



Australian
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Sub-acute care

An international literature review

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Lessons learned

This review analyses evidence from the international literature on sub-acute care, with a particular emphasis on what would work well in regional and rural Australia.

- > The evidence suggests there is no single model of what works in sub-acute care, but supported early discharge streams appear to offer the best approach for Australia, especially for regional and rural areas. The evidence suggests that if these are well-targeted and all the essential elements are provided they can reduce re-admission rates and improve quality of life and functional outcomes.
- > There is mixed evidence about the cost-effectiveness of sub-acute care, but such programs may provide value and patient satisfaction. Such programs may simply shift costs, but in doing so may also free up acute care beds.
- > The requirement for a range of healthcare professionals to deliver sub-acute care services sets up a barrier, especially outside of metropolitan areas.
- > The short-term and the non-recurrent nature of funding streams for sub-acute care is a challenge for their implementation and continued improvement.
- > Effective engagement of all stakeholders is important.

Introduction

This report has reviewed a wide range of literature. However, it is not offered as a systematic literature review, but rather as a selection of evidence from various sources; where possible, from published reviews, supplemented by information from 'grey' (unpublished) literature.

Method

A two-step process was used to identify the relevant publications. Firstly a comprehensive search was undertaken using the MeSH heading in PubMed. The MeSH headings used are listed in the box below. This generated a large number of potential articles, which were then filtered, first by country and then dates (all articles since 2000), language and presence of an abstract (Figure 1).

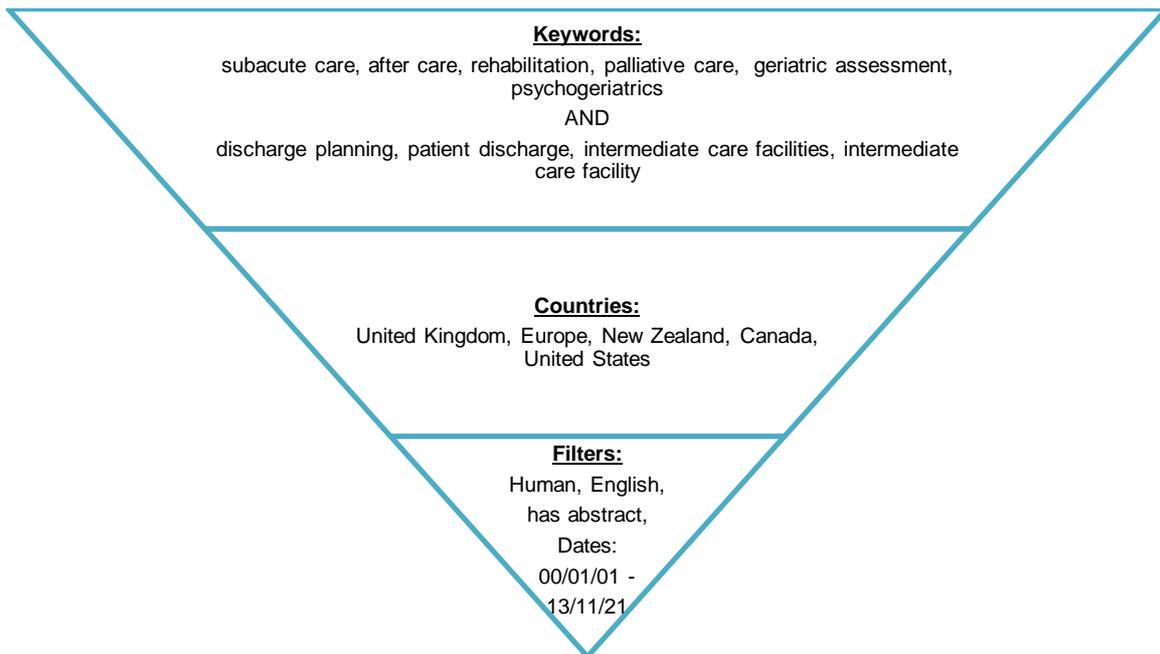


Figure 1: Search strategy

The abstracts were reviewed, and for those papers considered to be relevant, full papers were obtained, where available. In addition, to the search strategy illustrated in Figure 1, keywords were added to identify papers relevant to rurality and remoteness, however, this identified no articles.

References list were perused from key papers as they were being reviewed to identify other relevant literature. References that had not already been identified through the search were selected and reviewed.

Results

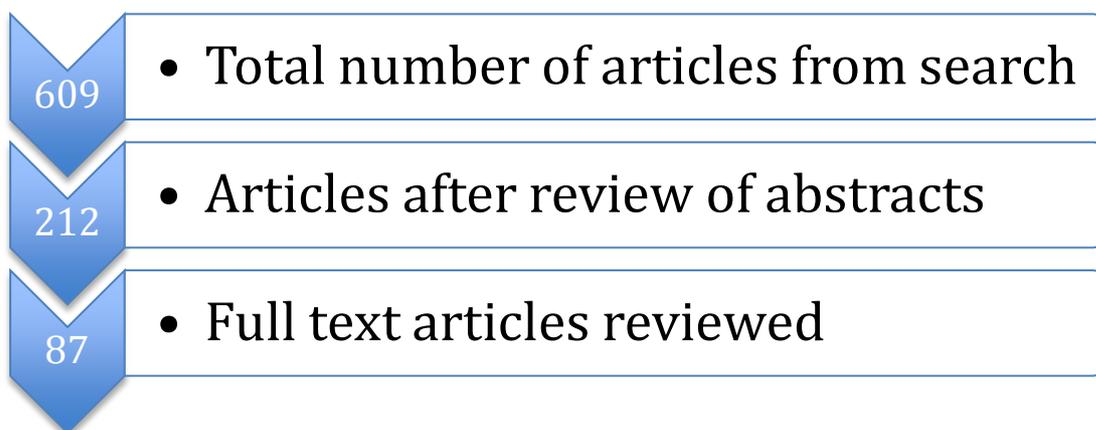


Figure 2: Search results

Figure 2 shows the number of articles that were identified and the full text articles that were reviewed.

DEFINITIONS

Common to all the definitions in the literature is a group of patients who no longer meet criteria for classification as 'acute', but who still require care at a level above that which can be provided by a General Practitioner (GP), and the care required being more clinically intense and goal directed than long term care.⁽¹⁾

The term subacute care was first used in Australia in 1992 to describe patients whose need for health care was predicted by their functional status, rather than their principal medical diagnosis.⁽²⁾ Internationally the definition of subacute care is very variable and a review by the US Department of Health and Human Services identified thirty-two different definitions in the published literature and a further four definitions used by American organisations.⁽³⁾

In the United Kingdom (UK), the term 'intermediate care' is used and "is a sweeping phrase that encompasses a wide diversity of practices in a plethora of venues"⁽⁴⁾ and at its simplest is described as "healthcare occurring somewhere between traditional primary (community) and secondary (hospital) care settings."⁽⁵⁾

The Department of Health (UK) identified criteria that intermediate care services should meet (Box 1) and subsequently Steiner identified key themes of 'intermediate care'.⁽⁶⁾ These include: services that are more supportive than directive; a model of care that is seen to follow more nursing than medicine; and care that is delivered in a home-like setting in or near the patient's home. There is also a set of consistent care elements that include holistic care and timely reassessment and flexible multi-disciplinary input but there is a lack of consensus on the required intensity of treatment. Steiner proposed a definition: "intermediate care refers to service or activities concerned with patients' transitions between hospital and home, and from medical/social dependence to functional independence".

Gray identified the increasingly important role of sub acute care and rehabilitation in

Box 1: The definition of intermediate care (DOH UK)

According to Health Service Circular 2001/001 intermediate care services should meet all of the following criteria ⁽⁷⁾:

- They are targeted at people who would otherwise face unnecessary prolonged hospital stays, or inappropriate admission to acute in-patient care, long-term residential care or continuing National Health Service inpatient care.
- They are provided on the basis of a comprehensive assessment, resulting in a structured individual care plan that involves active therapy, treatment or opportunity for recovery.
- They have a planned outcome of maximising independence and typically enabling patients/users to resume living at home.
- They are time limited, normally no longer than six weeks and frequently as little as one–two weeks or less.
- They involve cross-professional working, with a single assessment framework, single professional records and shared protocols.

Australia and focused on a range of functions that include “medium and low intensity medical care, comprehensive geriatric assessment (CGA), rehabilitation, psycho-geriatric assessment and management and palliative care”.⁽⁸⁾ He further described the location of sub acute services, which can be in an acute care environment, designated wards or facilities, on a separate site or in a long term care facility. The Australian Institute for Health and Welfare classifies subacute care as care that is delivered under the management of or informed by a clinician with specialised expertise in the care type and is evidenced by an individualized multidisciplinary management plan that is documented.⁽⁹⁾

Extract from Development of nationally consistent sub-acute and non-acute admitted patient care data definitions and guidelines, Australian Institute for Health and Welfare:

“ensure that care classified as subacute is care that:

- is delivered under the management of or informed by a clinician with specialised expertise in the care type
- is evidenced by an individualised multidisciplinary management plan that is documented in the patient’s medical record
- reflects both the characteristics of the patient and the expertise of the treating clinician”

In view of the varying definitions of subacute care internationally, the authors’ discretion was used during the process to identify those papers that met the Australian context and definition for inclusion.

Analysis

A framework^(10, 11) for thinking about the organisation of healthcare has been provided by “the ecology of medical care” model. Whilst this framework does not include sub-acute care, it can be overlaid onto this framework (Figure 3). These two ecology of medical care papers were published forty years apart but show that the distribution of illness and place of treatment provision have changed very little over this time frame. The availability of post-acute care is the most important determinant of whether patients use such care and which type of facility they use.⁽¹²⁾ It is estimated twenty five percent of elderly patients are deemed to require post-acute care and of these approximately eighty percent required post-acute rehabilitative care.⁽¹³⁾ For almost a fifth of patients in the UK admission avoidance schemes was the form of intermediate care utilised. This framework therefore provides a visualisation of the potential scope for subacute care and the volume of care that may be delivered in these settings.

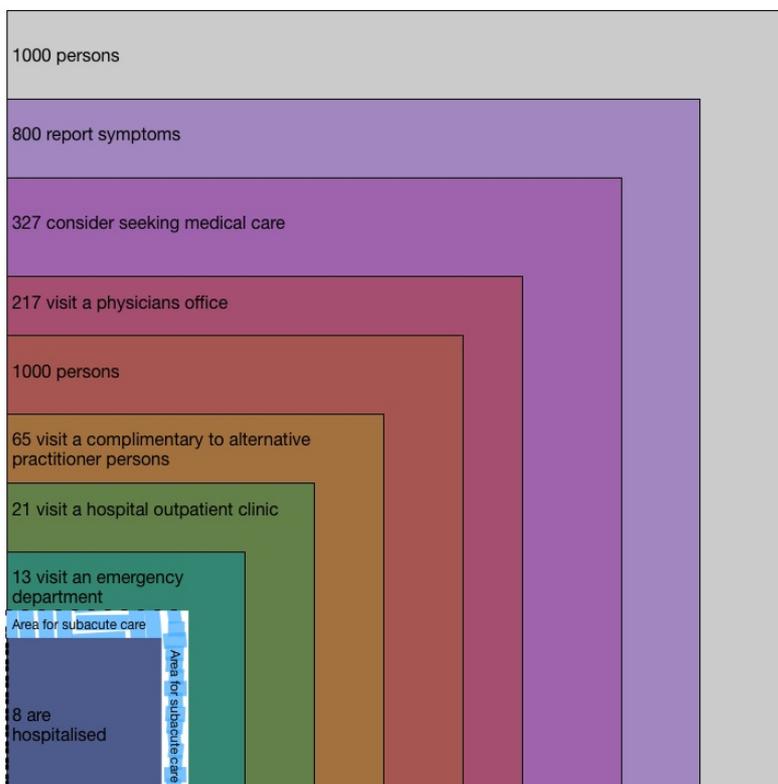


Figure 3: Adapted from Ecology of Health Care

The diagram (Figure 4) below provides a high level visual representation of a subacute care process. This representation using the SIPOC (Suppliers, Inputs, Process, Outputs, Customers) tool is used in quality improvement methodology for documenting a business process from start to end. This framework is used to report the findings from this review.

SIPOC: Sub-acute Care

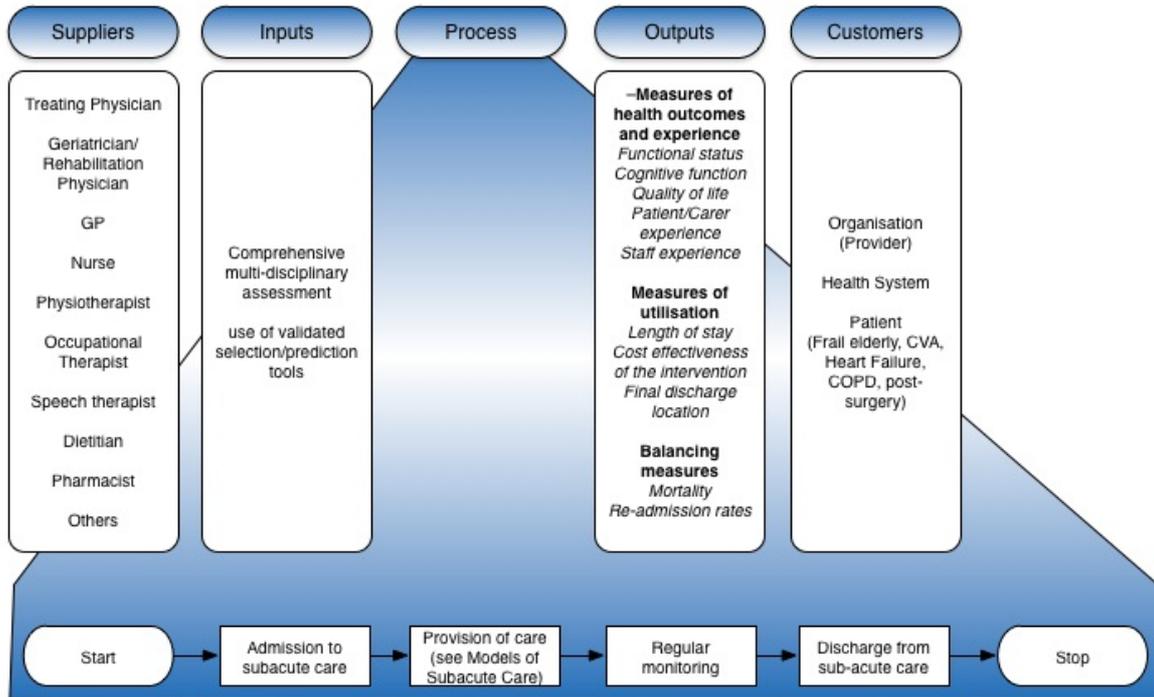


Figure 4: SIPOC Diagram - Sub-Acute Care

‘CUSTOMERS’

‘Customers’ are the clients that would benefit from the subacute care process. These broadly may be seen to be the acute health care system or the patient and their carers. The organisational focuses are often about reducing the length of stay, cost, appropriateness of hospital admission and nursing development⁽¹⁴⁾ (or more broadly staff development). The person-centred goals on the other hand are about recovery and improving function, or keeping people in their own homes. When considering patients, sub-acute care services are often targeted at specific groups. These groups may include the frail elderly or disease-specific groups. That is, for example, those people with heart failure, stroke, chronic respiratory diseases, and hip fracture/replacement. For some of these conditions there is clear evidence for specific follow-up and continuing treatment following a diagnosis. For example, cardiac rehabilitation in patients following a myocardial infarction, or the treatment of patients with a stroke in a stroke unit.⁽¹⁵⁾ In other cases, for example heart failure, there is ongoing research on how to optimise outcomes. Where a disease specific paper was identified in the context of subacute care this is discussed in the section on ‘process’.

In the UK there was a major drive to develop intermediate care services as part of the NHS plan in 2000 to build a bridge between hospital and home. The objectives of intermediate care policy were to promote faster recovery from illness, prevent unnecessary acute hospital admissions, support timely discharges and maximise independent living. The development of intermediate care was explicitly intended to dissolve the boundaries between health and social care services. It was also expected that it would involve private and voluntary organisations, so that a range of different services would be available to help to manage crises, some based in people’s own homes and others in non-acute hospital residential settings, i.e. it envisaged novel governance arrangements, focusing on the quality of service user experiences and on the coordination of services.⁽¹⁶⁾ The evaluation of intermediate care services discussed further below showed a mixed outcome.

‘OUTPUTS’

The outcomes for sub-acute care are mixed and the evaluation is complicated by the heterogeneous nature of sub-acute care, its variable definitions and its different purposes. This is further compounded by different populations in the research papers e.g. they may be the frail elderly or be specifically for those with hip fractures and again this makes comparison and extrapolations difficult. Nevertheless the types of outcomes that have been measured are similar and include:

- > Measures of health outcomes and experience
 - Functional status
 - Cognitive function
 - Quality of life
 - Patient/Carer experience
 - Staff experience
- > Measures of utilisation
 - Length of stay
 - Cost effectiveness of the intervention
 - Final discharge location
- > Balancing measures such as:
 - Mortality
 - Re-admission rates

Not all studies have the same range of measures or use the same instrument to measure the clinical outcomes. The most recent review in the case of older people in the UK, after a decade of intermediate care services, stated, “available data have not shown any intermediate care scheme to be effective at reducing acute hospital use” and “measuring outcomes and costs in complex services by conventional techniques may be too insensitive to detect genuine gains, and the patients currently being admitted to intermediate care services may not be the people most likely to benefit.”⁽⁵⁾ It went on to conclude that although there is a small benefit in functional outcomes and patient satisfaction, “the evidence to support a move towards any form of intermediate care service is still weak” and it may be more expensive than traditional inpatient care. In the section on ‘process’ (below), the different structures and models of sub-acute care are discussed and reviewed and the outcomes of specific models discussed in more detail.

PROCESS

The process of subacute care varies enormously and it takes many different structures. The literature is weak in discussing the specific processes of sub-acute care and focused more on the structures or models used. Appendix 2 provides a tabulated form of the papers used to inform this section by country and a narrative is offered below. Figure 5 offers a visual representation of a patient journey and the points at which subacute care processes may take place.

Models of Sub Acute Care

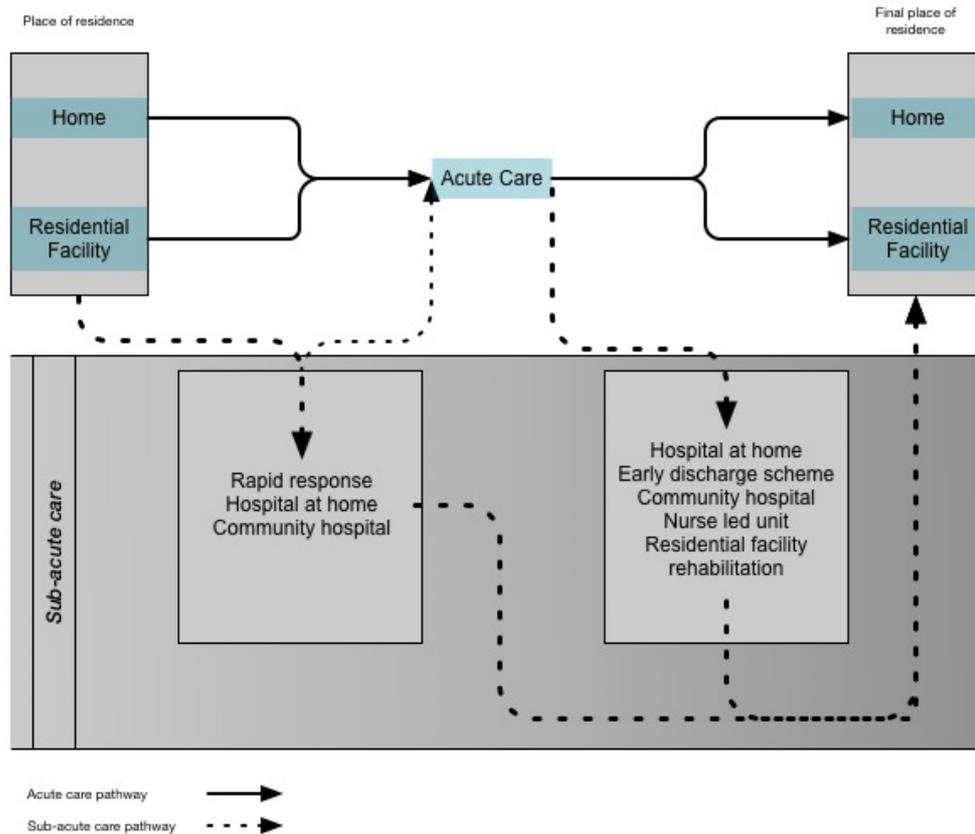


Figure 5: Sub acute care models

The literature either looks at single disease and the value of subacute care for those conditions or at selected populations, particularly the frail elderly. Steiner⁽⁶⁾ reviewed models of intermediate care and Woodford⁽⁵⁾ reviewed models for elderly populations whilst Stevenson⁽¹⁵⁾ offered a guide for development of intermediate care services. They present schemes that focussed on admission avoidance, schemes that offered post-acute care or schemes that may be either pre-acute or post-acute. Another review classified the intervention into short-term or long-term and whether they were residential or non-residential. One of the evaluation papers for the UK intermediate care program found that majority of referrals to intermediate care were for post-acute care with only seventeen percent for admission avoidance.⁽¹⁷⁾ Table 1 provides a description of each scheme and it's purpose. Evidence in relation to each scheme is discussed further below.

Model	Admission Avoidance	Post-acute Care	Description
Hospital at home	X	X	Hospital at home services provide active treatment by health and social care professionals in a person's home, for a condition that would otherwise require acute hospital in-patient care.
Supported early discharge schemes		X	A wide range of schemes designed to allow people to be cared for at home following a period of acute care. These may include multidisciplinary assessment, home visits, and arrangements for supportive services with involvement of primary care, geriatricians, social services and integrated health and social leads.
Rapid Response	X		Rapid response is a service that aims to provide a swift response to people's health and social care needs and simultaneously reduce pressures on the health and social care systems.
Community Hospitals	X	X	A unit that functions as either a part of a hospital or as an extension of primary care. It offers services that may include rehabilitation, convalescence, discharge planning, visiting consultant outpatient care, minor casualty services and minor surgery.
Nurse-led units		X	The post-acute nursing development units are based on the concept of 'therapeutic nursing'. This means that nurses rather than doctors manage the recuperation and discharge of appropriate service users in an environment that is conducive to recovery.
Residential rehabilitation units		X	These are the use of aged care facilities (residential or nursing homes) for short term to support rehabilitation.

Table 1: Models of Sub Acute Care^(5, 6, 15)

Hospital at home

Hospital at Home means the provision of active healthcare within patients' own homes by health and social care professionals in a way similar to the services available within a hospital environment, i.e. in the absence of this service they would need to be admitted. A Cochrane review compared early discharge hospital at home services with acute hospital care identified twenty-six trials with twenty-one being eligible for meta-analysis and thirteen

of them contributing data. ⁽¹⁸⁾ These trials were in Australia, Canada, New Zealand, Norway, Sweden, Thailand and UK. The main findings from this review were:

- > For patients recovering from a stroke and elderly patients with a mix of conditions there was insufficient evidence of a difference in mortality between groups
- > Readmission rates were significantly increased for elderly patients with a mix of conditions allocated to hospital at home
- > For patients recovering from a stroke and elderly patients with a mix of conditions respectively, significantly fewer people allocated to hospital at home were in residential care at follow-up
- > Patients reported increased satisfaction with early discharge hospital at home.
- > There was insufficient evidence of a difference for readmission between groups in trials recruiting patients recovering from surgery.
- > Evidence on cost savings was mixed.

The authors concluded “despite increasing interest in the potential of early discharge hospital at home services as a cheaper alternative to in-patient care, this review provides insufficient objective evidence of economic benefit or improved health outcomes”. Woodward stated that there is insufficient evidence to reliably inform health policy.⁽⁵⁾ A hospital in the home program in Tasmania, operated out of Launceston General Hospital, was closed in January 2012 as a result of low patient numbers.⁽¹⁹⁾ Caplan in an editorial surmises “where hospital in the home substitutes for in-hospital care, and the service works at reasonable capacity, hospital in the home is cheaper than hospital.”⁽²⁰⁾

Supported Early Discharge Schemes

Supported early discharge schemes are wide ranging and appear to be the best researched of all the different subacute streams. They are discussed in a review by Steiner and in guidance to implement intermediate care services the evidence is summarised as:

- > Reduces the length of stay in hospital for older people with hip fracture and increases the likelihood of people being able to return to their previous living arrangements;
- > Ensures that a higher proportion of older people remain at home 6–12 months after admission, resulting in a consistent fall in admissions to long-stay care over the same period, without any apparent increases in mortality; and
- > With some notable exceptions, the costs of early or supported discharge schemes seem to be lower than those of conventional care.⁽¹⁵⁾

This literature review identified several additional papers offering further evidence of use and efficacy.

A United States (US) trial of patients over the age of fifty with heart failure used an intervention that consisted of targeted inpatient education and consultations with a cardiac nurse specialist, a physiotherapist and dietician. A discharge plan was then created and a co-ordinated home care package implemented that consisted of telephone follow up and visits over a six-week period. The readmission rate was found to be almost four times less than for those who did not receive the intervention.⁽²¹⁾

A second US trial provided patients over the age of sixty-five with hip fractures with co-ordination of care from a gerontologic advanced practice nurse for six months after discharge. The services included phone calls and/or biweekly visits with activities constituting holistic assessment, education, communication with patient, carer, staff in various facilities, primary care physician, surgeon and staff in other agencies, locating

resources, and documenting progress. At twelve months the treatment group had better function but there were no differences in health, depression or living situation.⁽²²⁾

A Netherlands study offered outreach nurse support to patients following a stroke. The support consisted of three telephone contacts and one home visit within six months of discharge.⁽²³⁾ The paper described problems experienced by patients and carers. These include physical problems and emotional problems. Over the duration of the study the frequency of the reported problems was reduced. A Norwegian trial supporting early discharge in patients with a stroke offered a coordinating mobile team which organised a comprehensive follow-up service after discharge. It allowed the patient to continue rehabilitation at home or in a day clinic from a multi-disciplinary team consisting of a nurse, occupational therapist, physiotherapist and a part-time physician. The intervention group reported a better quality of life, functional outcome and reduced length of stay.^(24, 25)

A UK trial staffed by a multi-disciplinary team including occupational therapist, physiotherapist, nurses, community care officer and rehabilitation assistants visited older medical and surgical patients discharged from hospital. The service could visit up to four times a day for a month and could provide assessment, monitoring, rehabilitation therapies, assistance and care and was operational every day for fourteen hours a day. The outcome from this showed reduced length of stay in hospital with improved psychological well being and less physical limitations. Carers also reported better psychological well being. There was no difference in survival or residential status either at three months or twelve months⁽²⁶⁾ and an economic evaluation suggested cost-effectiveness.⁽²⁷⁾

A New Zealand meta-analysis (ASPIRE) of three trials included two in which the intervention was with a home care service.⁽²⁸⁾ One of the interventions offered input to patients and their families involving up to four visits a day from trained support workers; intensive care management from registered nurses with input from physiotherapists and occupational therapists as required; and a comprehensive geriatric assessment every six weeks. Another intervention was healthcare professionals working at an advanced level within well-defined geographical areas acting as care managers with strong partnerships with GPs and practice nurses. The research found that the approach facilitated independent living whilst not negatively impacting on the quality of life of the informal carer. The authors identified key ingredients as comprehensive assessment, case management, improved co-ordination and multiple follow-ups.

There are two trials that were identified in the literature search that are underway but are yet to report their findings. In the AD_LIFE (after discharge care management of low income frail elderly) trial⁽²⁹⁾ conducted in the US, elderly patients with impaired activities of daily living are supported by an early phone call from an advanced geriatrics care nurse to ensure care needs are being met and a nurse care manager undertakes a comprehensive in-house visit within seven days. The findings are shared with a multi-disciplinary team consisting of geriatrician, case manager, advanced nurse practitioner, social worker and a geriatrics certified pharmacist. An individual care plan is then created. The second study is a randomised trial offering admitted patients over the age of sixty five and at risk of functional decline a transitional care bridge program, consisting of a handover moment with a community care nurse during hospital admission and five home visits after discharge.⁽³⁰⁾

Rapid Response

Rapid response is a service that aims to provide a swift response to people's health and social care needs and simultaneously reduce pressures on the health and social care systems. They are often initiated through telephone triage systems, a method of crisis management, frequently but not exclusively nurse-led with health and social care inputs.⁽⁶⁾ The service was extremely popular with users, carers, primary care professionals and staff based in the local accident and emergency (A&E) department but underutilised by hospital staff and it appears to be safe, cost-effective and successfully reduces admissions.⁽¹⁵⁾

Researchers in the UK compared the use of extended scope paramedics to treat conditions in response to emergency calls against the standard emergency ambulance '999' service. They found the intervention to be effective in reducing hospital admissions with no difference in adverse outcomes ⁽³¹⁾.

Community Hospitals

Community hospitals are units that function as either a part of a hospital or as an extension of primary care. They offer services that may include rehabilitation, convalescence, discharge planning, visiting consultant outpatient care, minor casualty services and minor surgery. Hence they have a flexible and multipurpose role, however, there is little evidence on clinical outcomes and cost effectiveness to suggest that community hospitals are particularly appropriate settings for intermediate care.⁽¹⁵⁾ Three articles were identified commenting further on community hospitals.

One study provided individualised intermediate care including "care" and "cure" in a community hospital setting to patients over the age of 60 admitted to hospital.^(32, 33) A reduction in the number of readmissions to hospital for the same disease was observed and a significantly higher number of patients were independent of community care after 6 months, along with a decrease in mortality. Woodford and George⁽⁵⁾ cite another study that showed an improvement in activities of daily living but with other outcomes being similar to the non-intervention group. Green reports an intervention where patients allocated to community hospitals received a multidisciplinary assessment, individualised care plan, home assessments before discharge and co-ordinated discharge.⁽³⁴⁾ A consultant visited twice a week and local general practitioners covered out of hours. The duration of stay, care satisfaction and measure of care burden was similar to 'usual care' with a benefit having been observed in independence at six months for the intervention group.

Nurse-led units

A number of studies of nurse-led post-acute units have taken place, including a Cochrane review. The structure of nurse-led intermediate care units is multi-disciplinary, similar to acute-care wards.⁽³⁵⁾ The disciplines potentially include dietician, discharge planner, pharmacist, occupational therapist and physiotherapist, with the latter two disciplines being the most commonly involved. In addition, clinical nurse specialist, district nurses and speech therapist may provide occasional input with input available from chiropodist, geriatrician, general practitioner and chaplain on request. Steiner⁽³⁶⁾ found no differences in patient outcomes or post-discharge contacts with healthcare professionals, although patients in nurse-led units had fewer investigations and changes to medication. The length of stay was longer, but when adjusted for and taking account of community hospital length of stay (for those patients not admitted to the nurse-led unit) there were no significant differences, leading the authors to conclude that such units seem to unblock beds in community hospitals.

Cochrane reviews on the subject^(37, 38) concluded "there is some evidence that patients discharged from a nurse-led unit are better prepared for discharge but it is unclear if this is simply a product of an increased length of inpatient stay. No statistically significant adverse events were noted but the possibility of increased early mortality cannot be discounted."

Two US papers^(39, 40) published in 2007, and not included in the Cochrane review, implemented an "acute care for elders unit" in which patient aged over sixty-five who were admitted acutely to a unit designed to meet the needs of elders in relation to (i) the physical environment (ii) patient and family centeredness and (iii) the healthcare team. The papers are a narrative of one institution's implementation and cite a number of other studies⁽⁴¹⁻⁴³⁾ demonstrating effectiveness in several processes of care and outcomes of care e.g. improved satisfaction of patients, family, nurses and physicians, ADL function, symptoms of depression and reduced nursing home placements. There was no association with reduction in mortality or costs.

The reviews found the costs for nurse-led inpatient units were more in the UK studies but less in the US studies. Griffiths⁽³⁵⁾ concluded “the nurse led inpatient unit is a complex multidisciplinary intervention”, and that “positive results may only be generalizable to settings with similar skill mix across the multidisciplinary team as that found in the acute hospital.”

Residential rehabilitation units

Residential rehabilitation was one of the interventions in the New Zealand ASPIRE trial and included a slow stream rehabilitation service delivered within a residential facility.⁽²⁸⁾ Participants could remain within the facility for up to six weeks and received care from trained support workers and care management from a registered nurse with regular input from physiotherapy, occupational therapy, dietetics and a rehabilitation physician. On discharge the nurse co-ordinator would continue care management for up to one year utilising existing home care services. The outcomes were positive and have been analysed as part of a meta-analysis.

A study focused on cost-minimisation in the Netherlands introduced an intervention of early discharge to a nursing home with a rehabilitation process in place that included physical therapists, occupational therapist, and social worker supervised by a physician trained in geriatric medicine, found no significant cost savings but equivalent outcomes and concluded that early discharge shifted rather than reduced costs.⁽⁴⁴⁾

A guide for developing intermediate care services⁽¹⁵⁾ in the UK forms the same conclusion on cost and cites a study suggesting that “residential rehabilitation was well worth providing, but was difficult to do well.” Contrary to this, Woodford and George argue “this strategy may increase access to acute hospital beds, but is unlikely to be cost effective given the increase in overall time in care. For these groups of patients it seems that an additional period of rehabilitation has no significant sustained benefit in functional ability. It would probably be better to invest additional funding into care home provision to release hospital beds sooner, rather than develop this new model of continued hospital care”.⁽⁵⁾

As previously suggested the literature predominantly focuses on the interventions and structures of sub-acute care facilities rather than the processes of care. However, from the above narrative of the different structures, an impression of key process elements can be formed. These key elements appear to be:

- > Careful and standardised admission procedures;
- > Individualised care plans;
- > Care co-ordination and case management. (However note that one review concluded “there is no reliable evidence that case management is effective at reducing hospital admissions”.⁽⁵⁾ This was in the context of admission avoidance schemes.);
- > Intensive follow-up; and
- > Discharge planning from acute care.

Our search identified some literature that specifically focussed on the process elements; this was often around the process to support transitions of care. For example, Eija and colleagues interviewed home care personnel and explored their perspectives on the information needs for a successful discharge from hospital to home care.⁽⁴⁵⁾ The best predictors of successful discharge from the home care personnels’ point of view were: adequate information received about the treatment of the patient’s illnesses and their functional ability and cognitive potentials; timely information about the discharge; and good co-operation between the discharging hospital and the social care and health care workers working in home care. Furthermore, there were differences in the opinions of social care

workers and health care workers working in home care. The authors conclude for a successful discharge all the perspectives need to be taken into account. The issues and evidence on transitions of care in relation to sub-acute care are outside the scope of this paper but the issues are generic and the evidence has been reviewed recently.⁽⁴⁶⁾

A single UK-based study was identified which attempted to utilise tele-health within its structure to support patients with chronic obstructive pulmonary disease (COPD) who were discharged from hospital. In this pilot study, patients with COPD received either usual care or the intervention over a 8 week period. Usual care was six home visits by respiratory clinicians (physiotherapy or nurse) and the intervention was two visits with tele-monitoring at other times. The preparation for the trial led to the primary care trust experiencing significant challenges and difficulties. They had to partner with social services for installation of equipment. They were unable to report any data from the pilot study and instead reported on the significant challenges associated with significant changes to established working patterns.⁽⁴⁷⁾

INPUTS

The appropriate selection of patients for sub-acute care is a key issue. There is large variability in the selection of patient for subacute care, which may have a subsequent effect on the outcomes and the cost effectiveness. Studies have consistently shown that a large number of patients in hospitals are no longer in need of acute care.⁽⁴⁸⁾ At the same time, there is a recognised gap in care where patients who may benefit from low intensity sub-acute services are not referred for such services.⁽⁴⁹⁾

In an evaluation of the intermediate care program in the UK, one study found forty-seven percent of patients that were admitted to intermediate care were inappropriately admitted when compared to the Department of Health's criteria.⁽⁵⁰⁾ When a non-expert in rehabilitation and subacute care selects patients, the length of stay in the acute phase is shorter, however, a greater number of patients are readmitted. Furthermore, non-experts do not identify all the suitable patients.⁽⁵¹⁾

A factor that may impact the selection of patients is the expected outcome from rehabilitation. A number of studies have attempted to predict the outcomes. A US study reviewed the factors associated with positive and negative outcomes in patients receiving a Medicare home health benefit designed to provide short-term services to patients convalescing from acute illness. It found that age was negatively related to outcome, as was visual impairment, having Medicaid as a payer, confusion or cognitive impairment on admission, use of emergency or unplanned care, and urinary incontinence. Another study identified frailty status, as measured by an index of accumulated deficits, as also associated with adverse outcomes.⁽⁵²⁾ Sex, race, ethnicity, anxiety on admission, depression on admission, or living alone had no statistically significant relationship to outcome.⁽⁵³⁾

The level of function, as determined using a functional instrument, can be used in identifying patients suitable for rehabilitation, for example, in the case of stroke patients.⁽⁵⁴⁾ One study attempted to develop a prognostic index that could be used simultaneously to predict the risk of three outcomes (recovery, dependence or death) over the following year in older adults discharged from hospital. It found a number of predictors were able to accurately stratify the study population into those with a high likelihood of recovery, dependence or death. These predictors, which can all be obtained relatively easily, include age, sex, number of Activities of Daily Living (ADL) dependencies two weeks prior to admission, number of ADL dependencies at discharge, medical diagnoses, primary reason for admission, and creatinine level.⁽⁵⁵⁾

Comprehensive multidisciplinary assessment was a key element common to many of the studies of intermediate care where benefits were observed. MacMahon, in his narrative of the development of geriatric medicine, concluded that geriatric assessment is well proven and effective.⁽⁴⁾ There are a number of models of geriatric assessment and Woodford and

Steiner's reviews cite evidence showing benefits for geriatric evaluation and management, home assessment service and hospital to home assessment (supported discharge). The benefits included reduced mortality, living location, and physical function.^{(5) (6)}

Other papers since these reviews have also offered evidence in support of comprehensive geriatric assessment. A study from Norway redesigned patient pathways for hip fracture and placed the care of patients under the department of geriatrics (rather than orthopaedics).⁽⁵⁶⁾ A study from the US implemented a proactive geriatrics consultation model in collaboration with hospitalists. In this study the frail elderly population were targeted and the outcomes included a lower length of stay and lower hospital costs.⁽⁵⁷⁾

These studies evaluated assessments of inpatients. Ballabio undertook a comprehensive evaluation of elderly patients presenting to emergency departments in Italy.⁽⁵⁸⁾ All patients underwent an initial assessment by an on-site geriatrician and a comprehensive geriatric evaluation was performed on those elderly patients identified as benefiting by a small team of trained professionals that included a geriatrician, a nurse and a social worker. A significant reduction was noted in the number of patient re-attending the emergency department as well as improvement in the objectives scores on a number of inventories assessing neuropsychiatric, physical, functional and dietary status.

SUPPLIERS

A key element of delivering service is to be able to staff it with the right providers to deliver the needed care. There is no evidence about the best way to staff sub-acute units. There is weak evidence that the ratio of support staff to qualified staff impacts on health gains seen during care, with higher proportions of support staff being associated with greater improvement. There is stronger evidence that higher numbers of different types of staff are associated with lower costs.⁽⁵⁹⁾ In order to guarantee quality of care delivery, intermediate care requires a minimum number of nursing staff but there is no minimum standard available.⁽⁶⁰⁾

One study⁽¹⁴⁾ found that a nurse-led unit provided opportunities for nurses to enhance their roles and senior nurses saw this positively, although more junior nurses perceived the nursing role in nurse-led sub-acute facilities as being of lower status. However this same study also found that nurses in a nurse-led unit welcomed the increased autonomy and the opportunity to work more holistically with the inclusion of rehabilitation, convalescence and discharge planning as key elements in their work of therapeutic nursing.

The evaluation of intermediate care services in the UK has identified the recruitment and retention of both qualified and non-qualified staff as a challenge.⁽⁶¹⁾ A concern for professional isolation was identified as a factor for qualified staff and low pay and unsociable hours as a factor for non-qualified staff.

Conclusion

“Those developing intermediate care services must pay attention to what is already known, not simply to identify a single model that works but to identify the important mechanisms and contexts that have brought about the desired changes. As precise replication is impossible it is not sufficient to simply know that something worked (or indeed that it did not). In order for knowledge of effectiveness of such interventions to be useful it is vital to understand why they are effective.”⁽³⁵⁾

There is no clear model of subacute or intermediate care that stands out in the literature. The most evidence-based elements appear to be a comprehensive multidisciplinary assessment, followed by individualised care plans, and of both these need to be mandatory inputs into any subacute care pathway. The literature identified a number of evaluations of either transitions of care or intermediate care services and these have highlighted some general points that are relevant to sub-acute care. Hansen, in a review of strategies to reduce re-admissions to acute hospitals, made specific reference to two interventions; patient-centred discharge instructions and the post-discharge telephone call.⁽⁶²⁾ They also emphasised the significance of a bundle approach, that is, that all elements known to be effective have to be implemented.

Baumann evaluated English sites with low rates of delayed discharge to identify factors supporting good performance.⁽⁶³⁾ A key finding was that health systems should have a number of steps down from (or up to) acute care available. For example, for a patient from acute care, the first step down might be to an intermediate care centre, followed by a local intermediate care facility and then supported discharge home.

A separate review of five case studies of whole systems (rural, semi-rural and urban sites) demonstrated a range of services that included rapid response rehabilitation teams, residential intermediate care, sheltered housing facility, rehabilitation units (day centre, day hospital and community hospitals), and residential intermediate care and this range is consistent with Baumann’s conclusion.⁽⁶¹⁾ The same publication also identified challenges faced by those health systems in provision of intermediate care. The challenges included:

- > Recruitment and retention of staff
- > Short term, non-recurrent nature of funding streams
- > Lack of effective working between health and social care agencies
- > Different employment and health and safety policies held by health and social care agencies
- > Incompatible information technology and data collection systems
- > Lack of medical engagement

The strengths of intermediate care were felt to be the benefits to service users and outcomes with care being regarded as responsive, patient centred, flexible and holistic. Furthermore the establishment of a multidisciplinary team was reported to have benefits for staff as well as patients.

The analyses from another paper exploring transitions of care identified service configurations that facilitated transitions between health, social care and other services, and highlighted the importance of taking individual needs into account when decisions are made about which people are transferred into which services. The authors concluded, “while the results cannot be said to show that joined-up government works, they are consistent with

the argument that joined-up government goes beyond partnership-type concepts, and in practice, involves the creation of what might be termed integrated service networks.”⁽⁶⁴⁾

The outcomes reported in the literature for sub-acute care are variable. Some of this may reflect the fact that many of these studies were evaluations of changes in the ‘real world’ and thus not subject to the more rigorous controls expected for a research study. The second aspect to consider is that all the interventions described may be subject to quality improvement. That is, a theoretically appropriate intervention found not to deliver the anticipated outcomes in practice might do so if subjected to quality improvement, as demonstrated by Berkowitz.⁽⁶⁵⁾ In their study of a geriatric skilled nursing facility they conducted a quality improvement initiative that included standardisation of physician admission procedures, guidelines for common conditions, template for medication reconciliation, discussion of standardised goals and reflection on acute hospital admissions and multi-disciplinary conferences to look at the care of those patients. The intervention led to a twenty percent reduction in readmission back to acute care.

Researchers in Amsterdam evaluating an intermediate care model from an acute hospital to a residential facility advised that the “implementation of intermediate care needs to be given attention. It requires know-how and expertise. In Amsterdam, the initiators overestimated the ability of the staff of the residential home to develop and operate a transfer unit for early discharged patients”.⁽⁶⁰⁾

In a UK study of intermediate care in Cheshire authors commented that “methods and approach for reflective practice may be useful mechanisms for other providers to use when developing their current and future services for intermediate care. Involvement of users and carers in the evaluation and development of intermediate care is a priority.”⁽⁶⁶⁾ The need for effective clinical leadership is a key factor in the case of nurse led units, and the leadership is needed for the whole team, not the just discipline represented by the clinical leader.⁽³⁵⁾

In reviewing the above literature and analysing it in the context of the purpose of this document we believe the following are the key findings:

- > There is no single model or sub-acute care pathway that stands out as better in any way than any other. Identification of appropriate/ effective models and pathways is complicated because the definitions of what constitutes sub-acute care are wide-ranging.
- > It is necessary to be clear about the purpose of the sub-acute pathway and its objectives from the perspectives of all stakeholders including patients, and as such effective engagement of all stakeholders is important. The literature suggests that this is particularly so in case of medical engagement and consumers.
- > The sub-acute pathway represents another transition of care; hence another risk to patient safety. The need for effective and reliable transitions, both into and out of the sub-acute pathway, is critical as it is with any other service.
- > The appropriate selection of patients for entry into sub-acute pathways is critical. To be done effectively, experts must conduct selection of patients; although scoring systems may provide utility in identify those suitable for expert assessment. There is no evidence to determine if patients should be selected on the basis of diagnosis, prognosis, clinical and / or social needs, or some other factor.
- > Elements of sub-acute care programs that are common across interventions tested in studies are:
 - o A focus of rehabilitation with the right mix of staff and therapist(s)
 - o Co-ordination of service needs
 - o Regular follow- up and support mechanisms

- > The strongest evidence of essential elements for sub-acute care is for a multi-disciplinary assessment and individualised care plans. (This in the context of comprehensive geriatric evaluations.)
- > The evidence suggests that all elements known to be effective must be implemented.
- > Supported early discharge schemes have the greatest level of evidence with studies in those with hip fractures, strokes, heart failure and frail elderly with evidence supporting better functional outcomes, fall in admissions to long stay facilities, reduced re-admissions and cost-effectiveness. Admission avoidance schemes have supporting evidence, but the evidence is mixed for other subacute care structures including community hospitals, nurse-led units and residential rehabilitation units.
- > There is reasonable evidence that sub-acute care can improve quality of life and patient satisfaction and no evidence that mortality rates are affected.
- > Sub-acute care is unlikely to be cost-saving. There is some evidence that sub-acute care shifts costs from acute care; it may free up acute-care services and it appears to prevent re-admissions to acute care, at least in the short term. However, the assessment of outcomes and cost has been noted to be complex and lacking sensitivity in the literature.
- > The need to integrate sub-acute clinical care and social care services is a challenge.

Appendix 1 – Search Query

Query	Items found
Search (((((((((((subacute care[MeSH Terms] OR after care[MeSH Terms] OR rehabilitation[MeSH Terms] OR palliative care[MeSH Terms] OR geriatric assessment[MeSH Terms] OR psychogeriatrics[MeSH Terms])) AND ((discharge planning[MeSH Terms] OR discharge, patient[MeSH Terms])) OR care facilities, intermediate[MeSH Terms] OR care facility, intermediate[MeSH Terms])) AND (((united kingdom[MeSH Terms] OR europe[MeSH Terms] OR new zealand[MeSH Terms] OR canada[MeSH Terms] OR "united states"[MeSH Terms] AND (hasabstract[text] AND ("2000/01/01"[PDat] : "2013/11/21"[PDat])))) Filters: Abstract available; Humans; English	609
Search (((((((((((subacute care[MeSH Terms] OR after care[MeSH Terms] OR rehabilitation[MeSH Terms] OR palliative care[MeSH Terms] OR geriatric assessment[MeSH Terms] OR psychogeriatrics[MeSH Terms])) AND ((discharge planning[MeSH Terms] OR discharge, patient[MeSH Terms])) OR care facilities, intermediate[MeSH Terms] OR care facility, intermediate[MeSH Terms])) AND (((united kingdom[MeSH Terms] OR europe[MeSH Terms] OR new zealand[MeSH Terms] OR canada[MeSH Terms] OR "united states"[MeSH Terms] AND (hasabstract[text] AND ("2000/01/01"[PDat] : "2013/11/21"[PDat])))) Filters: Abstract available; Humans	665
Search (((((((((((subacute care[MeSH Terms] OR after care[MeSH Terms] OR rehabilitation[MeSH Terms] OR palliative care[MeSH Terms] OR geriatric assessment[MeSH Terms] OR psychogeriatrics[MeSH Terms])) AND ((discharge planning[MeSH Terms] OR discharge, patient[MeSH Terms])) OR care facilities, intermediate[MeSH Terms] OR care facility, intermediate[MeSH Terms])) AND (((united kingdom[MeSH Terms] OR europe[MeSH Terms] OR new zealand[MeSH Terms] OR canada[MeSH Terms] OR "united states"[MeSH Terms] AND (hasabstract[text] AND ("2000/01/01"[PDat] : "2013/11/21"[PDat])))) Filters: Abstract available	669
Search (((((((((((subacute care[MeSH Terms] OR after care[MeSH Terms] OR rehabilitation[MeSH Terms] OR palliative care[MeSH Terms] OR geriatric assessment[MeSH Terms] OR psychogeriatrics[MeSH Terms])) AND ((discharge planning[MeSH Terms] OR discharge, patient[MeSH Terms])) OR care facilities, intermediate[MeSH Terms] OR care facility, intermediate[MeSH Terms])) AND (((united kingdom[MeSH Terms] OR europe[MeSH Terms] OR new zealand[MeSH Terms] OR canada[MeSH Terms] OR "united states"[MeSH Terms] AND (hasabstract[text] AND ("2000/01/01"[PDat] : "2013/11/21"[PDat]))))	669
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Terms) OR "united states"[MeSH Terms] AND (hasabstract[text] AND ("2000/01/01"[PDat] : "2013/11/21"[PDat]))	
Select 609 document(s)	609
Search (((((((((((subacute care[MeSH Terms]) OR after care[MeSH Terms]) OR rehabilitation[MeSH Terms]) OR palliative care[MeSH Terms]) OR geriatric assessment[MeSH Terms]) OR psychogeriatrics[MeSH Terms])) AND ((discharge planning[MeSH Terms]) OR discharge, patient[MeSH Terms]))) OR care facilities, intermediate[MeSH Terms]) OR care facility, intermediate[MeSH Terms])) AND (((((united kingdom[MeSH Terms]) OR europe[MeSH Terms]) OR new zealand[MeSH Terms]) OR canada[MeSH Terms]) OR "united states"[MeSH Terms]) Filters: Abstract available; Publication date from 2000/01/01 to 2013/11/21	669
Search (((((((((((subacute care[MeSH Terms]) OR after care[MeSH Terms]) OR rehabilitation[MeSH Terms]) OR palliative care[MeSH Terms]) OR geriatric assessment[MeSH Terms]) OR psychogeriatrics[MeSH Terms])) AND ((discharge planning[MeSH Terms]) OR discharge, patient[MeSH Terms]))) OR care facilities, intermediate[MeSH Terms]) OR care facility, intermediate[MeSH Terms])) AND (((((united kingdom[MeSH Terms]) OR europe[MeSH Terms]) OR new zealand[MeSH Terms]) OR canada[MeSH Terms]) OR "united states"[MeSH Terms]) Filters: Publication date from 2000/01/01 to 2013/11/21	856
Search (((((((((((subacute care[MeSH Terms]) OR after care[MeSH Terms]) OR rehabilitation[MeSH Terms]) OR palliative care[MeSH Terms]) OR geriatric assessment[MeSH Terms]) OR psychogeriatrics[MeSH Terms])) AND ((discharge planning[MeSH Terms]) OR discharge, patient[MeSH Terms]))) OR care facilities, intermediate[MeSH Terms]) OR care facility, intermediate[MeSH Terms])) AND (((((united kingdom[MeSH Terms]) OR europe[MeSH Terms]) OR new zealand[MeSH Terms]) OR canada[MeSH Terms]) OR "united states"[MeSH Terms])	1565
Search (((((((((((subacute care[MeSH Terms]) OR after care[MeSH Terms]) OR rehabilitation[MeSH Terms]) OR palliative care[MeSH Terms]) OR geriatric assessment[MeSH Terms]) OR psychogeriatrics[MeSH Terms])) AND ((discharge planning[MeSH Terms]) OR discharge, patient[MeSH Terms]))) OR care facilities, intermediate[MeSH Terms]) OR care facility, intermediate[MeSH Terms]	3336

Appendix 2 – Table of papers relevant to ‘process’ (models) of care

Title	Description	Results/Discussion
UK		
Preventative tele-health supported services for early stage chronic obstructive pulmonary disease: a protocol for a pragmatic randomized controlled trial pilot ⁽⁴⁷⁾	Patient with COPD either received usual care or the intervention over a 8 week period. Usual care was six home visits by a respiratory clinicians (Physio or nurse) and the intervention was two visits with tele-monitoring at other times.	The preparation for the trial led to the primary care trust experiencing significant challenges and difficulties. They had to partner with social services for installation of equipment.
Organisation and features of hospital, intermediate care and social services in English sites with low rates of delayed discharge ⁽⁶³⁾	The aim of the qualitative study was to investigate discharge practice and the organisation of services at sites with consistently low rates of delay, in order to identify factors supporting such good performance.	A range of intermediate care services had been developed to help reduce the number of people unnecessarily admitted to hospital, and to facilitate discharge. These varied between sites, but it was not uncommon for a number of steps down from (or up to) acute care to be available, although patients were not necessarily expected to take each step. For those with high needs, the first step down might be to an intermediate care centre, a next step down might be to a local intermediate care facility close to home, and a final step down could be to go home with some health and social care input.
Sooner and healthier: a randomised controlled trial and interview study of an early discharge rehabilitation service for older people ⁽²⁶⁾	Population: 370 hospitalised older medical and surgical patients Intervention: Early Discharge and Rehabilitation Service (EDRS) was staffed by two occupational therapists, two physiotherapists, three nurses, a Community Care Officer (liaising with social services), seven	This was a study in Nottingham. The centre is urban. Results showed reduced length of stay in hospital and improved health in terms of activity limitation and psychological well being in the short term. Furthermore, carers had better psychological well being. Benefits in terms of reduced activity limitation and better mood were evident one year later. There was no significant difference in survival or residential status between the groups at 3 or 12 months.

	<p>rehabilitation assistants, and secretarial support. The service could visit up to four times a day for a month for the purpose of assessment or monitoring, the provision of rehabilitation therapies, or the provision of assistance and care. It was for extended hours (8am -10pm) every day.</p> <p>Comparator: ‘usual hospital care’ were managed in hospital until fit for home, using existing after-care services as required. After-care services comprised hospital out-patient department rehabilitation, geriatric day hospitals, and all usual social services.</p>	
Intermediate Care – A Challenge to the specialty of geriatric medicine or its renaissance ⁽⁴⁾	This is a review article with the author providing a narrative on the development of geriatric medicine and using evidence to inform the discussion. He concludes geriatric assessment is well proven and effective.	
The organisation, form and function of intermediate care services and systems in England: results from a national survey ⁽¹⁷⁾	A postal survey of intermediate care coordinators (ICCs) on the organisation and delivery of intermediate care services for older people in England. This was part of the evaluation of the intermediate care programme in	The role of ICCs in its policy implementation documents on intermediate care, stressing that this was to be a joint post pertaining to health and social care, with a strategic and operational role at the pioneering end of cooperative working between the NHS and local authorities. There was no apparent relationship between ICC funding source and the degree of integration of intermediate care.

	UK.	<p>It appears that the:</p> <ul style="list-style-type: none"> • Majority of referrals are for supported discharge with only 17% for admission avoidance the finding that post-acute intermediate care was significantly more likely to be provided in residential settings, and admission avoidance intermediate care in non-residential settings. • There was a lack of 24-hour service good deal of intermediate care provision may be aimed at comparatively low dependency older people rather than those in need of overnight provision. • It is apparent that intermediate care development has been highly sensitive to local context: old services predating the introduction of the policy have come under the intermediate care banner, and new services have been developed that vary immensely in remit and scope, and which are often united only by their label.
Economic analysis of an early discharge rehabilitation service for older people ⁽²⁷⁾	An economic evaluation conducted alongside a randomised controlled trial (RCT) of an early discharge and rehabilitation service (EDRS) in Nottingham, UK ⁽²⁶⁾ .	The authors conclude that despite the intense home input from the early discharge and rehabilitation service, the latter was cheaper and probably more cost effective than routine care.
Networks and governance: the case of intermediate care ⁽⁶⁴⁾	This paper from data collected as part of a case study evaluation of intermediate care developing service configurations that facilitated transitions between health, social care and other services, and that individual needs were taken into account in the decisions made about which people transferred into which services into the creation of	

	integrated service networks.	
A whole system study of intermediate care services for older people ⁽⁶⁷⁾	<p>This was a follow on study to a baseline study by the same author.⁽⁶⁸⁾</p> <p>Population: Patient presenting as emergency admissions to two elderly care departments with falls, confusion, incontinence or immobility.</p> <p>Intervention: a city-wide service in which a joint care management team (multi-agency, multi-disciplinary) assessed patient need and purchased support and rehabilitation from sector-based IC teams.</p> <p>Comparator: A cohort of patient recruited before the intervention.</p>	The intervention was associated with similar clinical outcomes but did not achieve its strategic objectives of reducing long term care and hospital use.
An estimate of post-acute intermediate care need in an elderly care department for older people ⁽¹³⁾	Elderly patients admitted to a district general hospital and registered with a GP in an area served by the community hospital.	25% of patients were deemed to require post-acute care and of these 80% required post-acute rehabilitative care.
A prospective baseline study of frail older people before the introduction of an intermediate care service ⁽⁶⁸⁾	<p>This paper is part of a two-staged research project.</p> <p>Population: Elderly people attending a district general hospital in North of England.</p>	There was a high mortality rate (36%), evidence for incomplete recovery, a gradual decline in independence over 12 months and a high degree of carer stress. There was little use of rehabilitation services (< 5%), about 25% required readmission to hospital by each assessment point and there was a gradual increase in institutional

		<p>care admissions. These findings support a needs-based argument for a more comprehensive community service for frail older people.</p>
<p>Intermediate care for older people in the UK ⁽⁵⁾</p>	<p>This was a review article.</p>	<p><u>Admission avoidance:</u></p> <p>Concluded that the total number of older patients with a mix of medical conditions randomised to evaluate hospital at home is very small and the evidence is insufficient. Furthermore they also concluded that there is no reliable evidence that case management is effective at reducing hospital admissions, although it may improve quality of care. The author cites evidence that a paramedic assessment service reduces hospitalisation but comment on the limitations of the study.</p> <p><u>Discharge schemes:</u></p> <p>There is no strong evidence that hospital at home for early discharge is any cheaper than standard care, but it appears to offer similar rates of mortality and disability. There may be a lower chance of admission to residential care at one year, but offset by a higher risk of readmission to hospital. Patients generally seem to like hospital at home schemes.</p> <p><u>Nurse led units:</u></p> <p>There is no reliable data that nurse-led units would either release hospital beds or save money.</p> <p><u>Community Hospitals:</u></p> <p>There was an improvement in functional status at a similar cost and another further study found reduced mortality. The author points to difficulty in generalisation due to heterogeneous nature of community hospitals.</p> <p><u>Care homes:</u></p> <p>This strategy may increase access to acute hospital beds, but is unlikely to be cost effective given the increase in overall time in care. For these groups of patients it seems that an additional period of rehabilitation has no significant sustained benefit in functional ability.</p>

		<p>The author concludes by citing evidence that for older adults with an acute illness care in an acute geriatric unit within an acute hospital is the gold standard with lower risk of functional decline, higher rate of discharge to their own home, and no significant differences in mortality. The enabler is claimed to be a comprehensive geriatric assessment.</p> <p>Overall, the evidence to support intermediate care is weak with no real data to suggest acute care usage will be reduced and potentially overall costs may rise.</p>
<p>Therapeutic nursing or unblocking beds? A randomised controlled trial of a post-acute intermediate care unit⁽³⁶⁾</p>	<p>Population: all patients referred to the nurse-led unit of Southampton University Hospitals Trust for post-acute care that met the selection criteria.</p> <p>Intervention: Nurse led unit located near main hospital. The unit has a dedicated physiotherapist visiting three times a week and other ancillary services on request.</p> <p>Comparator: Usual care.</p>	<p>Length of stay longer but when adjusted for length of stay in community hospital for the comparator group there was no significant difference leading the authors to conclude that do not shift service demands from hospital to community—instead, they seem to unblock beds in community hospitals.</p>
<p>Effects of locality based community hospital care on independence in older people needing rehabilitation: randomised controlled trial⁽³⁴⁾</p>	<p>Population: patients needing rehabilitation after an acute illness that required hospital admission.</p> <p>Intervention: Patients allocated to community hospital care were assessed by the</p>	<p>The duration of stay, care satisfaction and measure of care burden were similar for both groups but the independence at six months was greater for the intervention group.</p>

	<p>multidisciplinary team and received an individual care plan designed to maximise recovery and promote independence. Home assessments before discharge are commonly arranged, and discharge is coordinated with the local social service team. The consultant visited the hospital at least twice a week and the hospital practitioner visited the hospital each weekday. Local general practitioners provided out of hours cover.</p> <p>Comparator: Usual care consisted primarily of an extended stay in the care of the elderly ward in the local district general hospital but could include transfer to a non-locality based community hospital or to social service facilities, both of which offered slow track rehabilitation.</p>	
<p>Challenges, benefits and weaknesses of intermediate care: results from five UK case study sites⁽⁶¹⁾</p>	<p>This is a review of case collected as part of the evaluation of the intermediate care programme. Case studies were selected to represent whole systems. Two of the case studies were urban, one was urban/semi-rural, one rural/semi-rural and one urban</p>	<p>The challenges faced included difficulties relating to recruitment and retention of both qualified and non-qualified staff. Factors contributing to this included potential for professional isolation. For support staff low wages and unsociable hours. This was compounded by short term, non recurrent nature of some funding. A lack of effective joint working between health and social care agencies was highlighted as a major impediment to the implementation of intermediate care in all case study sites.</p>

	<p>and rural. The range of services included rapid response rehabilitation teams, residential intermediate care, sheltered housing facility, rapid response, rehabilitation, domiciliary care, rehabilitation units (day centre, day hospital, community hospital), residential intermediate care, beds in independent sector residential home.</p>	<p>At the operational level, different employment and health and safety policies held by health and social care agencies combined with incompatible information technology and data collection systems to present significant challenges to 'frontline' staff. Lack of medical engagement was cited as a challenge and the reasons for this included perception of discrimination against elderly, lack of evidence, as well as a perception by some that doctors were not needed in intermediate care.</p> <p>Interviews felt the main strength of intermediate care was the benefits to service users and outcomes with care being regarded as responsive, patient centred, flexible and holistic. The establishment of effective multidisciplinary team working was reported as strength of many of the intermediate care services and was regarded as having benefits for staff as well as users.</p>
US		
<p>The After Discharge Care Management of Low Income Frail Elderly (AD-LIFE) Randomised Trial: Theoretical Framework and Study Design⁽²⁹⁾</p>	<p>Population: 65 years old, confirmed or probable dual eligible (Medicare and Medicaid), and at least 1 impaired ADL or 2 impaired instrumental activities of daily living (IADL), and must be discharged home.</p> <p>Intervention: Intervention patients receive a phone call from a geriatrics-certified advanced practice nurse (APN) within 48 hours of discharge to ensure that immediate needs</p>	<p>Recruitment occurred. Evaluation ongoing.</p>

	<p>are being met. The APN and a nurse care manager (CM) perform a comprehensive in-home assessment and delineate patient goals of care within 7 days of discharge. These findings are shared with an interdisciplinary team that generates individualized care plans that are structured around the Assessing Care of Vulnerable Elders (ACOVE) guidelines. The core team includes a geriatrician, a nurse care manager, an APN, a social worker from the Area Agency on Aging (AAoA), and a geriatrics-certified pharmacist.</p>	
<p>The Acute Care for Elders Unit: Taking the Rehabilitation Model into the Hospital Setting⁽³⁹⁾</p>	<p>Population: Patients aged over the age of 65 admitted acutely</p> <p>Intervention: Acute Care for Elders (ACE) unit which pays particular attention to meet the needs of elders in relation to (i) physical environment (ii) patient/family centeredness (iii) healthcare team.</p>	<p>This paper is a narrative of one institutions implementation and cites other studies⁽⁴¹⁻⁴³⁾ demonstrating effectiveness in several processes of care (e.g., reductions in prescription of high-risk medicines, restraints used, and days to discharge planning), improvements in patient, family, nurse, and physician satisfaction; several outcomes of hospitalization at discharge, including ADL function, ability to walk, and symptoms of depression, and reduced nursing home placement; and no association with a significant reduction in mortality or hospital costs.</p>
<p>Benefits of Comprehensive Inpatient Education and Discharge Planning Combined With Outpatient Support in Elderly Patients With Congestive Heart</p>	<p>Population: Patient with heart failure aged over 50</p> <p>Intervention: A comprehensive community hospital-based heart failure program was developed coupling targeted inpatient</p>	<p>The primary outcome of the study was hospital readmission rates. The hospital readmission rate for the control group (44.2%) that received usual care was nearly four times that of the intervention group (11.4%) within 6 months.</p>

Failure ⁽²¹⁾	<p>education and consults (a cardiac nurse specialist, a physical therapy evaluation, and a dietary consult) and discharge planning with subsequent coordinated home care (6 week program with 6-20 visits) and telephone follow- up.</p> <p>Comparator: usual in-hospital care and education from the regular nursing staff according to a standard CHF pathway, and routine post-discharge home health care.</p>	
Interventions to Reduce 30-Day Rehospitalisation: A Systematic Review ⁽⁶²⁾	<p>This review provides an inventory of interventions studied to reduce re-hospitalisation within 30 days and describes the best published evidence for effectiveness of these interventions.</p>	<p>Did not identify a discrete intervention or bundle of interventions that appears to reliably reduce re-hospitalisation.</p> <p>Twelve interventions were identified in the categories of pre-discharge intervention, post-discharge intervention and interventions to bridge the transitions. Authors make particular reference in the discussion to two interventions; patient centred discharge instructions and the post-discharge telephone calls. They also raise the significance of bundle approach.</p>
Development and implementation of a proactive geriatrics consultation model in collaboration with hospitalists ⁽⁵⁷⁾	<p>Population: Patients at greatest risk for functional decline were proactively targeted for consultation soon after admission. These patients are usually aged 85 and older or 70 and older with cognitive or physical impairments</p> <p>Intervention: To provide a proactive geriatric consultation by a geriatrician and nurse</p>	<p>The most frequent geriatrics diagnoses were gait instability, delirium, and depression; recommendations usually included consulting physical therapy, increasing activity, and changing medications.</p> <p>Analysis of hospital administrative data revealed a lower length of stay index and lower hospital costs in patients receiving a geriatrics consultation.</p>

	<p>practitioner. The team assisted with identifying cases, provided consultation early in the hospital stay, focused its evaluation on functional and psychosocial issues, and assisted in clinical management to optimise implementation of recommendations.</p>	
Italy		
<p>A comprehensive evaluation of elderly people discharged from an Emergency Department⁽⁵⁸⁾</p>	<p>Population: Patients over the age of 75 attending emergency department.</p> <p>Intervention: All patients underwent an initial assessment by an on-site geriatrician aimed at identifying those elderly with complex needs who could benefit from a CGE to be performed within 72 hours at the Outpatient Geriatric Unit by a small team of trained professionals (geriatrician, nurse, and social worker).</p>	<p>Significant reduction (from 20% to 11%) in the number re-attending emergency department as well as improvement in a number on inventories used to assess neuropsychiatric, physical, functional and dietary statuses.</p>
Netherlands		
<p>Outreach nurse support after stroke: a descriptive study on patients' and carers' needs, and applied nursing interventions⁽²³⁾</p>	<p>Population: Patient experiencing a stroke.</p> <p>Intervention: Stroke patients and carers received outreach nurse support consisting of</p>	<p>This paper described range and type of problems described by patients but did not evaluate the intervention itself.</p>

	three telephone contacts and one home visit within six months after discharge.	
A randomised clinical trial on a comprehensive geriatric assessment and intensive home follow-up after hospital discharge: the Transitional Care Bridge ⁽³⁰⁾	<p>Population: All patients acutely admitted to the Department of Internal Medicine who are 65 years and older, hospitalised for at least 48 hours and are at risk for functional decline are invited to participate in the study.</p> <p>Intervention: transitional care bridge program, consisting of a handover moment with a community Care Nurse (CN) during hospital admission and five home visits after discharge.</p> <p>Comparator: will receive 'care as usual' after discharge.</p>	The outcomes from the trial are awaited.
A cost-minimisation study of alternative discharge policies after hip fracture repair ⁽⁴⁴⁾	<p>Population: all patients, aged 65 years and above, with a fresh non-pathological hip fracture.</p> <p>Intervention: Early discharge was implemented by a discharge protocol that started 5 days post-operatively. Administrative procedures were speeded up and the number of beds available on the rehabilitation ward of the participating nursing home was increased. Physical therapists,</p>	This was mostly an economic study and identified NO significant cost saving and concluded that early discharge shifted rather than reduced costs. Medical outcomes at four months after hip fracture repair were equivalent.

	<p>occupational therapists and social workers were involved in the rehabilitation process, supervised by a physician trained in geriatric medicine.</p> <p>Comparator: Conventional discharge where patients stayed longer in hospital for rehabilitation than early discharged patients. The treatment consisted of physical therapy, which was given two times per day by the hospitals' physical therapists under supervision of the ward physicians.</p>	
Norway		
<p>Acute stroke unit care combined with early supported discharge. Long-term effects on quality of life. A randomised controlled trial⁽²⁴⁾</p>	<p>Population: Patients admitted to the stroke unit with signs and symptoms of an acute stroke within 72 hours of admission and less than seven days after the onset of symptoms; Scandinavian Stroke Scale (SSS) between 2 and 57 points; living independently before the onset of stroke.</p> <p>Intervention: Extended stroke unit service (ESUS) had a co-ordinating mobile team (MT) organising a comprehensive follow-up service after discharge. It allowed the patient</p>	<p>Intervention group reported a reported a better quality of life a <u>non-significant</u> trend in direction of better outcome.</p>

	<p>to live at home as soon as possible after the stroke as well as to continue rehabilitation at home or in a day clinic. The team consisted of a nurse, an occupational therapist, a physiotherapist and a part time physician.</p> <p>Comparator: The primary health care system organised the follow-up for with further inpatient rehabilitation or a follow-up programme organised after discharge from the hospital.</p>	
<p>Intermediate care at a community hospital as an alternative to prolonged general hospital care for elderly patients: a randomised controlled trial⁽³²⁾</p>	<p>Population: aged 60 or more admitted to a general hospital due to acute illness or exacerbation of a chronic disease.</p> <p>Intervention: intermediate care at a community hospital (nursing home). "The experimental intervention was based on individualized intermediate care including evaluation and treatment ("care" and "cure") of each patient's diseases. However, the main focus was to improve the patients' ability to manage daily activities when returning home.</p> <p>On admission to the community</p>	<p>The intervention significantly decreased the number of readmissions for the same disease to general hospital, and a significantly higher number of patients were independent of community care after 26 weeks of follow-up, without any increase in mortality and number of days in institutions.</p>

	<p>hospital the physicians performed a medical examination of the patients and a careful evaluation of available earlier health records from the admitting general practitioner, the general hospital physicians and the community home care services. The communication with each patient and his family focusing on physical and mental challenges was also essential to understand the needs and level of care.</p> <p>Comparator: general hospital care.</p>	
<p>Development and delivery of patient treatment in the Trondheim Hip Fracture Trial. A new geriatric in-hospital pathway for elderly patients with hip fracture⁽⁵⁶⁾</p>	<p>Population: patients with hip fractures.</p> <p>Intervention: Comprehensive geriatric assessment and treatment under the care of department of geriatrics.</p> <p>Comparator: Usual care, where patients were transferred to trauma unit and orthopaedic surgeons were responsible for the care.</p>	<p>The experimental model focused at comprehensive geriatric assessment, fracture specific treatment and initiation of rehabilitation that was continued after discharge from hospital. No results were presented and the authors commented, “statistical analyses on effect of the intervention will be performed later this year.” A specific search to identify results identified a second paper that concluded “when treated with comprehensive geriatric assessment, compared with orthopaedic care, older persons suffering a hip fracture spent more time in upright, had more upright events, and had better lower limb function early after surgery despite no difference in their need for assistance during ambulation.”⁽⁶⁹⁾</p>
<p>Benefit of an Extended Stroke Unit Service With Early Supported Discharge: A Randomised, Controlled Trial⁽²⁵⁾</p>	<p>Population: Patients admitted to the stroke unit with signs and symptoms of an acute stroke within 72 hours of admission and less than seven days after the onset of symptoms;</p>	<p>An ESUS with early supported discharge seems to improve functional outcome and to reduce the length of stay in institutions compared with traditional stroke unit care.</p>

	<p>Scandinavian Stroke Scale (SSS) between 2 and 57 points; living independently before the onset of stroke.</p> <p>Intervention: Extended stroke unit service (ESUS) had a co-ordinating mobile team (MT) organising a comprehensive follow-up service after discharge. It allowed the patient to live at home as soon as possible after the stroke as well as to continue rehabilitation at home or in a day clinic. The team consisted of a nurse, an occupational therapist, a physiotherapist and a part time physician.</p> <p>Comparator: The primary health care system organized the follow-up for with further inpatient rehabilitation or a follow-up programme organised after discharge from the hospital.</p>	
New Zealand		
<p>The Assessment of Services Promoting Independence and Recovery in Elders Trial (ASPIRE): a pre-planned meta-analysis of three independent randomised controlled trial evaluations of ageing in place</p>	<p>Meta-analysis of three randomised controlled trials.</p> <p>Population: Older people (65 years or older) at risk of entry to residential home as assessed by regional geriatrics assessments service and/or</p>	<p>The interventions demonstrated a strong management approach facilitated independent living while not negatively impacting on the burden or the health-related quality of life of the primary informal carer. The authors attribute the shift to improved relationships with General Practice, and cite evidence from systematic reviews of community assessment interventions to be closely aligned with the primary care medical provider. They also hypothesise that that when</p>

<p>initiatives in New Zealand⁽²⁸⁾</p>	<p>hospital clinical team assessed using support needs assessment (SNA) tool.</p> <p>Intervention:</p> <p>All the interventions had a strong care management focus.</p> <p>A) Intervention site A was a home care service offering input to around 90 older people and their families, involving up to four visits a day from trained support workers with intensive care management from registered nurses and as required input from physiotherapists and occupational therapists. All older people underwent a CGA every 6 months and repetitive functional exercises were used to facilitate recovery or preserve function.</p> <p>B) Intervention site B was a slow stream rehabilitation service delivered within a residential facility. Participants could remain within the facility for up to 6 weeks, where they received care from trained support workers, and were care managed by a registered nurse with regular input from</p>	<p>“key ingredients are included, namely comprehensive assessment, case management, improved coordination and multiple follow ups” the combined effect is more positive in high risk populations of older people.</p>
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	<p>physiotherapy, occupational therapy, dietetics and a rehabilitation physician. On discharge from the facility, the nurse coordinator would continue to care manage the client for 1 year, providing ongoing allied health input as required, but utilising existing home care services.</p> <p>C) Intervention site C was a team of health professional care managers working at an advanced level of practice, located in the community within well-defined geographical areas. Care managers developed strong partnerships with GPs, practice nurses and organisations within their area. Following assessment, required services were contracted and the same care manager maintained ongoing care management. The care manager focused on maintaining/developing social support networks while utilising a wide range of social and health providers to meet the client's needs.</p> <p>Comparator: usual care.</p>	
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