provide a greater proportion of care for people in their homes who would otherwise be eligible for low-care residential support. During this same period the supply of community aged care packages, aimed at providing the equivalent of low-care residential support to people still living in their own homes, has expanded significantly.

The ratios of the combined number of operational community aged care packages and residential aged care places per 1,000 persons aged 70 and over at the State/Territory level were: Northern Territory (135.3), the Australian Capital Territory (101.0), Queensland (99.2), Tasmania (95.7), Western Australia (95.5), South

<sup>3</sup> Resident dependency levels are indicated by the Resident Classification Scale (RCS). The RCS replaced the Resident Classification Instrument (RCI) previously used to measure dependency in nursing homes and the Personal Care Assessment Instrument (PCAI) formerly used to measure dependency in hostels. The RCS comprises eight categories which represent eight levels of care in descending order of severity from 1 to 8. The level of Commonwealth care subsidy is based on the level of care need indicated by each RCS category. Categories 1 to 4 represent high care and categories 5 to 8 represent low care. The RCS was introduced from 1 October 1997, with the merging of nursing homes and hostels into a single residential care system. From that time, all new residents were classified using the RCS categories.

Australia (95.4), New South Wales (94.5) and Victoria (90.0). The corresponding ratios for residential aged care places per 1,000 persons aged 70 and over also varied across the States and Territories. The Northern Territory had the highest level of provision at 89.2 places per 1,000 people aged 70 and over, followed by Queensland (88.3), South Australia (85.3) and Western Australia (84.7). These were followed by New South Wales (83.9), the Australian Capital Territory (83.7), Tasmania (83.3) and Victoria (79.7). Victoria has had the strongest growth in residential provision over the past 15 years of all the States and Territories, yet provision in this state remains below the national average.

The following table illustrates the low allocation of residential care places in Victoria, from a perspective of the planning ratios and compared to allocations in other states and territories. The Department of Human Services (2001)<sup>xxi</sup> identifies that the inadequate availability of low and high level residential care places is strongly linked to "blockages" upstream in acute and subacute service. This is seen as the major reason for the extended lengths of stay in hospital by elderly people, who are medically ready for discharge to a more suitable environment.

**Table 2.2 Operational Residential care places and CACPs per 1,000 people 70 years and over, by geographic area (as at 30/6/00)**

	Capital Cities	Other Metropolitan	Large Rural	Small Rural	Other Rural	Remote Centres	Other Remote	Total
State/Territory	Ratio							
Places								
NSW	90.1	75.6	71.9	71.9	72.3	..	68.2	83.9
Vic	79.5	83.2	94.0	78.5	76.5	..	15.0	79.7
Qld	91.2	81.4	92.7	82.2	88.5	97.2	62.4	88.3
WA	89.7	..	..	86.0	52.8	115.4	35.2	84.7
SA	91.8	..	61.7	72.9	69.8	..	0.0	85.3
Tas	87.9	..	85.8	84.4	73.0	..	81.0	83.3
ACT	83.7	..	..	..	0.0	..	33	83.7
NT	80.4	..	..	..	0.0	247.6	17.5	89.2
<i>Australia</i>	<i>87.2</i>	<i>78.2</i>	<i>90.5</i>	<i>77.2</i>	<i>74.7</i>	<i>117.4</i>	<i>45.1</i>	<i>83.8</i>
Packages								
NSW	11.6	10.0	12.9	9.6	6.8	..	7.8	10.6
Vic	11.0	15.4	20.5	13.1	1.6	..	7.1	10.4
Qld	8.4	13.3	11.7	9.2	11.8	16.8	34.5	10.9
WA	10.1	..	..	9.5	10.8	43.8	12.9	10.8
SA	10.3	..	11.1	12.7	8.8	..	8.5	10.2
Tas	11.5	..	17.6	8.0	12.2	..	0.0	12.4
ACT	17.4	..	..	..	0.0	..	..	17.4
NT	20.5	..	..	..	0.0	128.0	54.6	46.1
<i>Australia</i>	<i>10.8</i>	<i>11.6</i>	<i>14.4</i>	<i>10.4</i>	<i>6.9</i>	<i>36.2</i>	<i>19.5</i>	<i>10.8</i>
Total								
NSW	101.7	85.6	100.6	81.5	79.2	..	76.0	94.5
Vic	90.6	98.6	114.5	91.6	78.1	..	22.1	90.0
Qld	99.6	94.8	104.4	91.5	100.3	114.0	96.9	99.2
WA	99.8	..	..	95.5	63.5	159.3	48.0	95.5
SA	102.1	..	78.2	85.6	78.7	..	8.5	95.4
Tas	99.4	..	103.5	92.4	85.2	..	81.0	95.7
ACT	101.1	..	..	..	0.0	..	..	101.0
NT	100.9	..	..	..	0.0	375.6	72.2	135.3
<b>Australia</b>	<b>98.1</b>	<b>89.8</b>	<b>104.9</b>	<b>87.6</b>	<b>81.7</b>	<b>153.6</b>	<b>64.6</b>	<b>94.5</b>

Victoria's historical and present low allocation of residential care packages is viewed as a major contributor of acute and subacute hospital system sub-optimal patient flow rates.

### 2.2.2 INPATIENT/ACUTE BED SUPPLY ISSUES

Supplementing these data is qualitative information derived from the Department of Human Service (2001–2) Medical Inpatient Study Report. This study collected data via a bed census on a particular day at the five hospitals in the study. The researchers asked hospital staff to identify reasons why patients who were medically fit for discharge but were not discharged on the day. A total of 956 medical patients were included in the census throughout the five hospitals. The overwhelming reason that staff identified for these patients not being discharged was waiting residential place to be available or to be arranged.

Johnson et al (1997)<sup>xxii</sup> undertook a 3 month prospective study to determine if there was a delay between a patient being considered medically fit for discharge by a general medical unit and the date of actual discharge. They found that a delay in discharge of one day in 31.1% of patients, with total number of days attributed to discharge delays representing 17% of all bed days. Major causes of delay were insufficient institutional care beds and failure to plan patient discharges.

The authors advocated the use of Interim Care wards to provide flexibility in placing patients and to relieve some of the pressure on acute medical wards. Effective discharge planning is an integral element of care co-ordination and is linked with pre-admission, case management and clinical pathways. A study undertaken by Johnson et al 156 in Brisbane also demonstrated that delays in discharge led to wasted bed days. The major causes are lack of nursing home beds and the failure to plan effectively for discharge. High re-admission rates, increased Emergency Department attendances, extended inpatient stays and higher hospital acquired infections are also symptoms of poor discharge planning.

Renwick et al (1992)<sup>xxiii</sup> performed a study 195 of Australian inpatient morbidity data for 1988-9 and 1989-90 found that 7% of Occupied Bed Days (OBDs) were used by elderly people who were discharged home after stays of 35 days and probably many of these could have been discharged to the community had appropriate support services been available. Older patients who probably should have been receiving care in nursing homes used another 6-9% of OBDs. It would be valuable to have more recent data on this situation.

National Hospitals Demonstration Project Phase 2<sup>xxiv</sup> (NDHP-2) was designed to identify and evaluate innovative service delivery approaches that would overcome barriers to efficient, high quality integrated management of all hospital admissions. The program was funded to identify and document an integrated bed management model/s which would address the management of all types of hospital admissions through the identification of best practice principles.

Principles of bed management are essential elements required to optimise the use of a hospital bed and manage the continuum of care. The principles illustrate that improving the availability of hospitals beds is not achieved by simply increasing the supply of beds, but active management of admission, planning and discharge processes is paramount. The principles include:

- There is an organisation-led commitment to manage all hospital beds.
- There is a centralised point of authority and accountability for the allocation of all hospital beds.
- A bed management forum is established to identify and resolve bed management problems. The hospital executive supports this forum.
- A documented policy framework supports integrated bed management principles.
- The function of allocating all hospital beds is centralised.
- Bed allocation staff have appropriate authority to allocate beds.
- Integrated bed management occurs 24 hours per day, every day.
- Integrated bed management must be linked with the needs of inbound and outbound patient traffic.
- Allocation of hospital beds is based on agreed medical criteria.
- The allocation of beds to clinical units is notional.
- A flexible bed base is built into the operating requirements to meet fluctuating bed demands.

- Patients are admitted to their correct speciality ward/unit on admission or within 24 hours where appropriate.
- A patient's episode of care is planned from pre-admission/emergency, through admission and discharge back to the community. Patients and carers are partners in this process.
- An interdisciplinary team plans and coordinates care and support services for a patient's episode of care.
- Integrated bed management is supported by accurate real time information. Data is continuously collected, audited, analysed and disseminated to guide resource management and optimise efficiency.

## 2.3 RESIDENTIAL CARE ENTRY PERIODS

The information in this section has been extracted from the AIHW document 'Entry Period for Residential Care'<sup>xxv</sup>.

Entry period has been used as a performance indicator by the Department of Health and Ageing in its annual reports and in the reports of the Steering Committee for the Review of Commonwealth/State Service Provision. In recent years, entry period has been increasing and concerns have been raised that this may indicate a decrease in the accessibility of residential aged care. Entry period, however, is not a measure of waiting time and care must be taken in interpreting trends in entry period as though they were the equivalent of trends in waiting time.

Entry period is defined as the difference in days between a resident's admission to care and the date on which the ACAT approval for such care was signed.

### PATIENT CHARACTERISTICS

The patient characteristics that affected the entry period for residential care were:

- Dependency measured by RCS level;
- Age;
- Sex;
- Marital status;
- Living arrangements;
- Concessional status;
- Use of respite packages; and
- Use of care packages.

#### *Dependency measured by RCS level*

Median entry period varies substantially between those individuals who are admitted at RCS levels 1–4 (24 days) and those who are admitted at RCS levels 5–8 (55 days). This difference is observed in all States and Territories with the exception of the Northern Territory, where the pattern is reversed (96 days for RCS levels 1–4 and 21 days for RCS levels 5–8). The trend towards a shorter entry period for RCS levels 1–4 is most pronounced in the Australian Capital Territory and South Australia, and least pronounced in Queensland, Victoria and Western Australia. Dependency is clearly an important factor, with high dependency residents having a median entry period around 31 days shorter than that for low dependency residents.

This difference is substantial and appears quite robust, as it can be observed across all States and Territories (with the exception of the Northern Territory).

Table 2.3 Median entry period (days) by Dependency group and by State/Territory

Group	NSW	Vic	Qld	WA	SA	Tas	ACT	NT	Australia
RCS 1-4	14	28	45	27	22	38	31	96	24
RCS 5-8	50	50	59	53	72	73	95	21	55
RCS 1-8	22	35	50	36	36	46	57	61	34

For individual States and Territories, the pattern is not so straightforward. New South Wales, Victoria, South Australia and Western Australia all show a broadly similar pattern to that reported at the national level.

### *Age*

There is a modest relationship between the age category of residents and the median entry period for admission to residential care. For residents aged under 65, the median entry period was 29 days, rising to 36 days for those aged 80–89. For those aged 90 and over the median entry period drops slightly to 31–33 days.

When low care and high care residents are examined separately, however, it emerges that this difference is evident only among low care residents. It is markedly stronger in this population, with younger residents (<65 years) having a median entry period approximately 27 days shorter than older residents (85–89 years). That is, for low care residents, median entry period increased with increasing age, from 33 days for the under 65 age group to 60 days for the 85–89 age group.

When the relationship between age and median entry period is examined by State and Territory, this trend is not consistently observed. Allowing for the effect of small cell sizes in some instances, the trend can be observed in general terms in New South Wales, Victoria, Queensland, South Australia and Tasmania.

### *Gender*

Gender has a modest effect on entry period, with men having a median entry period approximately 4 days shorter than that of women.

### *Marital Status*

Marital status also has an effect on entry period, with those who are divorced or never married having a median entry period up to 10 days shorter than those who are widowed or married.

### *Living Situation*

Living arrangements also proved to be a relevant factor, with those who lived alone having an entry period around 9 days shorter than those living with a child and the child's family. Those who lived alone had an entry period only 1 day longer than those who lived with a spouse only.

**Financial Status**

Concessional status was found to be a minor factor, with concessional residents having a median entry period around 4 days shorter than non-concessional residents. This difference was a little larger for low care residents (8 days) but was not found to be present for high care residents.

**Utilisation of Respite Services**

Use of respite services had a substantial effect on median entry period, with those who had used residential respite prior to admission having a median entry period around 41 days longer than those who did not.

**Utilisation of other care Packages**

Use of care packages had an effect on median entry period, with those who had used a care package prior to admission having a median entry period around 13 days longer than those who did not.

**SYSTEM CHARACTERISTICS**

System characteristics associated with entry period that were examined in the report were:

- Location of the ACAT assessment;
- Provision ratio;
- Auspice;
- Co-location;
- Certification score.

**Location of ACAT**

Median entry period varied substantially according to the location in which the aged care assessment team conducted the assessment to determine eligibility for admission to residential care. For those assessed at home, the median entry period was 71 days, while for those assessed in hospital it was 20 days. For those assessed in an aged care service (a much smaller proportion compared to those with assessment in hospital), the median entry period was 15 days (Table 2.4).

The pattern of a markedly shorter entry period for those assessed in either an aged care service or hospital compared to those assessed at home was clearly evident in all States and Territories. When the entry period for those assessed at home is compared with the entry period for those assessed in hospital, the difference was most pronounced in the Australian Capital Territory (108 days compared to 29 days), South Australia (88 days compared to 21 days) and Victoria (83 days compared to 24 days).

**Table 2.4 Residential Care Entry Period all services, by ACAT location, Victoria only**

ACAT Location	Entry Period (days)
Aged Care Facility	22
At Home	83
Hospital	24
Other	38
All	35

**Provision Ratio**

The provision ratio (i.e. the number of places per 1,000 people aged 70 and over in the region in which the relevant service was located) had a modest effect on entry period. For all residents, a higher level of supply was related to a median entry period around 6 days shorter than where there was a lower level of supply. When these

effects were examined separately for low and high care services, the effect was more pronounced for high care residents (a difference of 12 days in the median entry period) than for low care residents (a difference of 4 days in the median entry period). These effects were not consistently observed in the States and Territories.

Interestingly, for low and high care residents in Victoria, the authors found that people residing in areas with a comparatively low provision ratio for residential places had a median entry period lower than those living in a region with a comparatively high provision ratio for residential places. This finding contrasts with the experience of families and case managers in Victoria who have found that a lower provision ratio appears to have adverse effects on time taken to locate a suitable placement, such as at Northern Health, whilst areas with higher provision ratios, such as the inner parts of Eastern Health, enable more timely residential care placement.

A possible explanation of the moderate influence of provision ratio on the residential entry period is the ratio does not account for regional cultural, socio-economic or burden of disease factors. The burden of disease tends to be higher in people of a low socioeconomic status. This, in turn, tends to lead to higher levels of health service demand from people of low socio-economic status. The Australian Institute of Health and Welfare(1999)<sup>xxvi</sup> suggests that there is a marked gradient in the total burden of disease with socioeconomic disadvantage as defined by a small area index of socioeconomic disadvantage at SLA (local government) area level. The burden of disease per 1,000 population in the bottom quintile (most disadvantaged area) is 37% higher for males and 27% higher for females than the burden for males and females in the top quintile (least disadvantaged area). The flat planning ratio of 100 combined residential places and packages per 1000 people over 70 years old, however, does not reflect this variance within the population.

### *IRSED*

One of the most important indicators of socio-economic status in Australia is the locality in which an individual lives. For many people, the characteristics of their neighbourhood provide more information about their access to social and economic resources than do other indicators such as income. Whilst household income is a very important indicator of living standards, it does not take into account wealth, is sometimes poorly measured (eg for the self-employed), and does not take into account other sources of support from relatives living in other households.

The IRSED is the Index of Relative Socio-Economic Disadvantage. The IRSED is based upon the following regional characteristics:

- Persons aged 15 and over with no qualifications (%);
- Families with income less than 15,600 (%);
- Families with offspring having parental income less than \$15,600(%);
- Females (in labour force) unemployed (%);
- Males (in labour force) unemployed (%);
- Employed females classified as 'Labourer & Related Workers' (%);
- Employed males classified as 'Labourer & Related Workers' (%);
- Employed males classified as 'Intermediate Production & Transport Workers' (%);
- Persons aged 15 and who left school at or under 15 years (%);
- One parent families with dependent offspring only (%);
- Households renting (government authority) (%);
- Persons aged 15 and over separated or divorced (%);
- Dwellings with no motor cars at dwelling (%);
- Employed females classified as 'Intermediate Production & Transport Workers' (%);
- Employed females classified as 'Elementary Clerical, Sales and Service' (%);
- Employed males classified as 'Tradepersons' (%);
- Persons 15 and over who did not go to school (%); and
- Aboriginal and Torres Strait Islanders.

Whilst the IRSED is an imperfect indicator of socio-economic disadvantage in a region, it does encompass a wide variety of factors that one might expect to be correlated with disadvantage. In ABS validation testing it also correlates strongly with subjective evaluations of the status of different regions (ABS, 1998).

A higher value of the index indicates a less disadvantaged area. Scores are arbitrarily scaled to have a mean of 1000 and a standard deviation of 100 across all of Australia.

The values of the index of the aggregated Melbourne metropolitan regions<sup>xxvii</sup> are:

Region	IRSED
Eastern	1074
Northern	992
Southern	1028
Western	980

The IRSED indicates that on average, the Northern and Western metropolitan regions in Melbourne have a higher level of socio-economic disadvantage, and both are below the level of mean level of disadvantage in Australia. The Southern Region has less disadvantage than Northern and Western regions and the mean level of disadvantage in Australia. According to the IRSED, the Eastern Region has markedly less disadvantage than the other metropolitan regions of Melbourne.

There are considerable within region variations in metropolitan Melbourne, which can be mapped to Statistical Local Areas.

***Auspicing Arrangements***

Auspice also emerged as a significant factor, with private for-profit services having a median entry period 26 days shorter than that for charitable services and 29 days shorter than that for religious services.

***Co-location of Services/Facilities***

Co-location of homes also appeared to affect median entry period, with non-co-located homes having a median entry period around 16 days shorter than co-located homes.

***Certification Score***

Certification score was related to median entry period; median entry period was 27 days longer for services with high certification scores than for those with low certification scores.

### 3 COMPARABLE MODELS OF CARE

A search of the literature revealed there was a dearth of peer-reviewed journal articles pertaining to Interim Care. It is understood that research concerned with the feasibility and/or effectiveness of similar program initiatives is usually in limited circulation, leaving a small body of publicly accessible evidence to inform the evaluation.

The eligibility criteria for subjects in the Victorian Interim Care model are:

- Patients have completed their acute or sub-acute episode of care;
- Have been assessed by a multi-disciplinary team and recommended by the ACAS delegate for residential care;
- Are suitable for immediate placement in a low or high care residential facility if a place were available; and
- Are medically stable and unlikely to improve during a period of convalescence<sup>xxviii</sup>.

Discharge Planning was another area that was reviewed due to its similarity with many of the objectives of the Interim Care model. In a meta-analysis, Parkes and Shepperd (2002)<sup>4</sup> defined Discharge Planning as the development of an individualised discharge plan for the patient prior to leaving hospital for home, with the aim of containing costs and improving patient outcomes<sup>xxix</sup>. Their selection criteria were randomised trials and controlled trials comparing discharge planning with routine discharge for hospital patients. Eight studies were included involving 4,837 patients, with four studies recruiting patients with a medical condition and the other four including patients with a mix of medical and surgical conditions.

#### 3.1 SIMILAR MODELS

##### IN AUSTRALIA

Whilst there is evidence that similar projects are underway in Australia, there are few published evaluations or reports relating to such trials. In fact, the evaluation team was able to access only one published Australian study describing a program with similar aims and operating principles to the Victorian Department of Human Services' Interim Care model. The Western Moreton Health Service in Queensland has instituted an Interim Care model for patients awaiting nursing home placement after an acute episode requiring hospitalisation<sup>xxx</sup>. The project aims to:

- Reduce length of stay for nursing home type (NHT) patients;
- Improve the quality of the care for NHT patients;
- Establish forums for communication with external facilities and agencies; and
- Report back to the Commonwealth on the reality of the situation.

Ten interim care beds were established in a 29 bed subacute rehabilitation ward at the main hospital at Ipswich. The ward is staffed at a subacute ratio. The demand for the beds in the winter of 2002 reduced, compared to the previous winter as there is, anecdotally, a larger number of nursing home residents dying in the district, thus freeing up capacity.

In the winter of 2002, Western Moreton Health Service have also established 3-6 interim care wards in their smaller rural hospitals, that are used for patients, who live near these hospitals.

Their preliminary anticipated outcomes of the project were that there was:

- No measurable change in the average length of stay of patients awaiting placement;
- That a new district forum for communication was established. ;
- A better ward environment was developed. The ward environment was more appropriate for the needs of the patients. When patients were awaiting placement on the interim care ward, they were likely to ambulate to the toilet, and generally be more functional, which they were encouraged to do when in the acute wards;

Interestingly, only 57% of the interim care patients were placed in a residential care facility, and approximately 20% returned home to their usual residence. The program managers found that the acute episode often initiated the process of residential placement. But some families and carers realised that their relatives, Interim Care patients, could manage at home with some infrastructure changes to the patients' places of residence and with support provided by community care packages.

Two of the main problems the Interim Care program faced were workforce issues, with a shortage generally in the nursing sector, and more specifically in caring for the aged, and the increased complexity of co-morbidities as patients tend stay at home until they are older and more frail.

The program managers acknowledge that the Interim Care program is at the mercy of the supply of the residential aged care sector, and the program is a response to inadequate operational residential care places.

In addition to this published evidence, the evaluation team is also aware of some Commonwealth trials of programs similar to the Interim Care program, although details are not readily accessible. For example, the Transitional Care program operated by Baptist Community Services at Royal Newcastle Hospital (in partnership with Hunter Health) is one such trial (reported by Dr Nigel Lyons)<sup>xxxi</sup>.

The program has the following aims:

- To enhance enablement for elderly patients & improve functional status of residents; and
- To assess and improve accuracy of resident classification.

The program commenced operation June 1999 with the following outcomes:

- 431 admissions;
- Discharges:
  - Home 80;
  - Nursing Home 201;
  - Hostel 65;
- Average length of stay 42 is days;
- 19 residents change in care category (high to low care);
- 8% increase 2000/2001 compared with previous 12 months in number of elderly admissions assessed as requiring placement;
- ALOS of patients awaiting placement has decreased by 16.7% (98/99 - 00/01) from 31.6 - 26.3;
- 10.7% decrease in occupied bed days for patients awaiting placement (99/00 - 00/01); and
- John Hunter Hospital met Access Block benchmark from October 2000 - August 2001 - first winter for 3 years where this has occurred.

This model has more similarities to the Sub-Acute areas of Geriatric Evaluation and Management (GEM) and Rehabilitation than the interim care models, currently being piloted in metropolitan Melbourne.

#### **INTERNATIONALLY**

The majority of limited circulation reports describing similar programs to Interim Care emanate from the US. Whilst the US health and aged care system is managed and funded in a significantly different way to that in Australia, there are some examples of transitional care that represent reasonable point of comparison.

Most of the care models described as 'transitional care' tend to relate to rehabilitative type services, although the client group and service strategies follow similar pathways – that is, a specific transitional care unit for older people. Examples include the Newberry Hospital ([www.newberryhospital.org/transitional.htm](http://www.newberryhospital.org/transitional.htm)), which explains its program in the following way:

**What is the Transitional Care Unit (TCU)?** When a hospital patient needs additional rehabilitation, this unit provides the extended inpatient services that can restore the client's health to the maximum possible. This type

medical care is generally more intensive than traditional nursing facility care and less intensive than inpatient hospital care. The emphasis is on rehabilitation and restorative care. If you or a family member has had heart surgery, joint replacement or a complex medical problem, such as pneumonia, cancer or a stroke, you could be a candidate for this local service.

**What are the services in TCU?** Professional services are provided by an interdisciplinary team of healthcare professionals trained to assess and manage specific treatments and methods of care. Occupational, speech and physical therapy sessions are provided on a daily basis.

**Length of Stay** Skilled rehabilitation services and nursing care are rendered after an acute care hospitalization of at least three days. The average length of stay ranges from seven to 14 days.

**Payment** The program is certified to accept clients with Medicare and private insurance.

The Presbyterian Hospital of Greenville Transitional Care Unit ([www.hmhd.org/transit.htm](http://www.hmhd.org/transit.htm)) offers a similar range of services, based on the recognition that some patients need a longer recovery period than others. For those who no longer need acute hospital care but are not quite ready to go home, the Transitional Care Unit provides additional time in the hospital for patients to complete their recovery.

The Presbyterian Hospital's Transitional Care team includes physicians skilled in rehabilitative care, experienced nursing staff, on-site physical therapists, speech-language pathologists, social workers, nutritionists, pharmacists, case managers, and an activity director. All of these skilled professionals work together to restore each patient's independence.

The hospital notes that transitional care is also a cost-effective alternative for seriously ill, medically stable patients who require skilled nursing and rehabilitative care. The Transitional Care services include:

- Orthopedic services for hip and knee replacements;
- Wound care management;
- Post-acute surgical recovery;
- Respiratory management;
- Stroke rehab;
- Nutrition management;
- Complex diabetic management; and
- Complex intravenous administration management.

Presbyterian Hospital of Greenville's Transitional Care Unit has contracts with many HMOs, PPOs, and other managed care organizations. Payments are accepted from Medicare and most commercial insurance companies. The rehabilitation focus in both Newberry Hospital and the Presbyterian Hospital programs would be found in Sub-Acute service system, an existing part of Victoria's public Health Services.

## 4 VARIED MODELS OF CARE

Most of the research studies or evaluations that are referred to in this literature review have eligibility criteria for their programs that vary considerably from the Interim Care project being investigated here. The aims of the programs in the research, and the mechanisms and resources that are utilised to achieve these aims, are also at variance with the Interim Care project.

### 4.1 MODELS OF ACUTE CARE

#### 4.1.1 HOSPITAL IN THE HOME

As a consequence of the varied criteria of different care models, the data requirements and analytical outputs of these projects may not be directly comparable or applicable to the Interim Care models. The majority of articles relating to alternative models of acute care service provision pertain to Hospital in the Home. The Hospital in the Home subjects share a common feature with Interim Care patients in that they experience an acute episode of care requiring an admission to hospital. However, the subjects in the majority of the Hospital in the Home projects tend not to be eligible for nursing home placement because on balance, their overall health status (not withstanding their acute episode) is usually at a higher level than found in Interim Care patients.

Another contrast between the Interim Care and Hospital in the Home patients is that with the latter group, the patients' acute illness is expected to improve. Also whilst many Hospital in the Home patients are older people, this is not always a pre-requisite. These key features differentiate the programs and makes direct comparison problematic.

### 4.2 MODELS OF AGED CARE

#### 4.2.1 EXTENDED AGED CARE AT HOME (EACH)

The Extended Aged Care at Home Package pilot (formerly known as Nursing Home Care Packages) was established to test whether it is possible to provide care in a person's own home at the level currently provided in a high care residential facility. Whilst similar to CACPs, EACH aims to provide a more intensive level of service (equivalent to nursing home level of care).

##### *Relevance to the Interim Care Model*

The EACH packages target clients with a similar level of resource needs as the Interim Care models, with the key difference being that the Interim Care patients have had a recent acute episode, resulting in hospitalisation. However, a recent acute episode of hospitalisation is not a barrier for clients to receive the EACH package of services. Supporting Interim Care clients in a home environment is being undertaken by two of the health services in the current evaluation, and is being considered by others. The services and supports that the EACH program endeavours to provide to their clients will be broadly analogous to those provided to the Interim Care clients being managed at home.

##### *Services*

The services that are provided to clients under the EACH program include:

- assistance with daily living activities to encourage and help maintain the recipient's independence in their own home;
- preparation of meals and special diets for health, religious or cultural reasons;
- home help, laundry, home maintenance and modification services;
- advocacy services;
- emotional support;
- social activities;
- emergency assistance; and
- nursing services and medication administration; and

- allied health services.

The EACH Program is subject to a couple of important constraints. First, it is anticipated that the overall cost to the Commonwealth is to be no different from that which would have been incurred if the recipients had been cared for in a high level care facility. Secondly, recipients must be assessed as requiring care to a level which would otherwise be met only in a residential facility and must choose an Extended Aged Care at Home Package over entry to a residential facility.

Extended Aged Care at Home offers an opportunity to test alternatives to residential care which reduce institutionalisation of older people and respond to the wishes of those preferring to remain in their own home as long as possible.

#### *EACH Evaluation*

A summary of the main findings of the evaluation<sup>xxxii</sup> of the EACH Program is shown below.

- The pilot programs provide a high standard of clinical care equivalent to high-level residential care in all respects. The quality of the documentation and care plans was generally satisfactory and comprehensive.
- The evaluators found that all the providers in the pilot programs are committed to seeking the greatest possible freedom of choice and quality of life for their clients. All the clients and most carers feel they participate in decision-making in their program, and often have the leading role. Home visits also showed that most recipients and carers are happy with the care the pilots give them. A survey of clients and carers showed both groups had higher levels of satisfaction with EACH.
- The evaluators place one caveat on these very positive findings. Providers, clients, and carers must all understand that the EACH modality has limits, and be able to manage family grief and resistance to move if those limits are reached.
- EACH pilots have successfully managed to develop their care staff, their links with other services, and effective organisational support mechanisms.

The economic evaluation of the EACH Program is discussed in Section 3.3 of this report.

#### *Sustainability and viability*

The evaluators consider that the EACH model is sustainable and viable from the perspectives of quality, cost, consumer and carer demand, carer burden, capacity to serve that demand both in inner and outer urban areas and in rural areas, and affordability (for both Commonwealth and clients), on the assumption that EACH is a substitute for high level care in a residential setting.

The evidence indicates that the potential exists for EACH services to remain a viable activity, provided care costs are monitored and controlled, and clients are selected appropriately. A critical mass of EACH places is needed in an agency to ensure service viability, but once that critical mass is achieved, additional places are unlikely to have a significant impact on financial performance.

#### **4.2.2 COMMUNITY AGED CARE PACKAGES**

Community Care Aged Packages (CACPs) were introduced in 1992-93 to provide a community alternative for frail older people whose dependency and complex care needs would qualify them for entry to a residential care facility at least for low level care. CACPs are considered part of the suite of residential aged care services funded via the Commonwealth. As such, CACPs may be considered a potential destination for Interim Care patients, provided their ongoing care needs do not exceed that provided for within the CACP structure (CACPs usually cater for people with low-level care equivalent needs).

Receipt of a CACP is guided by the same principles as entry into other residential aged care options, with acute and rehabilitation services no longer required by the consumer.

Care packages are individually tailored packages of care services to frail older people assessed as requiring a range of care services in their own homes. The care packages are aimed at providing a suite of services that would be the 'equivalent' of low level (hostel care). Care packages are targeted to older people who have complex care needs but whose needs can be managed in the home. An Aged Care Assessment Team must have assessed all recipients as eligible.

Service providers use a case management approach to develop and monitor care delivery to the older person. Care Packages can be provided on a permanent or short-term basis.

### **RELEVANCE TO INTERIM CARE**

One of the metropolitan Health Services (Northern Health) was using a similar package of services to care for some of their Interim Care patients at home, in 2001-2002, whilst Eastern Health planned to introduce interim care supported services for the commencement of the 2002-2003 financial year.

The types of services, required by Interim Care patients, at Northern are similar to the suite of services provided by CACPs, and Northern Health tend to use the same service providers for their Interim Care patients, as those who provide CACPs.

The types of patients receiving CACPs are similar to those receiving Interim Care services at home, in that both groups of patients have been assessed as requiring low level residential care. One key difference between the two groups is that the interim care patients have recently received an episode of acute care, whilst the CACPs recipients may not, although a recent acute episode is not a barrier to CACP eligibility.

## 5 PERFORMANCE AND OUTCOME MEASUREMENT

### 5.1 QUALITY MEASURES

The following section describes how quality measures have been derived in the acute health and the aged care sectors.

#### 5.1.1 ACUTE SERVICES

The Commonwealth Department of Health and Family Services<sup>xxxiii</sup> suggest that when considering quality in the acute sector that the quality of integration and coordination of care is as important as the quality of component services.

There are no indicators with unequivocal and universal support as “gold standard” means of monitoring healthcare quality. Comparative studies of indicator performance in acute healthcare are rare and do not provide a basis for the unquestioned support of any individual quality of care indicator or indicator set in an Australian context. From the information available on current quality indicators the Commonwealth have (has?) selected a reasonable, basic set of indicators which they believe have sufficient evidence to support their probable utility. This evidence includes knowledge that the premise underpinning the indicator is sound, that data collection is feasible (given current or reasonably anticipated future health services information systems) and that the indicator would have practical utility.

The absence of compelling evidence to guide the choice of suggested indicators means that ultimately, those indicators recommended receive that recommendation based on an assessment of their overall worth - following an in-depth review of available information on quality indicators. A balance has been sought between the size of the initial indicator set for adoption and the desire for comprehensive coverage of the quality of acute healthcare services. Over time a larger indicator library can be developed based upon local research, development and experience and a close linkage of national indicator programs to international initiatives in quality indicators for acute healthcare.

The key dimensions of health care were addressed as those which could be amenable to quantification.

The care dimensions that were studied were:

Dimension	Encompassing	Working Definition
Access	Timeliness	The capacity of individuals to obtain the same quality of service
Efficiency	Technical Efficiency Allocative Efficiency	Maximising the benefits (or outcomes) for a given cost: Technical efficiency: the degree to which the least cost combination of resource inputs occur in the production of a particular service; Allocative efficiency: the degree to which maximum benefit (or outcomes) are obtained from available resources.
Safety		The extent to which potential risks were avoided and inadvertent harm minimized in the care delivery processes
Effectiveness	Efficacy	The degree to which an intervention produces measurable increases in survival or improved quality of life (or improved outcomes) when applied in routine practice.
Acceptability	Consumer perception Customer perception Satisfaction Relevance Cultural appropriateness Consumer involvement in the health service	The degree to which the service meets or exceeds the expectations of informed customers and consumers.
Continuity	Discharge planning Coordination	The extent to which an individual episode of care is coordinated and integrated into overall care provision
Technical proficiency		The extent to which the performance of interventions by healthcare professionals is consistent with contemporary standards and knowledge of skills relevant to that intervention.
Appropriateness		The extent to which potential benefits of an intervention exceed the risks involved.

The indicators that were recommended for trial in a core national set were:

- Access;
- Elective surgery waiting times;
- Emergency Department (ED) waiting times;
- Patient based reports of elective surgery, ED and Outpatient Department waiting times and the acceptability of these waiting times to patients;
- Cost: Cost per casemix adjusted separation;
- Effectiveness Generic health status (SF36 or SF12);
- Continuity;
- Patient based assessments using relevant modules from the Picker Commonwealth survey instrument;

- Acceptability – A national survey based upon components of the Picker Commonwealth<sup>4</sup>, Hospital Corporation of America and Royal College of Surgeons instruments;
- Appropriateness - Relative utilisation rates of targeted procedures.

The report also recommends trialling indicators for a defined frequency and finite duration targeting particular clinical circumstances. They are:

- Access – waiting times;
- Efficiency – cost;
- Safety adherence to best practice guidelines;
- Observed to expected outcomes ratios;
- Effectiveness;
- Condition-specific health status of health related quality of life measures;
- Stratified mortality rates;
- Unplanned readmission rates;
- Technical Proficiency – risk adjusted technical proficiency indicators;
- Appropriateness – Condition/ procedure specific relative utilisation rates.

### **5.1.2 BEST PRACTICE INDICATORS / PRINCIPLES OF POST-ACUTE CARE**

Caplan and Brown (1997)<sup>xxxiv</sup> developed a set of principles of post acute care. These included:

- Early assessment of at risk patients;
- Active management by a multi-disciplinary team;
- Prevention of avoidable complications;
- Maintenance of the patient's mobility and physical activity at optimal levels;
- Discharge planning commencing on admission and involving the patient, relatives/carers, GP and multidisciplinary team;
- Education and support for patients, relatives/carers;
- Early discharge, with commitment to re-admit when necessary;
- Immediate provision of expert domiciliary care and support (namely nursing, physiotherapy, equipment plus meals, shopping and cleaning services);
- Shared care with the general practitioner; ,and
- Standardisation of excellence (for example, clinical pathways).

### **5.1.3 RESIDENTIAL AGED CARE ACCREDITATION**

Accreditation is the evaluation process that aged care homes must undergo to receive residential care subsidies under the Aged Care Act 1997. To become accredited, homes must demonstrate how they will meet the Accreditation Standards and make a commitment to continuous improvement.

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<sup>4</sup> Picker's inpatient questionnaire focuses on dimensions of care patients themselves have identified as important - respect for patient preferences; physical comfort; involvement of family and friends; continuity and transition; coordination of care; information and education; emotional support.

The instrument emphasizes processes of care and addresses critical aspects of patient/provider interaction, facilitating hospitals' ability to identify problem areas and implement follow-up improvement programs.

The Accreditation Standards are detailed in the Quality of Care Principles 1997. There are four standards:

- Management systems, staffing and organisational development
- Health and personal care
- Resident lifestyle
- Physical environment and safe systems.

**MANAGEMENT SYSTEMS, STAFFING AND ORGANISATIONAL DEVELOPMENT**

**Principle:** Within the philosophy and level of care offered in the residential care service, management systems are responsive to the needs of residents, their representatives, staff and stakeholders, and the changing environment in which the service operates.

Matter Indicator	Expected Outcome
Continuous improvement	The organisation actively pursues continuous improvement
Regulatory compliance	The organisation's management has systems in place to identify and ensure compliance with all relevant legislation, regulatory requirements, professional standards and guidelines.
Education and staff development	Management and staff have appropriate knowledge and skills to perform their roles effectively
Comments and complaints	Each resident (or his or her representative) and other interested parties have access to internal and external complaints mechanisms
Planning and leadership	The organisation has documented the residential care service's vision, values, philosophy, objectives and commitment to quality throughout the service.
Human resource management	There are appropriately skilled and qualified staff sufficient to ensure that services are delivered in accordance with these standards and the residential care service's philosophy and objectives
Inventory and equipment	Stocks of appropriate goods and equipment for quality service delivery are available
Information systems	Effective information management systems are in place
External services	All externally sourced services are provided in a way that meets the residential care service's needs and service quality goals

**HEALTH AND PERSONAL CARE**

**Principle:** Residents' physical and mental health will be promoted and achieved at the optimum level in partnership between each resident (or his or her representative) and the health care team

Matter Indicator	Expected Outcome
Regulatory compliance	The organisation's management has systems in place to identify and ensure compliance with all relevant legislation, regulatory requirements, professional standards, and guidelines, about health and personal care
Education and staff development	Management and staff have appropriate knowledge and skills to perform their roles effectively
Clinical care	Residents receive appropriate clinical care
Specialised nursing care needs	Residents' specialised nursing care needs are identified and met by appropriately qualified nursing staff
Other health and related services	Residents are referred to appropriate health specialists in accordance with the resident's needs and preferences
Medication management	Residents' medication is managed safely and correctly
Pain management	All residents are as free as possible from pain
Palliative care	The comfort and dignity of terminally ill residents is maintained
Nutrition and hydration	Residents receive adequate nourishment and hydration
Skin care	Residents' skin integrity is consistent with their general health

Continence management	Residents' continence is managed effectively
Behavioural management	The needs of residents with challenging behaviours are managed effectively
Mobility, dexterity and rehabilitation	Optimum levels of mobility and dexterity are achieved for all residents
Oral and dental care	Residents' oral and dental health is maintained
Sensory loss	Residents' sensory losses are identified and managed effectively
Residents are able to achieve natural sleep patterns	

**RESIDENT LIFESTYLE**

**Principle:** Residents retain their personal, civic, legal and consumer rights, and are assisted to achieve active control of their own lives within the residential care service and in the community

Matter Indicator	Expected Outcome
Regulatory compliance	The organisation's management has systems in place to identify and ensure compliance with all relevant legislation, regulatory requirements, professional standards, and guidelines, about resident lifestyle
Education and staff development	Management and staff have appropriate knowledge and skills to perform their roles effectively
Emotional support	Each resident receives support in adjusting to life in the new environment and on an ongoing basis
Independence	Residents are assisted to achieve maximum independence, maintain friendships and participate in the life of the community within and outside the residential care service
Privacy and dignity	Each resident's right to privacy, dignity and confidentiality is recognised and respected
Leisure interests and activities	Residents are encouraged and supported to participate in a wide range of interests and activities of interest to them
Cultural and spiritual life	Individual interests, customs, beliefs and cultural and ethnic backgrounds are valued and fostered
Choice and decision-making	Each resident (or his or her representative) participates in decisions about the services the resident receives, and is enabled to exercise choice and control over his or her lifestyle while not infringing on the rights of other people
Resident security of tenure and responsibilities	Residents have secure tenure within the residential care service, and understand their rights and responsibilities.

## PHYSICAL ENVIRONMENT AND SAFE SYSTEMS

**Principle:** Residents live in a safe and comfortable environment that ensures the quality of life and welfare of residents, staff and visitors.

Matter Indicator	Expected Outcome
Regulatory compliance	The organisation's management has systems in place to identify and ensure compliance with all relevant legislation, regulatory requirements, professional standards, and guidelines, about physical environment and safe systems.
Education and staff development	Management and staff have appropriate knowledge and skills to perform their roles effectively
Living environment	Management of the residential care service is actively working to provide a safe and comfortable environment consistent with residents' care needs
Occupational health and safety	Management is actively working to provide a safe working environment that meets regulatory requirements
Fire, security and other emergencies	Management and staff are actively working to provide an environment and safe systems of work that minimise fire, security and emergency risks
Infection control	An effective infection control program
Catering, cleaning and laundry services	Hospitality services are provided in a way that enhances residents' quality of life and the staff's working environment

## 5.2 OUTCOMES MONITORING

The support for community-based service provision is strong and increasing, particularly from the older persons' lobby (individuals and peak body organisations). Whilst it is widely published that older people prefer to stay at home as they age, there is limited formal research to confirm support for this notion. Coupled with the desire to stay at home, is a reluctance to receive formal care services. Millward (1999)<sup>xxxv</sup> suggests that there is a hierarchy of preference for care providers. The order of preference is proposed such that older people would first prefer to receive support from their spouse, followed by daughter, son, other family, friends, neighbours and finally, from formal service providers.

### 5.2.1 LENGTH OF STAY

Parkes and Shepperd (2002) (op cit) found that there was a small reduction in hospital length of stay for elderly medical patients allocated to discharge planning, although Gray (2001)<sup>xxxvi</sup> found no difference in length of stay of patients allocated to discharge planning procedures compared to those who had no discharge planning.

The Western Moreton Health Service Interim Care model was not shown to reduce the length of stay for nursing home type patients awaiting placement.

Shepperd and Iliffe (2001 op cit) in their Cochrane review on hospital at home vs inpatient care found that the Hospital in the Home program tended to result in a reduction in the acute LOS, but an increase in the overall LOS. Wilson et al(1999)<sup>xxxvii</sup> found that Hospital in the Home patients required fewer days of treatment than the hospital group, both in terms of their initial stay, and total days of care. Rink et al (1998)<sup>xxxviii</sup> demonstrated similar findings with a group of orthopaedic patients.

In patients with acute exacerbations of chronic obstructive pulmonary disease (COPD), Bowler et al (2001)<sup>xxxix</sup> found LOS was not changed in a group of patients managed at home. Similarly, Holmqvist et al (1998)<sup>xl</sup> conducted a randomised control trial of rehabilitation at home for patients who had suffered a cerebral vascular accident and were moderately disabled and found no change in length of stay.

Meeds & Pryor (1990)<sup>xlii</sup> in NHDP15 conducted trials investigating early home rehabilitation for the elderly patients who had sustained a hip fracture and found there was a significant reduction in hospital stay and duration of nursing care.

### **5.2.2 HEALTH OUTCOMES**

Parkes and Shepperd (2002 op cit), demonstrated that no statistically significant differences were detected for patient health outcomes with discharge planning procedures compared to patients without discharge planning.

In Bowler et al (2001 op cit), for Home in the Hospital compared to inpatient care, no other significant differences were demonstrated in the clinical indicators measured, however the patients experienced an improvement in their quality of life. There was no difference in Home v Hospital treatment in Wilson et al (1999 op cit), Gray (2001 op cit) or Holmqvist et al (1998 op cit).

Shepperd et al (1998 A)<sup>xliii</sup> found that there were no major differences in outcome between home and hospital care, except those recovering from hip replacement, who reported a significantly greater improvement in quality of life with home care. Meeds & Pryor (1990 op cit) found that patients who were rehabilitated at home returned to their pre-admission level of independence far quicker than similar patients managed conventionally.

### **5.2.3 READMISSION RATES / COMPLICATIONS**

Parkes and Shepperd's Cochrane review found that discharge planning had mixed effects on readmission rates to hospital. Bowler et al (2001 op cit) found that the hospital-managed group was less likely to require re-admission within 28 days, although the numbers are too small to approach statistical significance. Gray (2001 op cit) or Wilson et al (1999) both found that there were no differences in the readmission rates for hospital and home groups.

Caplan et al (2001)<sup>xliiii</sup> found that there was a lower incidence of geriatric complications (confusion, urinary complications and bowel complications) and there was no significant difference in the number of adverse events or deaths between the groups of elderly patients being rehabilitated at home, and at hospital.

### **5.2.4 SATISFACTION**

Patient satisfaction surveys were amongst the most commonly used evaluation tools in the research. Richards et al (1998)<sup>xliv</sup> performed patient satisfaction surveys using Likert scales at 4 weeks and 3 months post-discharge of patients, who were randomly allocated to an acute setting or early discharge to home with support. The responses were very similar between the two groups at both time intervals, with the exception of the response to "discussions with staff". The home treatment model patients scored a significantly positive response compared to the acute group. In a similar study, more patients in the home group preferred their model of care compared to the hospital group with the exception of the patients with chronic obstructive airways disease (Shepperd et al A 1998 op cit).

The Hospital in the Home Evaluation<sup>xlv</sup> noted high levels of satisfaction from care recipients and carers involved in the trial, with 99% expressing satisfaction with the service and 92% of patients indicating that they would use similar services again if required. Similarly, the majority of carers expressed high levels of satisfaction with the home-based service model, feeling that it made it easier for them to look after the care recipient and assisted the patient's recovery.

In Shepherd and Iliffe's Cochrane review of Hospital in the Home, they state that patients allocated to the home group expressed greater satisfaction with care than those in hospital. Carers, however, expressed less satisfaction with hospital at home compared with hospital care.

### **5.2.5 WAITING TIME / ACCESS BLOCK**

The evaluation team were able to find only one study, which utilised the process measure of waiting, or access block to evaluate their program. The John Hunter Hospital<sup>xlvi</sup> found that there was an increasing improvement in percentage of admissions from their Emergency Department, admitted to an inpatient bed within 8 hours of seeing a doctor and sustained achievement of the NSW Department of Health benchmark.

The change management process that they attributed to the change included:

- Review of bed management practices;
- Review of admission practices;
- Earlier assessment of functional capacity and scope for rehabilitation of frail elderly patients as soon as possible;
- Commencement of slow stream rehabilitation;
- Employment of a Transitional Care Co-ordinator to co-ordinate transfer of patients between acute hospital and residential aged care facilities;
- Development of a multidisciplinary care plan; and
- Development of an Aged Care Information Booklet.

### 5.3 COST OF ALTERNATIVE MODELS OF CARE

There has been some debate as to the cost effectiveness of home-based care.

Shepperd et al (1998 B)<sup>xlvii</sup> found no difference in total costs between hospital and home treatment groups for elderly medical patients or patients with hip and knee replacement surgery. Costs were significantly higher in this study for patients treated at home after a hysterectomy. This was attributed to the longer length of stay in Hospital in the Home days.

Recent costing studies have supported claims that home-based care results in lower overall costs without impairing health outcomes. A reduction of an average of \$1780 per patient was reported by Farnworth, Kenny & Shiell (1994)<sup>xlviii</sup> through the introduction of an orthogeriatric program. The program adopted a multidisciplinary approach to improve continuity of care and to facilitate early discharge, with specialist geriatric medical supervision, early post-operative mobilisation and home-based rehabilitation. The control (hospital) group costings included hospital costs only. The home group patients' costings included hospital costs as well as the orthogeriatric program costs. The program costs included staff time (including travel time for home visits), medical goods and office space.

Board et al (1999)<sup>xlix</sup> undertook a costing study of a randomised control trial of hospital versus a Hospital in the Home (HITH) program. Hospital costings were calculated on a cost per day basis using the Australian National Diagnostic Related Groups (AN-DRGs). Hospital in the Home costings included unit overheads (fleet costs, mobile telecommunications, office overheads etc), staff salaries and on-costs, and non-contact staff (Nurse Unit Manager, clerical support etc). Costs per separation were \$1850 less in the HITH group than the hospital group.

The Hospital in the Home Evaluation (op cit) compared costs of care for home and inpatient nursing services. It found that there were no significant differences in the quantum of funding (per episode) between the models, although the composition of care costs varied, as did client satisfaction. This study also showed variations among the 11 pilot sites.

In Canada, a study has been completed to identify the cost-effectiveness of in-home support in comparison with residential and acute care services. The study made a detailed assessment of the relative costs of care across the three settings.

The research found that care costs for elderly patients may be cut by as much as half by providing care in the community instead of in institutions. It found that home care saves the health-care system money regardless of the severity of patients' condition, as long as their conditions are stable. Only when patients' conditions are unstable, and move frequently from home to hospital, were costs of care in an institutional setting found to be lower than home care.

The report found that, when clients were matched by their level of needs, the best value to government comes from supporting the client at home. The report demonstrated that each patient cared for in the community rather than in a facility saves the system an average of \$8,000 a year. The research demonstrated that these savings are realised even when costs related to home care are factored in, such as emergency department presentations and GP visits, higher prescription-drug use, domiciliary services and respite (adult day care).

The Canadian research showed that costs increase substantially each time there is a rapid transition, such as from home to emergency department/acute care hospital, or from home to a nursing home or extended-care

facility. However, when a person's condition deteriorates gradually, it is far more cost-effective to keep them at home even at the palliative stage, according to the study.

The research was conducted in British Columbia, a province that uses a standardised classification system for all older people entering the service system, whether they are assigned to home care or institutional care. This reflects the practice in Australia for higher level care services (that is, excluding HACC), whereby clients are assessed by an ACAT using the RCS. This was deemed as enhancing the rigour of the research as it enabled comparison of clients across the service system according to a single assessment tool.

The Cochrane study by Parkes and Shepperd (op cit) found that there were no statistically significant differences reported for overall health care costs, although one study reported a significant reduction in readmission costs for medical patients allocated to discharge planning.

Coast et al (1998)<sup>1</sup> undertook a cost minimisation analysis of home in hospital versus acute hospital care. The study was carried out in parallel with a randomised controlled trial (Richards et al op cit) comparing the effectiveness and acceptability of two alternatives, which concluded that the two forms of care had similar outcomes in terms of mortality, functional outcomes, quality of life, and satisfaction with care. The analysis calculated the mean cost per hospital patient as £3,292 and that for the hospital in the home patients as £2,516. This implies a reduction in cost of around £750 per patient with early discharge.

#### **EACH ECONOMIC EVALUATION**

The EACH evaluation (op cit) found that the current level of government subsidy plus the client contribution is generally commensurate with the cost of this level of service delivery. While the EACH pilot program cannot yet clearly demonstrate monetary savings, when considering the level of funding in conjunction with the quality of EACH services, the funder gets as good, if not better, outcomes for the same investment.

### **5.4 UTILISATION OF OUTCOME MEASUREMENTS**

A significant objective of the literature review is to investigate the types of outcomes measures that have been utilised in studies in the past. The criteria for inclusiveness of studies were: subjects were in acute care and were discharged to a setting such as home in the hospital. The subjects often were not suitable for nursing home placement and were discharged to home to receive sub-acute care. The subjects may have had specific medical or surgical conditions such as orthopaedics, cardiac or respiratory, or may have been general inpatients.

The table below indicates the types of measures used in studies. The measures can be categorised as sample or baseline and outcomes measures.

Outcome Measure	Studies Cited								
	Shepperd et al 1998	John Hunter Hospital 2001	Caplan et al 1999	Bowler et al	Victorian PAC Evaluation	Parkes and Shepperd 2002	NDHP 3 - Interim Care	Richards et al 1998	Wilson et al (1999)
ALOS		Y	Y	Y	Y	Y		Y	Y
Median LOS			Y						
Age			Y						
Gender ratio									
Barthels	Y								Y
Disease specific measures	Y			Y					
Hospital readmission	Y	Y	Y		Y	Y	Y		
Clinical complications		Y				Y			
Mortality	Y								
Number of medications	Y					Y			
Number of medical problems	Y								
Functional Independence Measurement (FIM score)	Y	Y		Y					
Mini Mental Status Examination (MMSE score)	Y								
Geriatric Depression Score (GDS score)	Y	Y							

Y

Y

Y

Health Outcomes International

score)									
Episodes of confusion	Y		Y						
Confusion Assessment Method (CAM)	Y								
% of occupied beds awaiting placement		Y							
Access Block									
Patient satisfaction	Y	Y	Y	Y		Y	Y	Y	
Carer satisfaction	Y Y	Y	Y	Y		Y			
Staff satisfaction				Y					
SF-36 or functional assessments							Y		
COOP	Y	Y							
Other Quality of life measures			Y		Y Y			Y	Y
Patient depression and anxiety							Y		
Cost	Y						Y		
Discharge Destination			Y						Y

Y

The table demonstrates that measures such as LOS, hospital readmission, Barthel Index score, and quality of life (including SF-36) measures have been used extensively in the literature. Patient / Carer satisfaction surveys have also been utilised extensively to assess the impact of home care on the attitudes of patients. Disease specific measures include measures that pertain specifically relating to clinical measures. They include measures relating to orthopaedics, respiratory, cardiac medicine or other specialities.

Bowler et al (2001) suggests that the evidence in the literature suggests that clinical outcomes (such as lung function analysis) have no functional implication or impact on patients' quality of life. Disease severity, as measured by FEV 1, and changes in these measures, have not been shown to correlate with patients' quality of life<sup>ii</sup>, hospital readmission rates<sup>iv</sup>, or to predict the frequency of exacerbations<sup>iv</sup>.

Increased distress and inadequate coping skills are more significantly related to clinical decisions, increased referrals to respiratory specialists and other resources such as hospital re-admission. Poor quality of life has been found to correlate with increased frequency of exacerbations and increased hospital readmission rates.

Well-being in COPD patients is more importantly related to factors outside than inside the clinical domain<sup>vi</sup>. Anxiety and depression have been found to be better predictors of quality of life scores than physiological measures for COPD and significantly associated with functional status<sup>vii</sup>.

The client, service, and system level measures considered appropriate for the Interim Care Program are discussed in the next section.

## 6 CONCLUSIONS AND DIRECTIONS FOR EVALUATION

### 6.1 PROGRAM LOGIC

Program logic refers to the underlying logic that guides the development of a health program<sup>lviii</sup>. There are a number of issues identified in the literature review that have influenced program logic. Further, it is important to consider the contextual, historical and political influences that have guided the development of the Interim Care program.

In particular, an analysis of program logic must recognise four important components (Lipsey, 1990 in Hawthorne op cit.):

- A clearly defined problem – in this context, the key problem identified is that of patient flow from acute to aged care settings following an acute episode;
- Specification of the program's inputs – these have been determined at the outset via the funding mechanisms in place, number of Interim Care places available and infrastructure available to the program. External inputs, especially acute and residential aged care places must also be considered in this context;
- Intrinsic and extrinsic processes upon which the program relies – particularly important in the Interim Care program are discharge planning processes and case management strategies; and
- Specified expected outcomes of the program – the program's objectives are clearly articulated in section 1.2 above.

In addition, there are a number of issues that influence the clarity of program logic. These include changing client groups (the client group is set for the Interim Care program), changing evidence bases and changes to policy and funding direction. Whilst the literature addresses all of these issues to some extent, there is no clear direction from the literature as to what constitutes best practice in terms of interim care/transitional care against the following parameters:

- Structure – how is the program best structured, what is the best system of service delivery (eg hospital-based, in-home, RACF-based)?;
- Size/scope – how many places should be available (this is obviously linked with external resource availability and service systems)?;
- Funding – who pays? The answer to this question is largely determined political structures (State/Commonwealth relationships, private and public service balance etc.); and
- Hierarchy of outcomes – short-term and long-term outcomes for the target population and the system are not explicitly defined. For each program objective, a matching outcomes provision must be stated.

### 6.2 PERFORMANCE MEASUREMENT

The majority of measures explored in this literature review are process, impact and outcomes measures. The measures that seem to be most relevant to the Interim Care model are satisfaction of both the client and carer, the cost of the service, waiting time/access block, re-admission rates, and LOS. Broadly, these measures may be grouped into client level, service level or system level performance measures.

The measure of ambulance by-pass rates and measures relating to design or inputs to the Interim Care model were not examined in the literature, primarily due to the paucity of the evidence base. These may be valuable in the current evaluation, although establishing causative links may be difficult. The following performance measures are identified as potentially applicable to the Interim Care program:

#### CLIENT LEVEL MEASURES

It is considered that evaluation of the impact of the Interim Care level is best undertaken by an analysis of the following variables:

- Client/carer satisfaction;
- Analysis of waiting times – in acute and residential aged care settings; and
- ALOS in acute and Interim Care settings.

Functional assessment data are available to the team and will be reviewed, although these variables (such as Barthel Index Score or ADL scores) are problematic due to the nature of the client group. That is, the client group is likely to be in deteriorating health, and their eligibility for the program is defined by the completion of medical and rehabilitative care. Analysis of these data may, however, identify unintended program outcomes.

#### **SERVICE LEVEL MEASURES**

The Interim Care program is expected to have a significant impact on the way in which both acute and aged care services are planned and delivered. The following features will be assessed:

- Case management procedures – the role of case managers, discharge planners and non-medical staff is vital to the overall success of the program and to patient transition between different elements of the Interim Care program;
- Records/Information management – information flow between relevant care providers and compliance with medical record management policies;
- Referral and transition processes – the ‘fluidity’ of service for consumers from a continuity of care perspective; and
- Relationships between acute and aged care service providers.

#### **SYSTEM LEVEL MEASURES**

Evaluation of the system level impact of the program is an extremely important component of the evaluation. The following parameters will aid this level of evaluation:

- Average Length Of Stay (ALOS) – this will indicate the extent to which the program’s overall objective of reducing ‘bed blockage’ is being achieved;
- Ambulance Bypass rates – another key objective of the program;
- Residential Aged Care and acute bed utilisation/occupancy – a method of assessing system capacity and potential for expansion of the program; and
- Cost of the program.

It may be assumed that if an impact is not observed on these parameters, the effectiveness of the program is limited in accordance with objectives. This may in turn require the development of alternative theories to explain the systemic problem of acute ‘bed blockage’, such as:

- Blockages are not entirely attributable to older people;
- The models of Interim Care are not appropriate;
- There may need to be more Interim Care places; or
- There may need to be a re-distribution of acute and residential care places.

### **6.3 DIRECTIONS FOR EVALUATION**

The literature review has elucidated a range of evaluation issues that must be considered by the evaluation team when assessing the impact of the Interim Care program. Broadly, the evaluation must focus on client, service and system level evaluation parameters, and must also be cognisant of extrinsic influences on the program.

In conclusion, it is considered that the literature guides the evaluation to apply the following strategy:

Evaluation Level	Evaluation Component	Extrinsic Variables to Consider
Client Level	Client satisfaction ALOS in acute phase Waiting time for Residential Aged Care Facility placement Independent functioning level (low priority)	Cause-effect may not be discernible Client choice may be incompatible with options available Influence of other programs Supply and demand issues external to the IC program Many clients with degenerative conditions may find it hard to regain or sometimes maintain functional abilities
Service Level	Policy development – record management, referral processes, memoranda of understanding Re-admissions Inter-agency relationships Waiting time for admission/discharge Patient flow (bypass rates, occupancy, ALOS)	Implementing new systems problematic (eg start-up/recruitment phases) Resistance to change within large tertiary hospitals History of relationships within sector Seasonal influences on occupancy etc. Regional demographic profiles
System Level	Occupancy/utilisation – acute and residential Ambulance bypass rates Cost Capacity to 'roll-out' further – system readiness	Allocation and distribution of aged care places (including exempt places) Policy direction – State and Federal

The evaluation components are shown in the main report in the sections on evaluation of the effectiveness (Section 4) and efficiency (Section 5) of the Interim Care Program.

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