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What is the evidence for the effectiveness of managing the hospital / community interface for older people?

A critical appraisal of the literature

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EXECUTIVE SUMMARY

Background

It is generally agreed that there is often a service gap for people who are frail or have complex or multiple conditions between short-stay hospital care and the support they need to manage in the community. The Ministry of Health, in conjunction with DHBNZ and ACC is aiming to develop an integrated service model for specialist geriatric and geriatric psychiatry services to bridge the gap. With the growing body of literature about options for bridging that gap, a critical appraisal of literature on managing the hospital / community interface for older people was carried out. This will contribute to the evidence base for developing a service framework for specialist health services for older people in order to meet the objectives of the *Health of Older People Strategy*.

Objective

This review was conducted to:

- provide evidence for the effectiveness of services managing the hospital / community interface and
- provide the evidence base for the Ministry of Health's work to assess the options for intermediate-level care to bridge the gap between the hospital and home-based care.

Methods

The aim of the search strategy was to provide as comprehensive retrieval as possible of published studies relating to intermediate care. Literature retrieval focused on obtaining studies of higher quality and levels of evidence (i.e., systematic reviews, meta-analyses, and randomised controlled trials) as first preference followed by lower level evidence.

Data sources

The literature was searched using the following bibliographic databases: Medline, Embase, Current Contents, Cochrane Controlled Trials Register, Index New Zealand, web of Science, PsychInfo, and Cinahl. Other electronic and library catalogue sources searched included: Cochrane Database of Systematic Reviews, Database of Abstracts of Reviews of Effectiveness (DARE), HTA database, ACP Journal Club, TRIP database. Other sources include Scottish Intercollegiate Guidelines Network, US National Guidelines Clearinghouse, UK National Coordinating Centre for Health Technology Assessment, Australian Department of Health & Ageing (*including subsites and related links*), Health Canada (*including subsites and related links*) and World Health Organisation.

Searches were limited to English language and were not restricted by date. These searches generated 747 citations.

A separate systematic method of literature searching and selection was employed in the preparation of service delivery guideline protocols and specified expert opinion literature. Searches were limited to English language material with no date restriction. The searches were completed on 9 May 2003. Additional searches on slow-stream rehabilitation (nurse-led units), and case-management services were also carried out in December 2003.

Professional associations and health systems with a focus on geriatrics in New Zealand, Australia, UK, Canada and the United States were also searched.

Selection criteria

Study selection

Studies were included if they were published between 1980 to 2003, used one of these designs (systematic review, meta-analysis, randomised controlled trials, controlled clinical trials, quasi-experimental, or descriptive) and intended to evaluate or describe any intermediate care service for older patients of 65 years and over with complex comorbidities who need services between general hospital and home support. Some measure of health outcome for the group to whom the service was delivered was required.

Excluded studies included articles with abstract only and correspondence as well as studies specifically set in stroke units, studies with less than 50 persons, studies with less than three months of follow-up, and studies, including systematic reviews and meta-analyses, with inadequate methodology.

Of 747 articles identified by the search strategy, 201 articles were retrieved as full text. From these a final group of 30 primary data papers, and nine systematic reviews were identified as eligible for appraisal and inclusion. An additional 13 studies were included but not appraised. These provided further detail about services. 134 articles were excluded from the review.

A further 40 articles were identified for the section on guidelines / protocols and specified expert opinion literature. Of these, 18 were excluded and 22 were described and included in the evidence tables.

Data extraction and synthesis

A single reviewer extracted data and appraised the articles applying a modified checklist based on the Cochrane Effective Practice and Organisation of Care Review (EPOC) of the Cochrane Collaboration and in-house checklists developed by the NZHTA for the appraisal of descriptive studies. Articles were graded according to levels of evidence defined by the National Health and Medical Research Council (NH&MRC, 2000).

Information was recorded about each relevant study and a tabular summary of study characteristics was compiled. This included study citation, source and design, study sample, inclusion and exclusion criteria, service design features, interventions, outcomes and study limitations.

Key results and conclusions

Overall, 201 articles were identified. 39 papers met the inclusion criteria for appraisal and 25 studies were used as reference material. Those papers appraised have their results presented separately according to the type of services that manage the hospital / community interface they assess. Additional material was also included as this provided useful information about services provided in a number of systematic reviews. The following conclusions are based on the current evidence available from this report's critical appraisal and review of the published literature on the topic.

In general, the evidence is a mixture of benefit, deficit and uncertainty, due to the complexity and variability of the interventions and methodological problems with the evaluations. Evidence supports intervention programmes that provide services to reduce and prevent falls. The literature provided evidence that discharge planning arrangements showed some beneficial effects on subsequent readmission to hospital. Hospital-at-home schemes as an alternative to acute hospital care are an increasingly popular way of delivering health care and the literature shows that outcomes for selected patients seems to be as good as standard hospital care, although studies have used many different outcome measures. Most of the published data on the care needs of older emergency patients are descriptive with minimal evaluation of the effect of the interventions on patient outcomes. Also, the current disease-oriented and episodic models of emergency care did not provide enough evidence to adequately respond to the complex care needs of older patients experiencing multiple and often inter-related medical, functional, and social problems. The mixed results with the ED-based studies suggest that more appropriate care of older ED patients can achieve better outcomes – therefore, costs can be more or less depending on the nature of the services. Published data around nurse-led units (NLUs) concern hospital-based NLUs, with none on community-based NLUs. No judgements about

effectiveness of nurse-led inpatient care for post-acute patients could be made. Various case-management models including a post acute care program (PAC), a short-term case management by an advanced practice nurse, an integrated community care program, case managers for patients discharged from hospital, and integrated home care program guided by a case manager generally showed benefits to patients in the outcomes assessed.

The majority of the studies included were set overseas with some conducted among Veterans Affairs, thus differences in health care delivery may limit how applicable these results are in New Zealand. Their generalisability to the New Zealand population and context needs to be considered. There is a need for future research that focuses on service models that are comparable and applicable to New Zealand's older population.

The general consensus from the analyses of service descriptions from published evidence-based service guidelines and protocols supports a continuum of care model which requires a high degree of collaborative, multidisciplinary and interdisciplinary care. Many recommendations were made for research into service development and care models focusing more on prevention and screening, and for comprehensive geriatric services across different care settings and also rehabilitation care. Funding for these services and monitoring and quality improvement systems are needed.

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LIST OF ABBREVIATIONS AND ACRONYMS

| | | |
|------------------------|---|---|
| ACC | – | Accident Compensation Corporation |
| ACE | – | Acute Care of Elders Unit |
| ADLs | – | Activities of Daily Living |
| A&E | – | Accident and Emergency Department |
| AGS | – | American Geriatrics Society |
| APN | – | Advanced Practice Nurse |
| AT | – | Assistive Technology |
| AT&R | – | Assessment, Treatment and Rehabilitation |
| BAAEM | – | British Association of Accident and Emergency Medicine |
| BGS | – | British Geriatrics Society |
| BMI | – | Body Mass Index |
| CA | – | Comprehensive Assessment |
| CCT | – | Care Coordination Team |
| CDP | – | Comprehensive Discharge Planning |
| CGA | – | Comprehensive Geriatric Assessment |
| COAD | – | Chronic Obstructive Airway Disease |
| COPD | – | Chronic Obstructive Pulmonary Disease |
| Cochrane EPOC Group | – | Cochrane Effective Practice and Organisation of Care Group |
| CT | – | Controlled Trial |
| DGH | – | District General Hospitals |
| DHB | – | District Health Board |
| ED | – | Emergency Department |
| EI | – | Environmental Intervention/s |
| EMS | – | Emergency Medical Services |
| FIM | – | Functional Independence Measure |
| GAU | – | Geriatric Assessment Unit |
| GEM | – | Geriatric Evaluation and Management |
| GNP | – | Geriatric Nurse Practitioner |
| GP | – | General Practitioner |
| HAH | – | Hospital-At-Home |
| HI | – | Home Intervention |
| HIT | – | Home Intervention Team |
| HITH | – | Hospital In The Home |
| HMO | – | Health Management Organisations |
| HRT | – | Hormone Replacement Therapy |
| HTT | – | Home Treatment Team |
| ICIDH | – | International Classification on Impairments, Disability and Handicaps |

| | | |
|-------|---|---|
| IDT | – | Interdisciplinary Team |
| IN | – | Intervention Nurse |
| ISAR | – | Identification of Seniors At Risk |
| LOS | – | Length Of Stay |
| LTC | – | Long Term Care |
| MCO | – | Managed Care Organisation |
| MDT | – | Multidisciplinary Team |
| MPS | – | Multipurpose Service |
| NCM | – | Nurse Case Management |
| NHMRC | – | National Health & Medical Research Council |
| NSF | – | National Service Framework |
| OT | – | Occupational Therapist |
| PACE | – | Program for All-inclusive Care of the Elderly |
| PAC | – | Post-Acute Care |
| QRS | – | Quick Response Service |
| RCN | – | Royal College of Nursing |
| RCT/s | – | Randomised Controlled Trial/s |
| RRR | – | Readmission Risk Ratio |
| SR | – | Systematic Review |
| TAG | – | Technical Advisory Group |
| UC | – | Usual Care |
| VA | – | Veterans Affairs |
| VN | – | Visiting Nurse |
| VNG | – | Visiting Nurse Group |
| WHO | – | World Health Organisation |

GLOSSARY

Care management - refers to the development of care plans, initiation and monitoring of service provision, and consulting with consumers and carers about whether the care plan is effectively meeting their needs.

Carer - is a family member or friend who cares for a person who is aged and frail or has a disability or chronic illness.

Common geriatric symptom complexes - atypical presentation of disease in older people where classical symptoms are masked and patients present with common symptom complexes including: unexplained collapse, dizzy spells, falls, instability, incontinence, delirium and febrile illness cause unknown.

Complex morbidity - means a mix of acute and/or chronic conditions and/or functional impairments that affects more than one domain rather than a single organ system disease or isolated impairment.

Examples include:

- two or more conditions which may be acute or chronic – e.g., fractured femur with osteoporosis, or a stroke with urinary incontinence, delirium and osteoarthritis
- chronic or degenerative condition with multiple medication – e.g., neurodegenerative conditions such as Parkinsons, Multiple Sclerosis, dementia, non-specific presentation/conditions with different symptomatology in older age.

Continuing care - long-term placement appropriate to needs – e.g., sheltered accommodation, residential home, nursing home and long stay care wards.

Community geriatric services - assessment, treatment and/or management, rehabilitation, advice to and liaison with other health or social service providers, information of older people, family and whanau to enable them to make informed choices about treatment and care plan options, advocacy for older peoples' health and support needs.

Disability - the resultant limitation in functional capacity from an impairment.

Handicap - the resultant social disadvantage and distress from disability to the individual or society.

New revisions to the terminology of the International Classification of Impairments, Disability and Handicaps (ICIDH-2) introduced by WHO replaces “disability” with “activity limitation” and “handicap” with “participation restriction”.

Hospital in the Home services - are defined as acute health care services provided to people living in the community, in their own homes or in residential facilities such as nursing homes, hostels or other forms of supported accommodation. Hospital in the Home (HITH) services might include treatment of orthopaedic conditions or the administration of intra-venous therapies. The use of HITH is voluntary for the patient. For a patient, the service might be a combination of hospital and home-based care or replace hospital care completely.

Integrated model of service provision - geriatricians and geriatric care health professionals provide specialist geriatric services in adult care services.

Inter disciplinary - multidisciplinary team members have a more generic role working across disciplinary boundaries.

Intermediate care - that range of services designed to facilitate the transition from hospital to home, and from medical independence to functional independence, where the objectives of care are not primarily medical, the patients discharge destination is anticipated, and a clinical outcome of recovery (or restoration of health) is desired. Plus, those services which will help to divert admission from an

acute care setting through timely, therapeutic interventions which aim to divert a psychological crisis or offer recuperative services at or near a person's own home¹.

Impairment - a specific health deficit.

Managed care - *managed care organisation (MCO), health management organisations (HMO)* - a system of private budget holding entities where individuals subscribe to managed care organisations who manage the risk for their health care. The organisation has a global government budget and all of the subscribers health care is funded through them (like Pegasus health in Christchurch but much larger). MCO usually fund and provide direct services or contract for provision of services.

Multidisciplinary - a collaboration of team members working within their own discipline with insight into other roles which includes: geriatricians, nurses, gerontological nurses, nurse practitioners, physiotherapists, occupational therapists, speech and language therapists, dieticians, social workers, and pharmacists and chiropodists.

Patient centred care - planning, treatment and management involves patient, family carers and advocates at all levels and goals are related to patient outcomes.

Positive ageing - positive ageing is a concept that recognises that growing older is a continuous life process and that becoming "old" is not a distinct event, or a completely separate stage of life. It is also dependent on policies and an environment that provides opportunities for older people to participate and to remain in control.

Protocols - documented standard practice procedures.

Rehabilitation - clients fall into three broad groups:

- people with an acute catastrophic event, who will need an initial period of rehabilitation and may or may not need long-term follow-up
- people with a progressive or chronic recurring condition who will need bursts of rehabilitation over a long period. (Australasian Faculty of Rehabilitation Medicine. Rehabilitation into the 21st Century. 1997, p 15)
- frail people who have a seemingly "minor" event, who need rehabilitation to maximise their functional abilities and chance of returning home.

About 70 percent of those requiring rehabilitation fall into the older age group, with the majority of clients having stroke and orthopaedic conditions.

Clients span a continuum in terms of potential for change or improvement between:

- those who will need a brief, intensive burst of services to return to a normal and active life
- those who will remain highly dependent, who may require nursing home care or may be managed at home, but for whom rehabilitation can:
 - maintain an optimal level of function and slow the rate of deterioration, or
 - increase the person's functional independence, mobility, self-respect and quality of life. (Australasian Faculty of Rehabilitation Medicine. Rehabilitation into the 21st Century. 1997, p 15)

Senior clinics - specialised ambulatory clinical care service centres for older adults providing primary care and health service coordination.

Transitional care - coordinated and continuous planning for health care during transfer of patients between locations or levels of care – e.g., hospitals, acute, post acute and long-term nursing facilities, home, and specialist referral.

¹ Vaughan BV, Lathlean J. (1999). Intermediate Care. Models in practice. London: King's Fund

Service type

Specialist geriatric service - a time limited service providing assessment, treatment, management and rehabilitation for older people with multiple or complex medical conditions or disabilities. It may also include mental health conditions for older people if there is no separate psychogeriatric service.

The service links with acute care wards caring for older people, primary health care, community health services and disability support services, particularly the needs assessment and service coordination agencies.

Team defined

Specialist geriatric team - specialist meaning dedicated team approaches to geriatric care or team care informed by specialist expertise in physically distinct locations – e.g., AT&R/GAU/GEM units, ACE, ortho-geriatric units, community setting, person's home.

A specialist geriatric team is an interdisciplinary team of professionals with specific qualifications and/or expertise in disease processes and injury in older people, and in assessment, treatment, management and rehabilitation for older people. As a minimum, the team consists of a physician and nurse, but can also include therapists (e.g., physiotherapist, occupational therapist, speech-language therapist etc), social worker, dietitian, pharmacist and/or psychologist.

Interdisciplinary team -

- works across discipline boundaries towards common clinical goals
- includes the patient and, where appropriate, the family in setting goals and making decisions about treatment
- recognises the specialist contribution of each discipline. (Australasian Faculty of Rehabilitation Medicine Rehabilitation into the 21st Century. 1997, p 20)

Multidisciplinary team -

- includes a range of disciplines working collaboratively
- team members do not work across discipline boundaries
- tends to have a team hierarchy based on discipline.

SECTION 1

This section provides background and context for the review on the effectiveness of services managing the hospital / community interface for older people.

Background

Far from being frail, the vast majority of older people remain physically fit well into later life. As well as being able to carry out the tasks of daily living, they continue to play an active part in community life. A minority however, are frail and vulnerable and require high levels of care and disability support. This is usually during the last few years of their lives, may be temporary and acute, or as a result of chronic illness or disability that may have been present for many years. Research shows that older people are significant users of both health and disability support services. They use hospital services, pharmaceuticals and laboratory tests more than people aged under 65 years. Public hospital admissions among older people have increased over the last 10 years in New Zealand and are still increasing. Preventable hospitalisations for people aged 65 to 74 years have also increased since 1996/97 at an average annual rate of 2.1 percent.

The Ministry of Health, in conjunction with DHBNZ and ACC is sponsoring work to develop a sound practice framework for the provision of specialist health services for older people. Specialist health services for older people include specialist geriatric, mental health for older people and psychogeriatric assessment, treatment rehabilitation, care management, advisory, liaison and consultation services. The ultimate aim of the project is to develop an integrated service model for specialist geriatric and geriatric psychiatry services that are integrated:

- across mental and physical health and disability support services
- with primary health care and other specialist health services.

The sound practice framework will be a statement of what specialist health services for older people are aiming for in order to meet the objectives of the *Health of Older People Strategy* and development of an integrated continuum of care. It will also clarify how specialist health services for older people interface with personal health, specialist mental health treatment and support, and disability support services for older people.

In addition to developing a sound practice service framework for specialist health services for older people, *Action 7.3.1 of the Health of Older People Strategy* stated that the Ministry of Health and DHBs will commence work in 2002 with service providers and health professionals to assess and, if appropriate, develop guidelines for intermediate-level care and rehabilitation for older people. The focus will be on providing a continuum of quality care between general hospital or psychiatric unit-based treatment and home-based support.

Key elements of intermediate care were identified as:

- quick response teams combined with rapid provision of home support
- hospital-at-home
- slow-stream rehabilitation care (residential or community-based).

It is generally acknowledged that there is often a service gap for people who are frail or have complex or multiple conditions between short-stay hospital care and the support they need to manage in the community. There is a growing body of literature about options for bridging that gap. In the United Kingdom, such services for older people are generally referred to as intermediate care. In the United Kingdom, intermediate care developed to fill a void for services that provided more than basic care and support in the community. A wide range of services have developed and the term 'intermediate care' has come to mean very different things to different people (including the

community-based rehabilitation component of specialist geriatric services as defined in the review of specialist geriatric services).

A paper by the King's Fund, London provides one of the most useful definitions of intermediate care:

"That range of services designed to facilitate the transition from hospital to home, and from medical independence to functional independence, where the objectives of care are not primarily medical, the patients discharge destination is anticipated, and a clinical outcome of recovery (or restoration of health) is desired." plus "Those services which will help to divert admission from an acute care setting through timely, therapeutic interventions which aim to divert a psychological crisis or offer recuperative services at or near a person's own home".²

This report goes on to say that:

The clear focus on health gain differentiates intermediate care from:

- convalescence - which allows time for people to heal but has no active therapeutic input
- hotel beds - which bring people near services but offer no therapy
- long-stay beds - where it is unlikely that there will be sufficient recovery for people to regain independent living
- movement of services - from one setting to another – e.g., the shift of treatment of deep vein thrombosis from acute to primary care
- another layer of service - rather it is being developed in response to what has become known as the “black hole”, where no targeted services have been available to help the transition between acute, primary and social care.

Overseas research has shown that well-managed intermediate care can improve recovery rates, increase patient satisfaction, reduce the impact on primary and community care services of unplanned discharges from hospital, and avoid unnecessary admission to long-term residential care. The *National Service Framework for Older People* released by the Department of Health in the United Kingdom has provision of intermediate care as one of its eight standards (UK Department of Health [London] 2002). Intermediate care, however, is not a substitute for acute hospital care and there has been criticism of the Department's approach (Grimley Evans and Tallis 2001).

Proponents of intermediate care argue that it provides a link in continuity of care between high-intensity services of short duration, and ongoing health care and home-based support. Others have argued that intermediate care is really second class care for older people and that the key links should be between specialist short-stay hospital care, multidisciplinary geriatric services and the broad range of community and home-based care and support, including primary health care.

Because of widely differing views on what intermediate care is or is not and whether it has a role in a continuum of health care and support for older people, this review uses the term ‘services to manage the hospital community interface’. This term is used to:

- exclude services explicitly covered by the geriatric and psychogeriatric services literature reviews
- include services for older people, other than the above, that are designed to either avoid, substitute for, or provide planned discharge from, general or psychiatric hospitals.

These services tend to have a narrower focus and range of interventions, with more specific access criteria than a multidisciplinary specialist geriatric or psychogeriatric service. However, entry to the service could be via a multidisciplinary assessment.

² Vaughan BV, Lathlean J. (1999). Intermediate Care. Models in practice. London: King's Fund

For the purposes of this review, services that manage the hospital / community interface have been defined as covering six main types of service:

- those that provide proactive interventions to increase or maintain functional ability (e.g., falls prevention programmes, including such programmes in residential care settings)
- those that support older people during acute episodes in the community and avoid presentation at an emergency department or admission to a hospital ward (e.g., hospital-at-home, enhanced primary care, primary care based rapid response teams, hospital in residential care)
- those that divert admission to a general or psychiatric hospital and provide enhanced community support (e.g., assessment and triage teams in emergency departments)
- those that provide for planned supported transfer from a general or psychiatric hospital to home, residential care or convalescent care
- services that provide for slow stream rehabilitation (nurse-led teams)
- services that provide for case management at different settings.

Such services would be expected to work closely with specialist geriatric and psychogeriatric services and in some instances may be part of those specialist services.

Slow-stream rehabilitation or step-down services in non-acute facilities such as residential homes and long-stay / continuing care hospitals or nursing homes will be covered in the review of geriatric services, but some of these initiatives will be labelled as examples of intermediate care and may not be identified in the literature searches for that review.

Overall, the project is divided into three interrelated reviews:

- specialist geriatric services
- psychogeriatric services
- services managing the hospital / community interface for older people.

This report addresses the review on services managing the hospital / community interface for older people. It has two purposes:

- to identify literature on the boundary of community-based specialist geriatric services that may be missed by that review because the literature is couched in an intermediate care framework that can also include less active, convalescent care
- to identify literature on specific programmes or services that are designed to either avoid, substitute for, or provide planned discharge from general or psychiatric hospital treatment for older people.

The review covers services that may form part of extended outreach for specialist geriatric services or may be complementary to them. This means that there is a blurred area of overlap between this review and the community-based assessment and rehabilitation component of the specialist geriatric services review. In general, literature that covers rehabilitation by a multidisciplinary team is included in the review of specialist geriatric services. If the services have a more specific focus, such as in the six service types identified above, they are classified as services that manage the hospital / community interface for older people.

Specialist geriatric and psychogeriatric services are provided by multidisciplinary or interdisciplinary teams with specialist expertise in:

- disease processes or mental health conditions in older people, particularly complex comorbidities, frailty and non-specific symptomatology

- assessment, treatment, rehabilitation, and care management for older people supporting older people and their family, whanau and caregivers to make informed decisions about care and support options
- providing expert advice to other service providers as needed.

The review identifies evidence for:

- the key components of services that manage the hospital / community interface for older people that have the most impact on positive outcomes for older people. These include:
 - service design features (range of services, location, access and exit criteria, relationship to other health and social support services, degree of integration / coordination with other health and disability support services for older people)
 - staff competencies
 - the key components of services that manage the hospital / community interface for older people that have the most impact for Maori, and for Pacific and other specific population groups
 - sound practice examples of alternatives to hospitalisation for older people that cater for people in rural and remote areas.

The review provides a summary of the above evidence for the Technical Advisory Group to use to provide advice on developing a sound practice service framework for specialist health services for older people.

OBJECTIVE

To identify and appraise international evidence for the effectiveness of managing the hospital / community interface for older people.

REVIEW SCOPE

Studies were included for review if they reported on intermediate care services with a focus on evidence for the effectiveness of service design and delivery outcomes rather than clinical treatment protocols, although it is recognised that both have an impact on outcomes for older people. The key components of the service reviewed are assessment, treatment, rehabilitation and clinical advice/liaison. This includes links with other related services including primary and community health care, disability support services (both home-based and residential care) and hospital-based services.

STRUCTURE OF REPORT

The review on the hospital / community interface services is divided into three sections.

The **first section** contains a summary overview and general conclusions.

The **second section** is a critical appraisal and write-up of original primary and secondary research addressing the efficacy of services managing the hospital / community interface on the health and service utilisation for older people compared to:

- people with the same condition receiving usual care
- people with the same condition receiving no intervention
- people with the same condition receiving standard care, early discharge (no additional support)
- people with the same conditions receiving no discharge / transfer planning and/or standard post discharge support.

The **third section** provides a descriptive outline of the key recommendations from published intermediate services protocols and guidelines and specified expert opinion.

SECTION 2

This section provides a critical appraisal of key primary and secondary literature for the review.

Methodology

SELECTION CRITERIA

For the second section of the review, inclusion and exclusion criteria were applied to the abstracts captured by the literature searches to identify those retrieved as full text. Selection criteria were applied to these retrieved papers in order to identify the final set eligible for full appraisal and summary in the evidence tables.

Study design

Peer reviewed studies were considered for this section of the review if they used one of the following study designs:

- systematic review or meta-analysis design
- clinical controlled trials randomised, quasi-randomised, non-randomised
- analytic studies (cohort and case-control designs)
- quasi-experimental studies (before/after design)
- descriptive studies and descriptive analytic studies (case series, cross-sectional, longitudinal designs).

Studies of higher quality and levels of evidence (e.g., SRs or RCTs) were used in preference to lower level evidence (e.g., descriptive studies). Levels of evidence are based on the notion that experimental study designs minimise or eliminate bias more effectively than non-experimental designs. However, it is recognised that lower level evidence may be more useful in their descriptions of service design and delivery.

Note: any identified unpublished or “grey” literature were included for New Zealand specific studies where this meets selection criteria and other higher-level evidence is unavailable.

Study inclusion criteria

The following criteria were used to include studies for appraisal in **Section 2** of the review.

Publication

Studies published between year 1980 to year 2003 inclusive.

Context

Study population are people aged 65 and over with complex comorbidities or at risk of deteriorating function from reversible conditions who:

- would otherwise be admitted to a general hospital with an acute or chronic condition
- require services intermediate between general hospital care and home support.

Studies that evaluate or describe intermediate care services that provide at least one of the following services:

- programmes of care, integrated services, linked services, care/case management
- case finding, home visitation, case management, falls prevention, environmental support equipment, home modifications, assistive technology
- triage and diversion in emergency department, hospital-at-home
- discharge planning, assessment and care management
- slow-stream rehabilitation – e.g., nurse-led units.

Study comparators: any of people with the same conditions receiving ‘usual services’, or no intervention, or ‘standard care’, or ‘early discharge (no additional support), or no discharge / transfer planning and / or standard post discharge support.

Outcomes

Studies where outcomes considered include one or more of the following:

- functional status
- health status
- hospitalisation
- disability scores
- primary care visits
- emergency department visits
- client satisfaction (patient and family satisfaction)
- in-hospital use (hospital days)
- costs
- death.

Studies, which identify the key components of health care services for older people that have the most impact on the above outcomes. These include:

- service design features (range of services, location, access and exit criteria, relationship to other health and social support services, degree of integration / coordination with other health and disability support services for older people)
- staff competencies
- studies written in English.

Study exclusion criteria

The following criteria were used to exclude studies from appraisal in **Section 2** of the review as well as drug trials or disease specific trials, unless they were testing a service intervention that was potentially generalisable:

- studies in stroke unit settings
- studies with fewer than 50 persons included in reported outcomes
- studies with a prospective follow-up/evaluation period of less than three months
- studies with inadequate description of methodology and/or results or significant error or methodological problems

- systematic reviews and meta-analysis with inadequate search methodologies – i.e., use of a single search database
- narrative reviews, expert opinion, letters to the editor, comments, editorials, conference proceedings, abstract only, books and book chapters. Such literature was reviewed in **Section 3** of the review on guideline / protocols and specified expert opinion
- studies with disease specific patients, unless the study provided important hospital / community interface service information
- studies with dementia patients.

LITERATURE SEARCH

The search was based on a previous search on intermediate care which had been carried out in August 2002. This was limited to Medline, Embase and Current Contents only and was limited to articles in English from 1990 to 2002.

In March 2003, the previous search was updated and expanded to include more sources, an unlimited date range, and a more complex and detailed strategy. Non-English language references were again excluded in this section of the search.

After removing duplicates, all references from both searches were scanned and items selected for retrieval. The detailed search strategies from both searches are given in **Appendix 1a**.

A separate search for service delivery protocols, specifications and guidelines was carried out in March 2003 to gather information for the hospital / community interface guideline and protocol analysis Section. Details of this search are given in **Appendix 1b**.

A further search on slow-stream rehabilitation conducted in late 2003 did not identify any further relevant literature.

A search using mostly database index terms was carried out on Medline, Embase, and Cinahl individually. As a cross check, a free text search across all three databases simultaneously was done incorporating any additional words suggested by the Technical Advisory Group to the project.

Main search terms

Medline Index terms

Intermediate care facilities, subacute care, patient discharge, home care services- hospital based, home nursing, health services for the aged, delivery of health care, delivery of health care-integrated, comprehensive health care, progressive patient care, accidental falls, referral and consultation, health services accessibility, telemedicine, patient care team, exp managed care programs, patient readmission, continuity of patient care, aftercare, frail elderly.

Embase Index terms

Aftercare, hospital discharge, elderly care, health care delivery, health care planning, falling.

Cinahl index terms

Subacute care, after care, patient discharge, home health care, home nursing, early patient discharge, continuity of patient care, delivery of health care, delivery of health care-integrated, telemedicine, patient care team, comprehensive health care, managed care programs, regional health planning, health planning, accidental falls, referral and consultation, gerontologic care, health services for the aged, frail elderly.

Additional free text keywords

Intermediate care, subacute care, sub-acute care, posthospital, post-hospital, hospital adj2 home, transition\$ adj care, postacute, post-acute, domiciliary care, home care, aftercare, (hospital and community and interface), geriatric\$, senio\$, elder\$, older person\$, older people, continuum adj care, collaborative care, extended care, augmented care, expanded care, convalescen\$, interdisciplinary care, multidisciplinary care, hospital adj community, inpatient adj community, integrated care, delivery adj service, service adj integrated, inclusive care, step down bed\$, slow stream rehabilitation. nurse led, general practi\$ led, GP led, day hospital.

Search sources

Bibliographic databases

- Medline
- Cinahl
- PsychInfo
- Embase
- Current Contents
- Web of Science
- Cochrane Controlled Trials Register
- Index New Zealand

Review databases

- Cochrane Database of Systematic Reviews
- HTA database
- Database of Abstracts of Reviews of Effects (DARE)
- ACP Journal Club
- TRIP database

Other sources

- Scottish Intercollegiate Guidelines Network
- US National Guidelines Clearinghouse
- UK National Coordinating Centre for Health Technology Assessment
- Australian Department of Health & Ageing (including sub-sites and related links)
- Health Canada (including sub-sites and related links)
- UK Department of Health Publications (including sub-sites and related links)
- World Health Organisation

STUDY SELECTION

Studies were selected for appraisal using a two-stage process. Initially, the titles and abstracts (where available) identified from the search strategy, were scanned and excluded as appropriate. The full text articles were retrieved for the remaining studies and these were appraised if they fulfilled the study selection criteria outlined above.

There were 747 studies identified by the search strategy. Overall, 201 full text articles were obtained after excluding studies from the search titles and abstracts. A further 134 of these full text articles did not fulfil the inclusion criteria and are cited in **Appendix 2a**. Therefore, 39 articles were fully appraised and are included in the evidence tables, and cited in **Appendix 3a**. An additional 13 studies were included but not appraised. These provided further detail about services from papers included in systematic reviews. Cited publications (e.g., appraised papers or those providing background material) are cited in the **References** section.

APPRAISAL OF STUDIES

Evidence tables

The evidence tables for research studies appraised in **Section 2** of the review present key information summaries of the following material:

- **Study citation, source and design** - including authors, year published, country of origin, study design, sample size and characteristics and level of evidence.
- **Study location** - acute ward, emergency department, hospital ward, senior-based centres, outpatients, clients own home.
- **Within each location** - type of staffing, size of operation (number of beds or clients seen), client group (who they include and exclude and why) aims of the service (e.g., increase independence, facilitate discharge), inclusion and exclusion criteria for the study.
- **Study interventions** - assessment, rehabilitation, training, education, treatment (pharmaceutical), counselling, length of stay (is there a max length of stay) and comparator.
- **Outcomes** - including statistically tested comparisons (statistical precision) of outcomes and reporting of relevant statistical data and authors conclusions.
- **Comments and conclusions** - including the key study limitations such as internal validity issues arising from the study appraisal.

Systematic reviews and meta-analyses are described and critiqued in terms of their search strategy, inclusion/exclusion criteria, data synthesis and interpretation.

APPRAISAL AND LEVELS OF EVIDENCE

Articles were formally appraised using an adapted schedule of the Cochrane Effective Practice and Organisation of Care Review Group (EPOC) of the Cochrane Collaboration and in-house checklists developed by NZHTA for the appraisal of descriptive studies. Summaries of appraisal results are presented in both text and tabular form and conclusions drawn from the study design and any limitations noted.

The evidence presented in the selected research studies was classified using the dimensions of evidence defined by the National Health and Medical Research Council (NHMRC, 2000). The designations of the levels of evidence are shown in **Table 1, page 12**.

LEVELS OF EVIDENCE

Levels of evidence were ascribed to each study in relation to their study design, so as to rank them in terms of quality according to a pre-determined “evidence hierarchy”. These evidence levels are only a broad indicator of the quality of the research. The levels describe groups of research which are broadly associated with particular methodological limitations. These levels are only a general guide to quality, because each study may be designed and/or conducted with particular strengths and weaknesses.

Table 1. Designations of levels of evidence*

| Level of evidence | Study design |
|-------------------|---|
| I | Evidence obtained from a systematic review of all relevant randomised controlled trials |
| II | Evidence obtained from at least one properly-designed randomised controlled trial |
| III-1 | Evidence obtained from well-designed pseudorandomised controlled trials (alternate allocation or some other method) |
| III-2 | Evidence obtained from comparative studies (including systematic reviews of such studies) with concurrent controls and allocation not randomised, cohort studies, case-control studies, or interrupted time series with a control group |
| III-3 | Evidence obtained from comparative studies with historical control, two or more single arm studies, or interrupted time series without a parallel control group |
| IV | Evidence obtained from descriptive studies – e.g., case series, either post-test or pre-test/post-test designs |

**Modified from NHMRC (2000).*

LIMITATIONS OF THE REVIEW

This study has used a structured approach to review the literature. However, there were some inherent limitations with this approach. Namely, literature reviews are limited by the quality of the studies included in the review and the review’s methodology.

This review has been limited by the restriction to English language studies. Restriction by language may result in study bias, but the direction of this bias cannot be determined. In addition, the review has been limited to the published academic literature, and has not appraised unpublished work. Restriction to the published literature is likely to lead to bias since the unpublished literature tends to consist of studies not identifying a significant result.

The studies were initially selected by examining the abstracts of these articles. Therefore, it is possible that some studies were inappropriately excluded prior to examination of the full text article. Some of the studies included were limited by their small sample sizes, biased control groups, failure to adjust for differences between treatment and comparison groups, and analyses that did not account for differential attrition.

The majority of/all studies included in this review were conducted outside New Zealand, and therefore, their generalisability to the New Zealand population and context may be limited and needs to be considered.

This review was confined to an examination of the effectiveness of the interventions and did not consider the acceptability, or any ethical, economic or legal considerations associated with these interventions. Interventions were not assessed in terms of their impact on general quality of life.

The review is based on a qualitative analysis of the appraised literature and is not a comprehensive systematic review. Rather it is an appraisal and description of key literature. The overall descriptions are general inferences of the effectiveness of hospital / community interface services. Only what was available from the appraised papers is reported. The degree of information provided on the service delivery models varied considerably and more information may have been available but authors were

not contacted to provide it. There were many similarities across the literature and these are sometimes repeated points in each of the sections below. More detailed information is available from the evidence tables.

The review is broad and examines literature from across a range of hospital and community settings, with significant heterogeneity in study assessment tools/measures and outcomes and also a wide range of interventions and patient populations. Meta-analytic work in this area is limited to only a few outcomes such as mortality due to problems with study measurement/outcome heterogeneity.

A number of conceptual difficulties with undertaking a review in service delivery and organisation were identified as in other reviews (Parker et al. 2000). These included differing terminology and descriptions of the stages and models of care in the literature, difficulties with constructing a comprehensive search strategy with non-condition specific searches, and differences in recovery. The literature often (through research study design) did not specifically identify what aspect(s) of a service delivery model was linked to efficacy and improved outcomes.

One researcher appraised/reviewed the articles included in each section of this review. The two researchers did not cross-validate the data extraction and appraisal process.

This review was conducted over a limited timeframe (February 2003 - July 2003). Further additional work was conducted intermittently over a very limited timeframe (December 2003 - March 2004).

This review has greatly benefited from the advice provided by the Technical Advisory Group (TAG) and it has been exposed to limited wider peer review. For a detailed description of interventions and evaluation methods, and results used in the studies appraised, the reader is referred to the original papers cited.

Results

PRIMARY AND SECONDARY RESEARCH: STUDY DESIGNS AND QUALITY

Study design

Thirty-nine studies were identified that fulfilled the inclusion criteria of service models managing the hospital / community interface. The level of evidence assigned to these studies varied and ranged between evidence level-I (systematic review) to evidence level-IV (descriptive study). The studies evaluating discharge planning service models were of a higher quality (systematic reviews - Level-I) than in other areas. Studies that evaluated services that support older people during acute episodes in the community and avoid presentation at the emergency department tended to be of lesser quality (Level-IV) because of their descriptive design.

Study setting

Studies were conducted across different settings and service models and varied within the same study if it was a systematic review of a number of combined studies. The settings included hospital wards, emergency departments, acute hospital wards, primary care units, residential care units, long-term care units, physician practices, client's own home, senior-based centers and other departments in affiliated hospitals and teaching hospitals.

All studies except two were in non-New Zealand settings. The majority of studies were conducted in the United Kingdom (16), the others were set in the United States (10), Canada (4), Australia (4), Italy (2), New Zealand (1), Germany (1) and Israel (1). All further additional referenced studies added to this report were conducted in non-New Zealand settings.

Samples

The 39 appraised studies identified a range of sample subjects and comparison subjects. All were older people with complex comorbidities, or at risk of deteriorating function from reversible conditions and would otherwise be admitted to a general hospital or require intermediate services between general hospital care and home and community support. However, some systematic reviews included studies with various age groups including young people but the analysis was done separately for older people.

Interventions

Various interventions from the 39 studies were described. These were often compared to usual standard care, or to no intervention for the control group. The interventions included falls prevention programmes, home visitation, home intervention and assistive technology, hospital-at-home schemes, group visits, home-based services, risk-screening and assessment at emergency departments, case-finding, case-management, triage, early discharge planning and discharge arrangements, nurse-led inpatient unit interventions, and supported discharge. All were multidisciplinary programmes that involved a team of a primary care nurse, physician, OT, physiotherapy, and others according to the type of the service model delivered. Further interventions were described from the additional 16 studies including services that provided different forms of services led by nurses and other group of services that provided case management.

Outcomes

Various outcome measures were included for the assessment of study interventions. These were most commonly mortality and length of stay in hospital. Other common outcome measures were admission / readmission to hospital, admission or visit to the emergency department, health services utilisation, physical health outcome, and functional status. Less common outcome measures reported were quality of life, patient satisfaction and carer satisfaction, and the number / incidence of falls.

SUMMARY OF EVIDENCE

This report qualitatively reviewed the literature related to services managing the hospital and community interface for older people.

Approximately 747 articles were initially identified by the search strategy. From this, 201 articles were identified as potentially eligible and were retrieved as full text articles for inclusion. A final group of 39 papers were selected for appraisal. These included 30 primary studies and nine systematic reviews. Main results are presented below. An additional 13 studies were used to provide additional detail about services included in several systematic reviews.

The interventions assessed within the studies included were of variable intensity ranging from a telephone call at one extreme to a multidisciplinary assessment with home-based rehabilitation at the other. Although some robust evaluations by randomised controlled trials have been reported, in general there was a relative lack of good RCT evidence to support specific service models. There were difficulties sometimes in interpreting these RCTs, in that they evaluated a single service model, whereas managing the hospital and community services requires a whole integrated system service constructed from individual service components. Therefore, the evidence base for these services remains limited and inconsistent especially in the context of this review.

LIMITATIONS OF CURRENT RESEARCH BASE

The evidence considered in this review exhibited methodological limitations, particularly as the review included descriptive studies without true experimental designs and lower evidence grades.

Limitations of this review are summarised below:

Primary study limitations most commonly included patient selection bias, significant losses to follow-up, lack of information on randomisation and concealment, and internal validity affected by bias and imprecision. The sources of bias in most cases were inadequate randomisation and method of concealment, contamination bias with failure to deliver the same intervention to the assigned group. Also, imprecision in the measurement of some variables due to the use of self-reported health outcomes, or questionnaires to assess satisfaction and personal costs (validity and reliability not specified). The reliability and validity of outcome assessment measures was often unknown although these were frequently referenced. Studies were also compromised by small sample sizes, with low statistical power to detect a true effect. External validity (generalisability) was commonly affected by the conduct of a study in a single setting – e.g., a restricted residential area or a single teaching hospital or urban area. Other major study limitations were in the control arms of the RCTs and comparative studies which received usual care. These were frequently not described in detail, so it was not clear what care the control group actually received. Thus, there may be questionable differences between the two groups. This may be a primary reason why there were fewer significant differences in outcomes between the intervention and control groups.

For the systematic reviews, common limitations included significant heterogeneity among the studies included at different analysis levels, with different study populations (some compared samples of frail older people with those from general population while others included only frail or only those at risk for functional decline), different study designs, variations in the follow-up period, different intervention and outcome measures. There was considerable heterogeneity in the outcomes reported between studies as well as in differences in the way same outcomes were reported by these studies. The included studies varied in the intensity and nature of the interventions tested as well as the outcomes assessed. Meta-analysis was sometimes not able to be carried out because consistent quantitative information was not available. Other problems included services provided by a range of different staff

ratios / modalities, including multidisciplinary teams, single-person services and services delivered over the telephone. Studies also described a range of service models, which were not easily classified into specific intervention types.

The major overall limitation of the review pertains to the fact that almost all of the studies were not conducted in a New Zealand setting.

DIRECTIONS FOR FUTURE RESEARCH

Further research should address the limitations in study design demonstrated in this review. More research is needed, particularly in New Zealand because models that provide interventions across the hospital / community interface have not been adequately evaluated. Further research to explore the issue of cross-national comparability of studies between different healthcare systems is required.

The variable results and conclusions regarding the effectiveness of services that manage the hospital and community interface requires more defined focus on what type of intervention or service works best for older people and also improved empirical research methodologies to enable firm conclusions to be drawn.

PRIMARY RESEARCH: STUDY RESULTS AND FINDINGS FROM LITERATURE APPRAISAL

What is the evidence for the effectiveness of services managing the hospital / community interface for older people?

The following summary points are based on a qualitative analysis of the appraised literature. The overall descriptions are general inferences of the effectiveness of the service delivery models. Only what was available from the appraised papers is reported. The degree of information provided on the service delivery models differed considerably and more information may have been available but authors were not contacted to provide it. There were many similarities across the literature and these are sometimes repeated points in each of the sections below. More detailed information is available from the evidence tables.

Study references which are in **bold** are to be found in the appropriate table in the evidence tables. Study references are listed alphabetically in each table. References not in bold are citations from systematic reviews and are included to provide a more detailed breakdown and greater description of specific kinds of services included in these reviews.

The literature on hospital / community interface services is organised into the following tables:

- **Table 2 (pages 38-41):** interventions to reduce falls.
- **Tables 3a-3c (pages 42-52):** services providing enhanced community services for older people including interventions using comprehensive assessment and follow-up.
- **Table 4 (pages 53-55):** hospital-at-home.
- **Table 5 (pages 56-60):** ED and community-based services that avoid the need for hospitalisation (e.g., rapid response).
- **Table 6 (pages 61-64):** slow stream rehabilitation (nurse-led units).
- **Table 7 (pages 65-69):** planned discharge (includes a plan and package of care/support).
- **Table 8 (pages 70-75):** supported discharge (these are stand-alone teams offering intensive home-based rehab, education, treatment or support for a finite period).
- **Table 9 (pages 76-86):** case management.
- **Table 10 (page 87):** interventions involving home-based modification.

Discussion on Table 2: Interventions to reduce falls rates amongst older people living at home or in residential facilities

Overall, four studies were included in this group including one meta-analysis conducted in New Zealand.

The systematic review by **Gillespie, et al. (2003)** (grade level I) assessed a variety of intervention programmes that were included in the reviewed studies. All interventions among the 40 trials aimed at minimising the effect of/or exposure to any risk factor for falling. The programmes were designed to reduce the incidence of falls in older people (living in the community, or institutional or hospital care). These included eight types of interventions which were exercise/physical therapy (14 studies), home hazard modification (5 studies), cognitive/behavioural interventions (6 studies), medication withdrawal/adjustment (2 studies), nutritional/vitamin supplementation (4 studies), hormonal and other pharmacological therapies (2 studies), multidisciplinary, multi-factorial, health environmental risk factor screening and intervention (14 studies), and system modifications to prevent falls in high risk hospital patients (2 hospital-based studies).

There were eight other studies awaiting assessment and 20 ongoing trials with falls described as an outcome in the protocol. Five investigating an exercise or physical therapy intervention, three recording fall outcomes in trials of Vitamin D supplementation, and nine trials assessing the effectiveness of multidisciplinary screening and intervention programmes. One trial is evaluating the effect of accelerated treatment of cataract, another is studying the effectiveness of vestibular rehabilitation in people with vestibular dysfunction. A multi-centre SAFE PACE 2 trial is studying the effect of cardiac pacing in older people with carotid sinus hypersensitivity.

The interventions studied varied in their effects on outcomes with few programmes showing benefit (with significant differences reported between the intervention and control groups). Such programmes included muscle strengthening programmes, 15-week Tai Chi group exercise, home hazard assessment and medication, and multidisciplinary health/environmental risk factor screening/intervention programmes. Other interventions were of unknown effectiveness or unlikely to be beneficial and are all presented in the evidence tables. Overall, most of the interventions did not report an increase in adverse events or increased falls. One study reported a higher number of falls in the brisk walking group, all the women in this study had a history of an upper limb fracture in the previous two years. Given this result, the authors concluded that brisk walking should not be recommended as a fall prevention intervention in women with a history of falling. The review showed that some interventions designed to reduce the incidence of falls appear to be clearly effective especially those that target multiple risk factors, but also some which set out to target single risk factors. This review has certain limitations, including variable methodological quality of the included studies, falling was not always defined, and methods used for recording falls also varied widely. Also, the individual trials reviewed differed considerably in detail of the intervention, and in the health and social status of the participants. Outcome measures and duration of follow-up also varied.

A meta-analysis conducted in New Zealand by **Robertson, et al. (2002)** considered four controlled trials. These all tested the intervention of an individually prescribed home exercise programme. The meta-analysis included 1,016 community dwelling older people from nine New Zealand cities with an average age of 82 years. A muscle strengthening and balance retaining exercise programme was prescribed in each person's home, plus a walking plan was evaluated and compared to different control intervention / or no intervention. The control interventions were social visits, usual care (no active intervention) and general withdrawal of psychotropic medication. The results favoured the effect of the exercise intervention in terms of significantly lessening the number of falls and fewer injurious falls among the exercise groups. Analyses among the subgroups showed significantly fewer injurious falls among those 80 years and above, and both men and women showed similar benefits from the exercise programme. No other significant differences with self-reported health status at follow-up were reported. Overall, the study provided evidence about the effectiveness of the muscle strengthening programme especially among those 80 years old and over.

An RCT by **Nikolaus and Bach (2003)** compared a CGA intervention with a diagnostic home visit by a home intervention team (HIT) to reduce falls in older peoples' home with a control group which received a CGA plus recommendations and usual care at home. They found that after one year of follow-up, the intervention group had a significantly reduced number of falls compared to the control group. The effect was more prominent among those who reported having had two or more falls.

In a large teaching hospital, a home-based programme involving a falls-nurse intervention to assess risk factors for falls was compared to usual care assessment (**Lightbody, et al. 2002**). Within four weeks of the index fall, the intervention group received a home assessment, (by the nurse), of medications, ECG, blood pressure, cognition, visual acuity, hearing, vestibular dysfunction, balance, mobility, feet and footwear.

These were done to address easily modifiable risk factors for falls. An environmental assessment was also done and patients were given advice and education about safety in the home and simple modifications were made with consent. The intervention group showed significantly higher scores in indicators of function and mobility within the community compared to control groups. Also, this group showed non-significantly less falls and hospital attendance.

Discussion on Tables 3a-3c: Enhanced community services for older people

This section is divided into three sub-sections. The first is home visiting interventions aimed at promoting the health of older people, the second sub-section is interventions utilising comprehensive assessment to improve outcomes for older people and the third sub-section is services providing enhanced community services for older people. Overall, seven studies were included in this group of services.

Table 3a: Home visiting interventions aimed at promoting the health of older people

The systematic review by **Elkan, et al. (2001)** (grade level I), reviewed 15 studies, of which 13 were RCTs and two were quasi-experimental studies. This review looked at the effectiveness of home visiting programmes that offer health promotion and preventive care to general older people living at home (9 studies) including frail older people at risk of adverse outcomes (6 studies). The 15 studies were divided into two groups: one group of nine studies assessed general older people. The content of the interventions in this group ranged from social support, coordinating community services, distributing aids, modification, to practical advice, health education, referral to appropriate services; to usual health visiting practice, health education, prevention, referral to other services and other contents. The second group of six studies assessed vulnerable older people who were at risk of adverse outcomes. The content of interventions also ranged between assessment, problem identification, referrals to GP, case management, service coordination, counselling, referrals, respite, education, medical back up and other. The second group consisted of four studies of older people recently discharged from hospital who were at risk of further admissions and two studies of frail older people who had been referred to home care agencies.

A meta-analysis was carried out when enough information was available and revealed a significant reduction in mortality and admission to long-term care facilities among the general old and the frail old, with persons receiving home visiting reported in some studies. A meta-analysis of three studies (out of 8 that measured mortality in older people in general) showed that home visiting was associated with reduced mortality. Also, a meta-analysis of four (out of 5) studies among frail older people who were at risk of adverse outcome showed that home visiting had a significant effect in reducing mortality. No significant differences were reported in terms of admission to hospital, functional ability between the intervention and control groups. However, meta-analysis of the results of four (out of 5) studies showed that home visiting reduced admissions to residential nursing homes of members of the general older people. Similar findings were reported for older people considered to be at risk. Overall, it is not clear as to which population benefits more from home visitation.

In a systematic review by **Elkan, et al. (2000)** (grade level I) a review of international literature and a selective review of British literature was carried out. This review assessed the effect of home visiting programmes on older people and their carers within 17 studies. Home visiting programmes were successful in reducing mortality for both older persons in the general population and those considered at-risk or frail. Although there was an overlap between the literatures in this review and **Elkan, et al. (2001)**, an interesting outcome among four studies was reported relating to support given to the carers of frail older persons. The four studies (of older people recently discharged from hospital and at risk of further admission) were among six studies that assessed vulnerable older people who are at risk of adverse outcomes. The other two studies were of frail older people who had been referred to home care agencies. All four studies reported favourable outcomes in the intervention groups. These included some form of counselling, referral, or respite. Positive outcomes included increased coping

skills, reduction of carer's psychological symptoms, increased well-being, and increased competition on the part of carers to perform care-giving activities. Although these studies provide some evidence that preventive home care helps reduce caregiver burden, there has not been any methodologically sound study specifically addressing the issue of caregiver burden. The four studies showing a reduction in psychological symptoms and enhanced well-being in the carers of older people from home visiting programmes did not reach statistical significance over the control group.

The results in this well conducted review were distinct among the two groups of older people participating in the trials. That is, among general older people and at-risk older people. Meta-analyses of outcomes showed a significant reduction in mortality in general older people (6 RCTs) and at-risk older people (5 studies). No significant effect was seen from home visiting in reducing admissions to hospital, physical health, functional status, quality of life, for both general and at-risk older people. However, admission to LTC was reduced with home visiting among at-risk older people (3 RCTs) but not among general older people (3 RCTs).

A home-based intervention programme was assessed among physically frail older patients and compared to an educational programme (**Gill, et al. 2002**). The intervention group received a six-month home based program that involved physical therapy to improve any underlying impairment in physical abilities. This includes balance, muscle strength, ability to transfer from one position to another, and mobility. On average, 16 visits were provided by a physical therapist who assessed each participant for potential impairments in physical abilities and home environment. Following the completion of the visits over the six months period, participants were called by the physiotherapist for additional six months to answer questions and provide encouragement. A health educator provided the control group participants, on the educational program, with attention and health education during six monthly home visits. This was accompanied by reviewing general practices promoting good health such as proper nutrition, management of medications, physical activity, sleep hygiene, and other health related areas. On the completion of the visits, the health educator called the participants monthly for six additional months to answer questions and to provide encouragement. There was significantly less functional decline among the intervention group compared to the control group. With disability scores are being significantly different between the two groups at both seven and 12 months of follow-up.

Table 3b: Interventions utilising comprehensive assessment to improve outcomes for older people

The RCT by **Dalby, et al. (2000)** evaluated a preventive home assessment visit by primary care nurses for frail older people (determined to be at risk for health deterioration) compared to usual care. The intervention was a visiting nurse group, which involved an assessment, a care plan development and follow-up visits / phone calls over a 14 month period. Patients in the visiting nurse group tended to make more visits to their family physician and specialists and they experienced longer lengths of stay in hospital than those in the usual care group but these were not statistically significant. All other findings were not significant. This study may have suffered from a small sample size of participants leading to low statistical power. A greater proportion of elderly in the intervention group had lost someone close to them in the six months before the study compared to the control group.

A trial by **Leveille, et al. (1998)** evaluated a multi-component programme of disability prevention and disease self-management of chronically ill older people. Within the intervention group, the geriatric nurse practitioner (GNP) contacted each participant's primary care physician to obtain information about the current health problems (of the patient) as well as the providers' goals for the patient. The participant met the GNP to address risk factors for disability (such as inactivity, smoking, alcohol misuse, psychoactive drug use, depression, and poor nutrition). Also, to develop a targeted health management plan that also addresses self-management of chronic illness. The meeting sessions were initially done within the senior centre, and were then followed up by visits and telephone contacts to monitor participants' progress toward the health goals. Two key components of the intervention was emphasised with participants, these were a range of physical activities available at the senior centre to select from and chronic illness self-management. Home exercise options were recommended for those who preferred not to participate in group exercise activities at the centre. In addition to the individual counselling by the GNP in chronic illness self management, participants were encouraged to attend the Chronic Illness Self-Management Course, a seven week series that combined peer support with health promotion information and disease self management concepts. The control group did not meet with the geriatric nurse practitioner but had access to all senior centre activities that were available to the intervention group.

A significant improvement in the health assessment questionnaire and a reduction in the number of disability days were reported among the intervention group. A significantly fewer number of hospital days and lower rates of psychoactive drug use among the intervention group than control group were reported. There was a significantly smaller decline in functional status among the intervention group compared to the control group. However, there were statistically significant baseline differences between the two groups. The strength of this study arises from the way the study incorporated self-management of chronic illness with disability prevention in frail older people living in the community. So it is community-based, reached people previously not involved with the senior centre, meant individualised health management goals were collaboratively planned with the geriatric nurse practitioner and physician, and preventive health and self management of chronic illness were emphasised. Although many statistical measures were employed in the analysis, the results were mixed. Also, more of the intervention group were women, not married, lived alone, had diabetes and were more likely to report restricted activity days.

The RCT by **Hebert, et al. (2001)** assessed an intervention of home assessment of the subjects on multiple dimensions by a nurse. The intervention was an assessment and surveillance programme, which is based on a structured programme targeting specific physical, psychological and social aspects, designed to target the population identified as being at risk using postal questionnaires. The specific interventions proposed in this programme were selected from a literature review based on four criteria. These include major prevalence of the condition, proven impact of the condition on autonomy, evidence that the condition might be modified by a diagnostic or therapeutic intervention, and the existence of a simple, effective measuring instrument for that condition that could be administered by a nurse. The 12 selected dimensions are medication, cognitive functions, depression, balance or risk of falling, orthostatic hypotension, environmental risks, social support, nutrition, arterial hypertension, vision, hearing, and incontinence.

Within the programme, a trained nurse visited subjects assigned to the study group and administered the evaluation, which is specific to each dimension. Results of the assessment were then reported to the GP, followed up by recommendations for interventions, then monthly telephone contact by the nurse to ensure the application of the recommendations. For certain problems, the nurse may directly refer to the relevant specialised resources such as balance and gait rehabilitation programme, occupational therapist assessment of the home, dietary assessment, and audiological assessment. In other cases, the nurse telephoned the GP to discuss the case and request help for planning referrals to other health services. This home-based evaluation and follow-up programme looked at a sample considered to be at risk of functional decline. This was compared to older people receiving usual care. No significant differences were found between the two groups in all primary and secondary outcomes, including measures of functional decline, functional autonomy, well-being, and perceived social support. Although this was a robust study with a strong design, the intervention appeared to be largely dependent on the physicians' compliance with the nurses' recommendation for treatment. Also, it was not clear from the study which interventions were recommended for certain problems, though it is likely that the treatment involved both in-home and clinic/doctors' office care.

Table 3c: General enhanced community services for older people

The study conducted by **Master, et al. (1980)** was a comparative descriptive study (grade level IV) of a home-care programme and teaching hospital. It involved a description of a multidisciplinary system of physicians and mid-level practitioners. This provided individualised care to chronically ill older people who were homebound and also to nursing home residents. There was a reduction of in-hospital use, especially hospital days. The study was of limited quality since the descriptive design does not provide strong evidence in terms of assessment and evaluation.

Tables 4 and 5: Services that facilitate hospital avoidance for older people

Within these services two groups of services are identified, hospital-at-home for acutely unwell older people and rapid response for older people with sub-acute illness, both of these services are ED-based.

Discussion on Table 4: Hospital-at-home for acutely unwell older people

Overall, five studies were included in this group. The systematic review by **Shepperd and Iliffe (2001)** included three clinical trials that evaluated hospital-at-home schemes that provided care following early discharge from hospital (Caplan, et al. 1999, Davies, et al. 2000, Wilson & Parker, 1999). Two of the trials were ED-based (recruited patients from the accident and emergency departments (Davies, Caplan) whereas the third (Wilson) recruited patients directly from the community. The review (grade level 1) identified 16 RCTs. The study populations in the majority were older medical patients. The review looked at hospital-at-home schemes that provided care following early discharge from hospital (13 trials). Three trials (as above) also looked at hospital-at-home schemes that provide admission avoidance. This systematic review assessed the effects of hospital-at-home compared with in-patient hospital care. Hospital-at-home offered specific services to patients in their homes that required health care professionals to take an active part in their patient's care. The review defined hospital-at-home as a service that provides active treatment, by health care professionals, in the patient's home of a condition that otherwise would require acute hospital inpatient care, always for a limited time period. The authors highlighted the different concepts among different countries. In the UK – e.g., hospital-at-home concentrates on providing personal, nurse-led care rather than technical services which contrasts the high technology (intravenous drug administration and blood transfusion) home care in North America. Generally, hospital-at-home schemes are either community-based or hospital-based. Patients are either admitted to hospital-at-home from hospital or directly from the community. The type of patients vary between schemes, as does the utilisation of technology. Some schemes are designed to care for specific conditions – e.g., home care for patients requiring long-term ventilation; or more commonly schemes are designed to care for patients discharged early from hospital following specific interventions, such as orthopaedic surgery.

The prospective randomised clinical trial by Davies, et al. (2000) compared hospital-at-home and hospital care as an inpatient in acute exacerbation's of chronic obstructive pulmonary disease (COPD). Patients diagnosed with chronic obstructive pulmonary disease, according to standard diagnostic criteria, were assessed for exacerbation by specialist nurses in the ED department. A doctor from the hospital respiratory team agreed management and entry into the trial. Patients were randomised in a ratio of 2:1 for hospital-at-home or hospital admission according to certain inclusion and exclusion criteria. During the period of exacerbation, patients within the hospital-at-home intervention were accompanied by one of the specialist nurses to home. The patients' GPs were faxed to inform them of the patients being randomised to the hospital-at-home care. Within the service, an immediate social support was also available. Patients were treated with the appropriate therapy including bronchodilators and antibiotics and nurses visited the patients mornings and evenings for three days and thereafter at the discretion of the nurses. Evening and night cover was also provided with the agreement of pre-existing services by district nurses. The nurse or patient could trigger admission if the progress of the condition is unsatisfactory. Of 583 patients with COPD referred for admission who were assessed, 192 met the inclusion criteria, and only 150 participated (100 for the hospital at home and 50 for the hospital admission). No significant differences were reported between the intervention and control groups in the forced expiratory volume in one second FEV1 after use of a bronchodilator at two weeks, or three months. Thirty-seven percent of patients in the hospital at home care and 34 percent of patients receiving hospital care were readmitted at three months. In terms of mortality between the two groups at three months, no significant difference was found (90% vs 80%). The authors concluded that hospital-at-home care is a practical alternative to emergency admission in selected patients with exacerbations of COPD.

The randomised controlled trial by Caplan, et al. (1999) compared the treatment of a variety of acute illnesses requiring admission to hospital, at home and in hospital. The study also, assessed safety, effect on geriatric complications, and patient/carer satisfaction. One hundred patients requiring admission to hospital and meeting the inclusion criteria for the study were randomised to hospital in the home treatment (HIH) or treatment in hospital (control group). Older people (69% of the study sample were 65 years and over) as well as some younger patients were accepted in the study. The conditions selected were those amenable to home treatment, were taken home on the day of presentation to the ED, or on the following morning if they presented at night. Participants in the intervention group (Hospital in the Home HIH) are patients treated according to the presenting diagnosis by the hospital community outreach team. Treatments include administration of intravenous antibiotics (according to results of bacteriological tests) and other medications, as well as blood transfusions. The control group (hospital treatment) were admitted under the appropriate physician or surgeon of the day and treated in

accordance with standard regimens without the intervention of the study team. Before the study, an educational program consisting of an evening lecture and a question-and-answer session for the local division of general practice was conducted. This was to seek agreement of the patients' GP before entering the patient in the trial. Follow-up after discharge includes sending the patients, carers and GPs an unmarked satisfaction survey colour coded to differentiate between responses from HIH and hospital treatment. From 129 eligible patients, one hundred patients were enrolled (51 randomly allocated to HIH, and 49 to hospital treatment). There were significant differences between the two groups. The HIH group showed lower incidence of confusion, urinary complications (incontinence or retention), and bowel complications (incontinence or constipation) than the hospital group. Also, patient and carer satisfaction were significantly higher among the HIH-treated group. However, no significant difference in number of adverse events and deaths (up to 28 days after discharge) in the two groups was found.

The study by Wilson and Parker (1999) was a randomised controlled trial that compared the effectiveness of patient care in a hospital-at-home scheme with hospital care (hospital inpatient care). All patients referred to the hospital at home scheme with an acute condition (within a specified 8-month period) were eligible for inclusion in the trial. Participants were 199 consecutive patients referred to hospital at home by their GP and assessed as being suitable for admission. One hundred and two patients were randomly allocated to hospital-at-home (6 refused admission), and 97 to hospital (23 refused admission). There were no significant differences between the hospital-at-home (intervention) and hospital inpatient care (control) group in terms of health status at two weeks, and three months. Also, there were no significant differences between the two groups in dependency at two weeks and three months. The hospital-at-home group required significantly fewer days of treatment than the hospital group both in terms of initial stay (median 8 days versus 14.5 days) and of total days of care at 3 months (median 9 days versus 16 days).

The study by **Stessman, et al. (1997)** (grade level IV) was a descriptive study of home hospitalisation programmes for 741 older people referred either from hospital by medical staff or from community by a family physician. The home hospitalisation programme provided intensive medical care at home through regular home visits by physicians and also nursing assessment to determine the need for regular nursing care. This study was a retrospective design with no comparison group, and it only used a comparator group for evaluating the cost of the programme. Although findings showed a patient satisfaction with the intervention, the evidence is not strong with this study. However, it showed various interventions including medical and pharmacological care that were provided in the programme.

Discussion on Table 5: Rapid response services for people with sub-acute illness that avoid the need for hospitalisation

Emergency Department (ED) based services

Overall, four studies were included in this group of services. A descriptive study by Brazil, et al. (1998) (grade level IV) evaluated the role of a rapid access home-based service as a means for the elderly to avoid admission to an acute-care hospital. This was implemented as a one-year demonstration project in emergency departments in three acute care hospitals and a home care program in a mid-size Canadian city. All three acute care hospitals, which served the City of Kingston region participated in the project. Two of the facilities were teaching hospitals affiliated with the medical school in the city. The third facility was a community hospital located in a small outlying rural community. The quick response service QRS was designed to address the needs of individuals who presented at one of the three participating hospital EDs or who were seen in the community by a family physician. The service provided visits from registered nurses (maximum of 4 visits per day) and assistance from a homemaker (up to 24 hours per day) to a maximum of five days. These services were to be provided to clients within three hours of admission to the program. Access to the service is either by referral from a family physician or from an ED. Patients eligible for the service were in need of professional and/or home support services, with a medical condition that an adequate treatment could be provided at home and close medical supervision was available by a community family physician.

Referrals from the ED department started with ED staff, which assessed patients on admission and directed those considered appropriate for QRS to the service. The QRS case manager, who was responsible for patient assessment and coordination of services assessed the patient and decided whether he or she should be admitted to QRS or alternate services. Arrangements were then made to transport the patient home and necessary professional and support services initiated. Referrals from the community included community access to enhanced and rapid coordinated services as an essential component to avoiding unnecessary ED visits. A single telephone number was established for the service in all areas of the health district. Family physicians, requesting QRS for their patients, called the number and were connected to QRS case managers. The case manager would assess the patient in their home and determine if the patient would be appropriate for the QRS services or alternate services. The program involved a component of reassessment of QRS patients and that involves the QRS case manager who visits the patients in their home within 72 hours of admission to the service. Community nurses were also involved along with the QRS case manager in the assessment as necessary. On the fifth and final day of service, the case manager also visited the patient at home to reassess the plan of care (the plan was agreed upon by both the patient and/or caregiver and the community case manager). Following this final assessment, the patient was transferred from the QRS to the most appropriate level of care (i.e., regular Home Care Program, a long-term care facility, an acute care hospital, or to other community agencies).

Multiple sources of information were obtained to evaluate the service. Hospital ED records and home care records were reviewed. Ninety-six patients participated in the service, and 119 physicians and nurses had some involvement in the service. These participants were surveyed appraising the service in terms of relevance, access, quality and coordination. Study results revealed that elderly women with multiple health problems who lived alone were the most frequent users of the service. The majority of the patients admitted to the service presented with problems of a functional nature that were the result of a fall or mobility problems. The results indicated that the service did avert hospital admissions and facilitated a process by which patients could avoid the intermediate step of hospitalisation before placed in a higher level of care or returning to previous levels of functioning. Economic analysis indicated that the value of the service stemmed from the benefits to patients and caregivers rather than from cost savings offered to acute care hospitals.

The before and after study by **Fry, et al. (1996)** (grade level-IV) was included because it provided detailed information on a quick response programme. The programme was lodged in the emergency department to address existing problems faced by older ED patients. It involved community health nurses, general practitioners and emergency staff. The aim of the programme was to prevent avoidable admissions to hospital through the provision of a home-based care and to optimise discharge planning for patients discharged from the ED. After 12 months of programme implementation, a comparison was made of the patients' profile before and after the programme on presentation to the ED. The authors concluded that the predicted outcomes with the implementation of the programme is that it could enhance the services to the elderly while aiming to be cost-effective through decreasing admission rates, length of stay and transportation cost. They also predicted that the quick response programme provided an alternative pathway for the older patients presenting to the ED. The study however did not provide sufficient information and data on the outcomes to draw conclusions. The study is a descriptive design with a lack of a comparable group, thus interpretation should be weighted with the lack of evidence associated with this design.

The review by **Aminzadeh and Dalziel (2002)** (grade level III-2) looked at patterns of use of emergency services among older adults compared with younger persons, and at different interventions among older emergency patients. Some of the studies were on hospital and community-based comprehensive geriatric screening and intervention programmes targeting older people. This review has grade level-III-2 because it has limited search strategy and the number of studies included was not indicated. It involved mixed study designs (prospective, retrospective, and randomised trials) describing or testing mixed interventions among ED patients. Eleven large-scale ED use studies looked at the patterns of use of ED among the elderly, 14 prospective studies examined the patterns and predictors of adverse health outcomes among older ED patients. The review identified few studies that incorporated home care into emergency services for older patients. For example, they referred to four Canadian studies that described a quick response service that was designed to provide rapid access to home-based services for older emergency patients. The review reported that these programs were successful in identifying patients requiring home care services and reduced the need for hospital admission on the index visit but did not attempt to evaluate short-and long-term patient outcomes.

Moss, et al. (2002) conducted another descriptive analysis (grade level IV) with a 12 month follow-up that looked at an ED-based multidisciplinary care coordination team (CCT) to ensure that ED patients were provided with services that would facilitate their return or maintenance in the community. A validated risk-screening tool was employed by triage staff to identify patients at risk. Care coordinators also received referrals directly from other ED staff and attended hand over rounds to identify suitable patients. The care coordinators undertook a comprehensive discharge risk assessment of suitable patients then made referral to internal and/or external service providers, consultation with case managers, GPs, carers, etc, then provide information and/or education to patient and family then either discharge home or transfer to ward. The service CCT was assessed 12 months after its commencement. The rate of hospital admission from the ED fell significantly compared with the 12-month period before implementing the service. However, as with the previous study this was descriptive with no control group – thus the results should be weighted with the limitations associated with this design in interpreting the results.

Discussion on Table 6: Services that provide for slow stream in-patient or residential rehabilitation (Nurse-led teams/units)

Overall, four studies were included in this group of services, all were conducted in a non-New Zealand setting.

Griffiths, et al. (2001) (a hospital-based intervention). In this randomised controlled trial, a comparison of outcomes of care on a nursing-led inpatient unit with that of a system of consultant-managed care on a range of acute hospital wards was carried out. The NLIU was a 19-bed ward in a medium-sized district general hospital. Patients were referred from acute wards in the same hospital. Patient care was managed by one of three nurse practitioners, and nurses led the multi-disciplinary clinical team, and nursing was regarded as the main therapy. Other therapies were provided on referral, non-urgent medical input was provided on nursing staff referral by a general practitioner during four 2-hour sessions per week. Emergency care was provided by the usual hospital service. The outcomes assessed were length of inpatient stay, functional dependence at discharge, place of discharge and readmission. Findings revealed that NLIU increased length of inpatient stay, was associated with less daily cost of care, but increased the mean hospital total cost per stay. No benefits appeared to be gained from this additional stay. The study showed also that care in the NLIU had no significant impact on discharge destination or dependence. The authors concluded that it is very unlikely that the NLIU could yield cost savings and that it may be more costly than usual acute care.

Richardson, et al, (2001) reported on a hospital-based intervention. The model implemented in this study was an NLIU as a model of intermediate care designed to substitute a stay in the NLIU for a period of acute hospital stay prior to discharge. The authors referred to a more detailed description of the organisation and establishment of this NLIU (Griffiths and Evans, 1995). The model aimed to maximise recovery prior to discharge, provide a more appropriate care environment, and reduce the routine involvement of doctors in the care of medically stable patients. The outcomes measured included clinical outcomes, resource use, inpatient costs and post-discharge costs. The study showed that the treatment group had no statistically significant differences compared to the control group in clinical outcomes, psychological well-being at recruitment into the study, and completion of the questionnaire. The main resource use included physiotherapists, occupational therapists, speech therapists, social workers, dieticians, clinical nurse specialists, and visits to the pain management team. All outcomes (apart from longer length of stay among the treatment group) showed no statistically significant differences between the treatment and control groups. The treatment group used on average less resources except visits to the GP surgery as part of the post-discharge costs. However, this lower resource use in most categories resulted in a significantly lower post-discharge cost per month in the treatment group. The inpatient costs were divided into the mean ward cost per inpatient stay, the mean costs of medication, and the mean cost of inpatient therapy. There was a statistically significant difference between the two groups in mean inpatient cost.

The study by **Cameron, et al. (2000)** is a retrospective descriptive study consisting of data collection from the first 16 months of a multidisciplinary team's operation set up to work directly in the acute admissions ward. The study evaluated the impact of a nurse-led multidisciplinary team on the management of older people with functional problems admitted to an acute medical admission unit in a district general hospital in Scotland. Subjects were all older people with functional problems who were considered fit for immediate multidisciplinary assessment. The team consisted of a clinical nurse

specialist in care of the elderly, senior occupational therapist and senior physiotherapist. This team had close links with consultants in both general and geriatric medicine, and liaised closely with hospital social workers and community occupational therapists. The team met each weekday morning and received a report on all elderly patients in the acute admissions ward. Seriously ill patients and those unfit for assessment were not seen and so move to the general medical wards. Elderly with lesser medical problems, who are recognised to have problems with activities of daily living or who require review of social care were seen immediately. A full assessment of the patients' abilities was made and the clinical nurse specialist relayed this information back to the "on call" consultant by early afternoon. The medical status of each patient was combined with a clear summary of their functional and social needs. The consultant "on call" can then decide whether discharge home or if a more prolonged hospital stay was appropriate. If discharge was to take place, the multidisciplinary team commonly arranged some form of early support package. If the patient required further inpatient care, the global picture of their needs permitted a move to the most appropriate ward setting. The nurse-led multidisciplinary team saw 30 percent of all acute admissions aged 65 years and over. Three reasons were identified as causing this, firstly, the medical status of the patient, where the assessment took place only for the medically fit, so many took several days to improve sufficiently, and patients were removed from the Admissions Units to general medical wards for later functional needs assessment. Secondly, a second group of admissions had pure medical problems with no perceived problems functionally, so the team did not become involved with these individuals. Thirdly, admission over the weekend period. A discharge of almost a quarter directly home from the admission ward was considered a success and 40 percent had direct follow-up by the MDT to expedite early supported discharge. The strategy worked well, with only three percent of this frail elderly group re-admitted within 30 days. The early recognition of rehabilitation issues permitted immediate settings of targets and goals. The need for home visits was also recognised early, thus reducing planning delays. Occupational therapy input began several days sooner because of better targeting of resources. This study is limited because of the absence of a comparison group and is a descriptive study.

The study by **Davies (1994)** was a quasi-experimental study (before-after) which evaluated the effects of a system of a nurse-led team care on a ward providing intensive nursing and rehabilitation to older people. The evaluation was in an 18-bed rehabilitation ward within an elderly care unit, comprising of rehabilitation and long-stay beds in an inner London health authority. Participants were eligible patients who were to be admitted to the study ward aged 75 years and over. Medical diagnoses varied and included cerebrovascular accident, myocardial infarction, pneumonia, fractured neck of femur, in addition to admission for social reasons. Baseline data were collected immediately prior to implementing the new team on the study ward, and reassessments were conducted after six months. The system involved the admission of patients to either acute rehabilitation or continuing care wards according to their needs, rather than admitting patients with very different needs to the same ward. This allowed nursing teams to implement models of care most appropriate for their particular client groups. In the continuing care wards, this involved limiting the amount of medical assessment and intervention which patients received and encouraging the medical consultant to act in advisory capacity to the nursing staff. Nurses on the continuing care wards made a decision to stop wearing uniforms in order to create a more homely environment, and systems of team and primary nursing were gradually introduced. Variables were quality of care, job satisfaction, and length of patient stay, which were compared between the study ward and two wards within the unit. Semi-structured interviews with all team members involved with patients on the study ward at any time during the evaluation period were conducted to complement quantitative data as well as observation of ward rounds and social team meetings. There was an improvement in the quality of care scores on the study ward but not on the main comparison ward. Admission to the study ward did not adversely affect the length of patient stay. There were no differences between nurse job satisfaction between the study and comparison wards throughout the period of evaluation. Communication was more structured and focused on the study ward and patient goals were more clearly specified. Data from the staff interviews provided some insight into the effects of nurse-led team care on the quality of patient care (e.g., a developing partnership with patients, equality between team members, and improved decision making and quality of care).

Discussion on Table 7: Planned discharge (including a plan and package of care/support)

Overall, two systematic reviews, both with evidence grade level-I were included in this category. All were set in the UK and looked at different forms of interventions related to discharge planning. Databases searched included Cochrane EPOC, Cochrane Controlled trials, Medline, Embase, Cinahl, EcoLit and others. Seventy-nine studies were included in these systematic reviews, the majority were randomised controlled trials, few recruited patients with medical conditions, although some others recruited patients with a mix of medical and surgical conditions.

A recent Cochrane systematic review by **Parkes and Shepperd (2003)** assessed the effectiveness of discharge planning for patients moving from hospital to home. The review included eight controlled trials with 4,837 patients; four of the studies recruited medical patients and the other four recruited patients with a mix of medical and surgical conditions. The review defined discharge planning as the development of an individualised discharge plan for the patient prior to them leaving hospital for home. The discharge planning across the studies included different ways of implementation and involved pre-admission assessment, case finding on admission, inpatient assessment and preparation of a discharge plan based on individual patient needs, implementation of the discharge plan and monitoring. The control groups received usual care, which was a routine discharge for hospital patients. The results were mixed on several outcomes including mortality rate, patient health status, complication rate, carer satisfaction. However, there was some consistency in results showing a reduction in hospital length of stay and in some cases reduction in patients having to be readmitted to hospital once they had been discharged. The review found that patients who received discharge planning were more satisfied with their care compared with the usual care group. The results also suggest that discharge planning might also be associated with increased use of other health care services but there was no evidence that it led to reduced health services costs.

The results of the review might reflect the different study populations, the different ways the intervention was implemented, the multiple components of the interventions, the methodological quality of included trials, and variation in the timing of the discharge planning across the studies. The authors concluded that an important element of discharge planning (aimed to bridge the gap between hospital and home) is the effectiveness of communication between hospital and community and that this was not reported in any of the trials included in this review. This was one of the major limitations, the expectation is that discharge planning will ensure that patients are discharged from hospital at an appropriate time in their care, and with adequate notice to organise the provision of other services. The economic consequences of discharge planning remains uncertain, as it is not clear if costs are reduced or shifted from secondary to primary care as a result of discharge planning. Five of the trials included in the review were based in the USA, two in Canada and one in Denmark. In each country, the orientation of primary care services differs, thus application to the New Zealand context should be studied. The authors mentioned the scope for a systematic review to be conducted to examine the effectiveness of discharge planning combined with home follow-up.

The comprehensive systematic review by **Parker, et al. (2002)** reviewed clinical trials related to interventions that improve the discharge of older people from inpatient hospital care. The review included 71 studies including 54 RCTs, with four predominant types of interventions. To be included, a trial had to evaluate an intervention intended to modify discharge in patients experiencing discharge from inpatient hospital care. The review included studies of discharge planning schemes (primarily interventions that utilise comprehensive discharge planning protocols); discharge support schemes (a variety of models in which new and existing services are targeted at recently discharged patients, including schemes with early discharge from inpatient hospital care); geriatric assessment programs (assessment services focused on hospital inpatients and patients recently discharged from hospital (comprehensive assessment schemes in ambulatory care were excluded); and educational programs (a fairly distinct group of studies with objectives of educating patients in aspects of management of their illness many are related to drug).

Discharge planning (six RCTs) delivered by a single professional, usually a specialist nurse, with some of the studies including some form of follow-up (home visit, telephone or both) after the patient had been discharged from hospital, including early discharge schemes, although not all the interventions were specifically designed to hasten discharge. The studies evaluated a comprehensive discharge protocol implemented by an individual who was a specialist nurse, a social worker or an admitting

clerk. The description of the protocols in the trials was similar and had many common elements. Not only did the specialist nurse or social worker assess, co-ordinate and provide post discharge follow-up support, they also educated or reinforced education required for discharge. Another common element was a 24-hour pre-discharge visit. The social worker interventions included in one study involved health education, financial planning, referrals to community placements and help with medical follow-up. Other studies investigated the additional value of a home visit by the patients' GP to patients discharged under the usual multidisciplinary discharge planning process of a geriatric inpatient unit, which included a 24-hour pre-discharge home visit. With comprehensive geriatric assessment (14 studies), the patients were experiencing discharge from inpatient hospital care. The trials included geriatric evaluation and management units, inpatient geriatric consultation services and hospital home assessment services.

Overall, combined results showed that mortality was the most consistently available outcome (reported in 36 studies) and for three different time periods following discharge, no statistically significant effect on mortality was found at three, six and 12 months. There was no particular advantage or disadvantage conferred by the interventions being delivered by a team or single person. Similarly, the index length of stay was unaffected by discharge arrangements. The main positive finding was that the greatest impact of the interventions was on the readmission rate indicating a reduction in relative risk for being readmitted in the intervention (35 studies). The effect of the intervention was slightly greater when delivered by a single person than when delivered by a team. No consistent effects were seen on physical functioning nor on cognitive functioning. Similar effects were seen in discharge destination in the studies in which this outcome was reported. Although there were difficulties in reviewing and synthesising a heterogenous group of studies, this review was robust given the sufficient number of trials identified, and allowed a quantitative synthesis overall, a subgroup analysis in particular intervention types, and a meta-analysis on a range of outcomes for the studies as a whole and thus provided sufficient evidence to draw conclusions.

In summary: despite the relative lack of good RCT evidence to support specific service models to hasten or enhance hospital discharge the reviews indicated that there is an effect of intervening in discharge, and that this is reflected in an overall beneficial effect on the risk of readmission to hospital but not on mortality, length of stay or discharge destination. When the characteristics associated with the effect on readmission were considered, interventions occurring across the interface between hospital and community care are the most marked, although it appears there is little difference in the effect size whether the intervention was delivered by a single person or a team.

Discussion on Table 8: Supported discharge (stand-alone teams offering intensive home-based rehabilitation, education, treatment or support for a finite period) upon hospital discharge

Overall, there are five studies in this group, two of which are systematic reviews and all were conducted overseas. A comprehensive systematic review by **Parker, et al. (2002)** reviewed clinical trials related to interventions that improve the discharge of people from inpatient hospital care. Discharge support arrangements was one of the four predominant types of intervention included. The review identified 33 studies on discharge support arrangements (28 were RCTs) which was another category in which the interventions were intended to provide an enhanced level of support around the time of discharge and subsequent frequent follow-up support. The trials were mostly from northern Europe (10 trials from the UK, four from elsewhere in northern Europe, seven from North America, one from Hong Kong, one from Australasia, and the others not stated). This systematic review included randomised controlled trials that assessed the effect of interventions in which hospital or community staff are in contact with the patient around the time of hospital discharge period. This included early discharge schemes, although not all the interventions were specifically designed to hasten discharge.

The literature included a wide range of types of interventions, from a telephone call after discharge at the simplest level, to complex multidisciplinary interventions with elements of rehabilitation at the other extreme. Discharge support was provided through hospital at home schemes, as well as other types of interventions. Some of these interventions have focused on achieving early discharge, but most have been concerned with preventing complications after discharge, particularly with the aim of preventing readmission to hospital. Rehabilitative care was provided in some literatures by therapy and/or nursing staff in patients' own homes, other interventions included supervision of discharge

arrangements by the primary health care team, and a variety of forms of surveillance (visits from health professionals, visits from other trained visitors, and telephone follow-up). Some of the studies included groups in which discharge support was provided in hospital settings in ambulatory care (e.g., geriatric day hospital). Four of the studies provided telephone follow-up by a single discipline only, this was always a nurse. Telephone follow-up and support for clinic visits was tested in two studies. This was by a nurse in one study and a nurse / doctor in the other. Single discipline intervention was provided in 12 of the studies, usually by a nurse or care assistant. In one other study, an occupational therapist was used, however the largest group of studies provided team-based intervention in the patients home. Discharge support provided by hospital at home schemes were also presented in two trials in the review. The other two types of interventions were comprehensive geriatric assessment programmes and education interventions. Each category was used for an analysis of the extracted data by intervention type.

All the trials included older people experiencing discharge from inpatient hospital care. However, subjects were excluded for a variety of reasons such as severe disability, cognitive impairment, and difficulty with language and others. There was a tendency towards including patients aged 70 years and above, and the population included more women than men except for two studies conducted among men. A variety of outcome measures were reported, with mortality being the most common measure. These included duration of inpatient stay (13 studies), index of length of stay (6 studies), physical health outcomes were reported in 17 studies and mental health (anxiety depression and cognitive function) in 11 studies. The results reported showed that overall there appears to be little difference in mortality between the subjects receiving discharge support and those receiving conventional hospital-based alternatives. Therefore, the findings from the review did not support the hypothesis that discharge support arrangements reduced mortality in older patients experiencing discharge from inpatient hospital care.

Overall, the six studies that reported index length of stay did not show a significant effect of the intervention on length of stay. The mean difference in length of stay between intervention and control groups was 3.9 days but this was statistically not significant. In 18 of the trials that reported on readmission to hospital, the duration of hospital inpatient stay appears to be similar between the intervention groups and the controls in these trials. Therefore, the reviewers could not conclude that this discharge support arrangement decreases the length of stay.

In 19 of the trials that reported on some aspect of physical functioning the changes were reported in a variety of ways, but not all the data were available for meta-analysis. However, there was some tendency towards better functioning in the intervention groups with some level of improvement among subjects in receipt of discharge arrangements. However, physical function was not consistently reported, and the review could not draw firm conclusions about functional health outcomes for patients. Also, no conclusions were drawn about carer health outcomes, or patient and carer preferences.

The review concluded that elements of service use and cost were not consistently recorded or reported in the studies, and therefore, no general conclusions were drawn about the cost or cost-effectiveness of discharge support arrangements as evaluated in these studies.

The systematic review by **Shepperd and Iliffe (2001)** (grade level-1) reviewed 16 RCTs. This review differed from the above review in that this review included studies that compared hospital at home care with acute hospital inpatient care, whereas in the above review the studies were undertaken within inpatient hospital settings (teaching or community hospitals) or in the community after patient discharge from such institutions. The other difference is that in this review the patients included were aged 18 years and older, patients with long-term care needs, paediatric and obstetric patients, and those requiring mental health services were excluded. The above review included patients above the age of 65 years experiencing discharge from hospital care and excluded discharge from inpatient facilities not potentially providing high technology care such as nursing homes, or ambulatory care settings such as day hospitals and outpatient departments. The intervention in this review includes mainly hospital at home care which offer a specific service to patients in their home. This requires healthcare professionals to take an active part in the patients care. If hospital at home care did not exist, the patient would be admitted to hospital. Whereas the above **Parker, et al. (2002)** review included a variety of models in which new and existing services were targeted at recently discharged patients.

The study populations for this review in the majority of studies were older medical patients. The review looked at hospital at home schemes that provided care following early discharge from hospital (13 trials). In this review, three trials (Wilson & Parker, 1999, Caplan, et al. 1999, and Davies, et al. 2000) evaluated hospital at home schemes that provided an admission avoidance function (these were included above in the discussion on **Table 4 (pages 22-23)** but were not included in the evidence tables).

There were other trials that evaluated hospital-at-home schemes which provided care following early discharge from hospital (Adler, et al. 1978; Coast, et al. 1998; Donald, et al. 1995; Indredavik, et al. 1999; Martin, et al. 1994; Rodgers, et al. 1997; Ruckley, et al. 1978; Rudd, et al. 1997; Widen Holmqvist, et al. 1998; Shepperd, et al. 1998a). This was compared to hospital care and hospital organised rehabilitation.

A summary of the types of services evaluated in the studies included in this review (providing care following early discharge from hospital) as presented by the systematic review are presented below.

The study by Adler, et al. (1978) (UK), included patients following elective surgery (hernia and varicose veins) aged 18 to 64 years. The type of service provided was an early discharge from hospital, with no night care available. The service was organised by hospital surgeons, provided by community, and the clinical responsibility was held by GP.

The type of service assessed in the study by Coast, et al. (1998) (UK) was early discharge from hospital for elderly patients recovering from elective surgery or emergency medical admission, with no night care. The admissions included various sites of fractures, hip/knee replacements, cerebrovascular accidents, and other reasons for admission.

The type of services provided for elderly medical patients in the study by Donald, et al. (1995) was an early discharge organised by hospital (nurse manager, physiotherapist, occupational therapist, and assistants), and provided by the community. It was not clear whether 24-hour care was provided, GPs provided routine and emergency care for the patients.

Indredavik, et al. (1999) (Norway) evaluated an early discharge scheme that used a mobile team based in a stroke unit and worked with the primary care team. The team included a nurse, physiotherapist, occupational therapist, and stroke physician. The service was compared to a control group on combined active and rehabilitation stroke unit and further follow-up organised by the rehabilitation clinic and/or primary health care system.

Martin, et al. (1994) also provided an early discharge scheme and the type of service was hospital based with the GP having the clinical responsibility. The team involved a nurse manager and unqualified staff. (The study is further detailed in **page 32**).

Rodgers, et al. (1997) conducted a pilot study in a UK setting among patients recovering from stroke to establish the feasibility and best method of evaluation of an early supported hospital discharge policy. This was compared to conventional care. The service involved a physiotherapist, occupational therapist, speech and language therapist, and social worker.

Ruckley, et al. (1978) assessed an early direct discharge scheme of patients after operations for varicose veins or hernia compared to patients to be managed in an acute ward for 48-hours or in a convalescent hospital for 48-hours. The district nurse and a general practitioner provided early discharge care at home and this was organised by the hospital and provided by the community. The team included 15 GPs and district nurses.

In another trial, Rudd, et al. (1997) assessed an early discharge scheme for medically stable patients (mean age 71 years) with stroke. A physician based in secondary care coordinated the hospital at home service and a community-based rehabilitation team provided the service. Patients received specialist community rehabilitation for up to three months after randomisation and this was compared to conventional hospital and community care.

The RCT by Shepperd, et al. (1998a) was among patients recovering from a hip or knee replacement, hysterectomy, elderly medical patients, patients with chronic obstructive airway disease (COAD). The study evaluated an early discharge and admission avoidance scheme. The service provided was community-based nursing and therapy, nursing aids, with GPs having clinical responsibility. This was compared to in-hospital care.

The Swedish study by Widen Holmqvist, et al. (1998) was conducted among patients recovering from a stroke and evaluated rehabilitation at home after early supported discharge for moderately disabled stroke patients. The type of service provided was community-based nursing and therapy. The patients were randomised to either early supported discharge with continuity of rehabilitation at home for three to four months or to routine rehabilitation service in a hospital, day care, and/or outpatient care. The home rehabilitation team consisted of two physical therapists, two occupational therapists, and one speech therapist.

Overall, the review reported that in each trial the care being provided by the intervention was primarily nursing with additional care, sometimes being provided by care assistants or home helpers. Physiotherapy care was provided by some of the interventions (Donald, et al. 1995; Rodgers, et al. 1997; Widen Holmqvist, et al. 1998; Rudd, et al. 1997; Coast, et al. 1998; Shepperd, et al. 1998a; Indredavik, et al. 2000); occupational therapist care by other interventions (Donald, et al. 1995; Rodgers, et al. 1997; Widen Holmqvist, et al. 1998; Rudd, et al. 1997; Coast, et al. 1998; Shepperd, et al. 1998; Indredavik, et al. 2000). Access to a speech therapist was described in four of the interventions (Rodgers, et al. 1997; Widen Holmqvist, et al. 1998; Rudd, et al. 1997; Shepperd, et al. 1998). In four of the trials, 24-hour care was not available as part of the intervention (Adler, et al. 1978; Martin, et al. 1994; Rudd, et al. 1997; Coast, et al. 1998). (Readers are referred to the original systematic review and the included studies for further schemes description). The review concluded that:

- early discharge of elderly medical patients failed to detect a difference in mortality between intervention and comparison groups
- early discharge of elderly patients following elective surgery failed to detect difference in mortality between groups
- early discharge hospital-at-home reduced hospital length of stay, and admission avoidance schemes reduced the total length of stay. However, increasing total length of care for schemes providing early discharge care offset this.

Although this review included only RCTs, it has certain limitations. These are, the inclusion of trials not restricted to older people, trials restricted to women only, and the follow-up periods varied across the trials, which ranged between 24-hours to more than two years. The use of different measures to assess patient's outcomes in the trials limited meta-analysis to mortality, readmission rates, and length of stay. However, early discharge schemes for patients recovering from elective surgery and older patients with a medical condition may have a place in reducing the pressure on acute hospital beds, providing the views of the carers are taken into account.

The systematic review by **Hyde, et al. (2000)** (grade level-I) of nine randomised or quasi-randomised trials, looked at supported discharge provided to patients or their carers. This was actual additional support from any source commenced within one week of discharge following an acute admission for older people with undifferentiated clinical problems. The supported discharge was provided for variable duration, the majority however had been withdrawn by 16 weeks post-discharge. The outcomes reported across the studies included mortality (9), hospitalisation (8), institutionalisation (7), functional status (6), at home (5), patient satisfaction (1), and carer satisfaction (1). Overall, the proportion of those at home six to 12 months after admission was greater with the supported discharge, and was clarified by meta-analysis for available data. This was associated with a consistent pattern of reduction in admission to long-stay care over the same period without apparent increases in mortality. For hospitalisation, the results were variable and no apparent effect was noted. Data were not comprehensive on functional status, patient and carer satisfaction and thus uncertainty exists about the overall effectiveness of the intervention. The studies included were limited by selection bias, small sample size and inadequate/unclear allocation concealment, raising the need to be cautious when interpreting the results for conclusions. The review was also limited by the lack of detailed information about the interventions and the control groups.

The study by **Crotty, et al. (2002)** is a small study set in three hospitals in Adelaide. This evaluated an accelerated discharge and home-based rehabilitation intervention in a group of elderly people recovering from hip fracture. Patients assigned to the intervention group were discharged within 48-hours of randomisation. The home rehabilitation team consisted of a team coordinator, a physiotherapist, an occupational therapist, a speech pathologist, a social worker and a therapy aid. This

was compared to usual care in which the patient remained in hospital for conventional rehabilitation. In terms of measures of quality of life, at four months of follow-up the intervention group showed significantly more improvement in measures of current ability to perform day-to-day activities (MBI) compared to the control group, also they scored higher on the Falls Efficacy Scale. There were no differences between the groups in falls rates. Patients in the home-based rehab had a shorter stay in hospital but longer stay in rehabilitation overall. Groups were comparable on the rate and length of admissions after discharge, use of community services, need for carer input, and contact with a general practitioner after discharge. The authors concluded that accelerated discharge and home-based rehabilitation appears to improve physical independence and confidence in avoiding subsequent falls, which may have implications for longevity and overall quality of life.

The study by **Martin, et al. (1994)** is a small (54 participants) randomised control trial with 12 months of follow-up and compares a Home Treatment Team (HTT) (primarily a hospital discharge team for the elderly) with conventional community services. The aim of the team was to provide help and promote independence for patients at home for up to six weeks after hospital discharge. The HTT team was designed for elderly patients who, after acute medical treatment and rehabilitation, were still at risk of failing to manage at home with the usual community services (fail to resettle, and thus readmitted to hospital or residential or nursing home), but likely to manage with these services after further recovery within six weeks. The team consisted of a qualified district nurse (nurse manager) and 10 unqualified health care assistants, trained to perform the tasks usually associated with the roles of auxiliary nurse, home help and therapy aid. The ward teams and HTT nurse manager prepared a care plan for each patient, frequently using a domiciliary visit identify the objectives for rehabilitation at home. Discharge generally took place within one week of referral. The HTT worker visited the patient up to three times daily for up to six weeks for personal care and domestic assistance. Progress was reviewed weekly and the team withdrew (at 6 weeks or earlier) when the patient could then manage with conventional community services such as home care, district nursing, day care, etc. Patients with medical problems were seen by their GP, although the team also had easy access to the hospital Elderly Care Unit if necessary.

The results showed that fewer HTT patients were readmitted than controls (4 vs 9 by 6 weeks and 9 vs 14 by 12 weeks) and more were at home at six and 12 weeks, and at 12 months. The HTT group patients spent fewer days in hospital than controls during the 12 weeks (median difference 34 days) and more days at home during 12 months. The only significant differences between the two groups in the use of community services was less home care by the HTT group at six weeks and more district nursing at 12 weeks. Neither group showed any significant change in mental state or functional abilities over 12 weeks. The authors concluded that for selected patients, a specialised post-discharge team can prevent some readmission, reduce the use of institutional care and increase the time that disabled elderly people spend at home, the HTT was of benefit but the mechanism of its effect was not identified.

Study limitations for the section most commonly included patient selection bias, significant losses to follow-up, lack of information on randomisation and concealment, generalisability limitations because of a single setting, reliability and validity of outcome assessment measures was unknown although these were often referenced. With the systematic review heterogeneity was prominent among studies, with differences in the study designs, variation in the follow-up period, different interventions and outcome measures.

Discussion on Table 9: Services that provide for case management

Overall, 12 studies were included in this group of services, all were conducted in a non-New Zealand setting.

An RCT (single-blinded) by **Gagnon, et al. (1999)** (grade level-II) looked at nurse case management among older people. This consisted of coordination and provision of healthcare services by experienced geriatric nurses, both in and out of hospital for a 10-month period. The nurse case managers were expected to integrate care from a health maintenance and promotion perspective. This included supporting the older people and their caregivers during times of transition related to health status, environmental changes, and changes in resource needs. The nurse case manager coordinated the work of all health care providers involved in the care of the older persons in order to create and implement a responsive plan of care. During hospitalisation, older people were placed on the

Promotion of Autonomy Intervention Framework which consisted of a structure of assessments and interventions mapped against a timeline and associated with appropriate outcomes to promote the functional autonomy of older adults. Baseline data were obtained during a series of early visits with the older person and, as much as possible, with his or her informal caregiver. During this early period, the nurse focused on responding to the strengths and coping abilities of the older person while encouraging his or her maximal autonomy. A monthly phone call and a home visit every six weeks were the minimum standard for all nurse case managed patients. Any additional follow-up was usually by telephone contact, although home visits were made when the nurse case manager deemed it appropriate. The control group received a usual care (UC) in which the hospital and community services were provided separately.

Hospital care varied because it was determined by a variety of physicians, nurses, and other team members. Community care was determined by whether or not the older person was known to the health centre. Definitions of frail and criteria for entry into the community health centres varied by centre. This intervention was compared to a control group receiving usual care varied by healthcare provider and community health centre. The control group received usual care in which hospital and community services were provided separately. Hospital care varied because it was determined by a variety of physicians, nurses, and other team members. Community care was determined by whether the older person was known to the health centre. Quality of life, functional ability, satisfaction with care, and health services use did not differ significantly between the two groups. However, the intervention group showed an unexpectedly significantly greater average number of ED visits than the group receiving usual care during the follow-up period. These results suggest that frail older people receiving nurse case management are more likely to use emergency health services without a concomitant increase in health benefits. Intention-to-treat analyses showed similar results. This is a robust well-conducted randomised controlled trial, however when interpreting the results there are some problems with the internal validity (with the lack of sufficient statistical power from the small sample size, and wider confidence intervals). There was also contamination bias that might have occurred when the control arm received intervention care.

The study by **Evans, et al. (1995)** is a descriptive study that describes the establishment of an outpatient interdisciplinary service designed for community-dwelling chronically ill older adults. Known as the CARE (Collaborative Assessment and Rehabilitation for Elders) Program, it was designed to meet the needs of frail older adults in Pennsylvania, USA. This program is a nurse-managed collaborative outpatient program and involved a gerontological nurse practitioner as care manager, in which clients received an intensive, individualised, time-limited program of nursing, rehabilitation, mental health, social, and medical services in one setting several days each week. Additional geriatric services, such as primary care, are available in the same location when needed. Participants targeted were those persons aged more than 65 who have complex health problems (e.g., 71% of subjects had an admitting rehabilitation diagnosis of osteoarthritis, and 19% with stroke) and are living at home. Individuals required multiple services, including at least one rehabilitation therapy session, and they were unsuitable for inpatient rehabilitation. In its first eight months of operation, the CARE program received 97 referrals, evaluated 66, and admitted 53 clients (78 years average age). Over three-fourths (77%) were women and 58 percent were black. Initial screening determined that 57 percent were at high nutritional risk. The average stay in the program was six weeks. Functional Independence Measure (FIM) scores, which improved by a mean of 2.4 points, were found to lack sensitivity to the functional improvements achieved by clients. The authors concluded that under existing Medicare and third party reimbursement policies, it is feasible to establish a nurse-managed comprehensive outpatient rehabilitation program designed to meet the needs of frail older persons. Preliminary data support the beneficial effects of the program as well as the economic feasibility of this approach.

Challis, et al. I & II (1991) (grade level-VI) conducted a quasi-experimental comparative study of 214 older people (published as two articles). These were frail older people discharged from geriatric or acute medical wards to a project (the Darlington Project) that included an intensive case management and care at home (101 patients, mean length of stay 123 days) compared to (113 older patients, mean length of stay 305) long-term hospital care. This study considered the quality of life and quality of care outcomes for older people (they excluded terminally ill patients), and showed that there was a statistically significant improvement in overall indicators of subjective well-being. The effects upon carers were tested among the three groups. The project carers group, whose relatives received the Darlington Project, were seen on two occasions, about two weeks after discharge and again after six months. The other two groups were day hospital carers whose older relatives attended the day hospital

in Darlington but otherwise received traditional service support at home. Hospital carers were carers of older people forming part of the client control group. The project carers carried out significantly fewer care tasks than the day hospital carers, and were significantly less subject to distress associated with the performance of these tasks. The information and analyses was based on a period of time during which the service was a pilot project thus limiting this study. Also, the lack of true experimental study design contributed to the limited evidence provided by the study.

The study by **Lim, et al. (2003)** was a prospective multicentre, RCT with six months of follow-up and outcome measurement was blinded. The trial evaluated the benefits of co-ordinating community services through the Post-Acute Care (PAC) program in older people after discharge from hospital in four Australian university-affiliated metropolitan general hospitals in Victoria. Patients were discharged home from acute wards and were referred to the PAC co-ordinator. Coordinators were hospital-based staff (allied health or nursing background) who assessed patients and helped develop a discharge plan and provide more time and expertise than usually available. They also provided short-term case management including telephone follow-up as required, availability to patients in the event of crisis, liaison with service providers, coordination of service provision, nursing and adequate referral before discharge from the PAC program. Control group patients received usual hospital discharge planning provided by ward nursing staff and the social work department. This is limited to several nursing visits per week as well as community services, such as delivered meals and housekeeping support. The results showed that there was no difference in mortality between the intervention and control groups (both 6%). However, there was significantly greater overall quality of life scores at one-month follow-up in the PAC group compared to usual care. No difference was reported in unplanned readmissions, but PAC group patients used significantly fewer hospital bed days in the six months after discharge (mean 3 days) than the control patients (5.2 days). In terms of total costs including hospitalisation, community services and the intervention, these were lower in the PAC group than the control. The authors concluded that the PAC program benefited the transition from hospital to the community in older patients.

The study by **Naylor, et al. (1999)** was an RCT that was conducted in two urban academically affiliated hospitals in the USA (Philadelphia) involving 363 patients. The study evaluated the effectiveness of comprehensive discharge planning (CDP) plus case management (home follow-up). This was an advanced practice nurse-centred discharge planning with home follow-up intervention for older people at risk of hospital readmissions. Participants were older people of 65 years and over who were hospitalised between 1992 to 1996 and had at least one of several medical and surgical reasons for admissions. The intervention extended from hospital admission through four weeks after discharge. An advanced practice nurse (APN) assumed responsibility for discharge planning during hospitalisation of patients, and substituted for the visiting nurse (VN) during the first four weeks after the index hospital discharge. The nurse, in collaboration with the patients GP, individualised patient management within the bounds of the protocol. This included an APN visit within 48-hours of hospital admission; APN visits at least every 48-hours during the index hospitalisation; at least two home APN visits (1 within 48-hours after discharge, a second 7-10 days after discharge); additional APN visits based on patients needs with no limit on number; APN initiated telephone contact with patients or caregivers. The control group on usual care received discharge planning that was routine for older patients at the study hospitals, no more details were given. The control group patients were more likely to be admitted at least once than the intervention group by week 24 (37% vs 20%). Fewer intervention group patients had had multiple readmissions than the control group (6.2% vs 14.5%). The mean length of stay for readmitted patients in the control group was higher (4 days) than the intervention group (1.5 days). The time to first readmission was significantly lengthened in the intervention group. Medicare reimbursements for health services were lower for the intervention group patients than the control group. The study showed that focussed, short-term case management around the time of hospital discharge may reduce subsequent readmissions and total hospital days for a selected group of elderly patients.

The study by **Bernabei, et al. (1998)** was an RCT with 199 elderly people, with one year of follow-up. This looked at the impact of an integrated social and medical care with case management programs among frail elderly people living in the community. The study was conducted in a small town in Northern Italy. The intervention group received case management and care planning by the community geriatric evaluation unit and GP. The services were provided in an integrated fashion, the control group received primary and community care with the conventional and fragmented organisation of services (GP, regular ambulatory and home visits, nursing and social services, home aids and meals on wheels). Functional outcomes, after one year of follow-up, in terms of activities of daily living,

instrumental activities of daily living, mental status, and depression were compared between the two groups. In the control group all functional indices deteriorated, whereas in the intervention group, less consistent changes were observed. The differences between the intervention and control groups were all significant. Also, the adjusted mean number of medications was reduced in the intervention group. The results obtained in the intervention group was achieved without increases in use of health services. Survival analysis showed that admission to hospital or nursing home in the intervention group occurred later and was less common than in controls. Health services were used in the same extent, but control subjects received more frequent home visits by GPs. The intervention group had improved physical function (in terms of daily living score), and showed a decline in cognitive status. The authors concluded that integrated social and medical care with case management programs may provide a cost effective approach to reduce admission to institutions and functional decline in older people living in the community.

The study by **Fitzgerald, et al. (1994)** assessed the efficacy of case managers to increase outpatient general internal medicine primary care contacts and reduce subsequent hospital readmission and ED visits among men discharged from hospital. This RCT with one year of follow-up was conducted at a University affiliated Veterans Affairs medical centre in the USA. In this study, 333 men aged 45 years and above (mean age, 64 years) who were discharged from the general medicine inpatient service, were randomly assigned to receive the intervention (a nurse case manager). Whereas 335 men, mean age 64 years, were randomised to receive the usual care provided to any patient eligible for care at the VA hospital as a control group. The intervention was a nurse case manager, this was assigned to each intervention patient at hospital discharge. The role included instructing patients of their medical problems and facilitating access to usual care and identifying and fulfilling unmet social and medical needs with standard or alternative sources of care. Within 24-hours of discharge the case manager mailed educational materials and access information, and within five days called intervention patients to review and resolve unmet needs, early warning signs, barriers to keeping appointments, and readmissions. Case managers contacted the patient in the intervention group if they made no visit for 30 days. This resulted in a total of 6,260 patient-case manager contacts. At baseline, there were significant differences between the intervention and control group and in the physical health score and the number of days spent in the hospital in the previous six months. However, controlling for baseline differences did not affect the results. Patients in the intervention group made 15 percent more outpatient visits to their primary care physician in the intervention group than did patients in the control group so that the intermediate aim of the intervention, to increase outpatient care by the primary care physician was achieved. There were no significant differences between the two groups in non-elective readmissions, readmission days, or total readmissions. The authors concluded that frequent contacts for education, care, and accessibility by case managers using protocols were ineffective in reducing non-elective readmissions. Study randomisation was not adequately described and blinding was not clearly reported. The study is limited to participants in USA Veterans health care settings so generalisability to New Zealand context is limited.

The study by **Weinberger, et al. (1996)** was a randomised controlled trial that evaluated an intervention model that increased access to primary care to prevent readmission at nine Veteran Affairs Centres. The model involved a close follow-up by a nurse and a primary care physician of patients to be discharged at risk of readmission (e.g., patients with diabetes, chronic obstructive pulmonary disease or congestive heart failure), and this follow-up was to continue for the next six month after discharge. The model here differed from the one by Fitzgerald, et al. (1994) in that the intervention team consisted of one licensed registered nurse (experienced in patient care) and one primary care physician (predominately board certified in internal medicine, or family practice). The intervention had two components (before discharge and after discharge) both had an inpatient component, which began immediately after randomisation, and an outpatient component, which began at discharge. When patients assigned to the intervention group were readmitted to the hospital, the inpatient protocol was repeated. The before discharge component involved the assessment of patient's post-discharge needs by the primary care nurse within three days before discharge. The nurse also developed a list of medical problems, provided educational materials, assigned the patient to a primary care physician, and gave the patient a card with the names and beeper number of the primary care nurse and primary care physician. The primary care physician visited the patient personally within two days before discharge to review the hospital course, discharge plans, lists of problems, and medication regimens, discussing discharge plans with hospital physicians as necessary. Then, the primary care nurse made an appointment for the patient to visit the primary care clinic within one week of discharge. The after discharge component involved the primary care nurse who called on the patient within two working days after discharge to assess potential difficulties with medications or medical regimens, identify

health problems arising since discharge, make sure that patient knew how to contact providers, and remind patients of the follow-up appointment. Patients kept the first post-discharge appointment. Then the primary care physician and primary care nurse reviewed and updated the treatment plans at the first post-discharge appointment. Appointment reminders were sent if necessary, and the missed-visit protocol was implemented if necessary. The control group received usual care in which no post-discharge care was required nor prohibited for the patient in this group. Their care after discharge could be provided by community physicians, or at Veterans Affairs clinics, as arranged by the physicians treating them as inpatients. The control group did not have access to the primary care nurse and received no supplemental education or assessment of needs beyond what was customarily offered at each site.

Patients were severely ill, and with an extensive burden of illness (evident from their extremely poor base-line scores for quality of life). Half of those with congestive heart failure (504 patients) had disease in New York Heart Association class III or IV; 30 percent of those with diabetes (751 patients) had end-organ damage; and a quarter of those with chronic obstructive pulmonary disease (583 patients) required home oxygen treatment or oral corticosteroids. Although the patients in the intervention group received more intensive primary care than controls, they had significantly higher rates of readmission (0.19 vs 0.14 per month) and more days of re-hospitalisation (10.2 vs 8.8). Intervention group patients showed more satisfaction with their care, but there was no difference between the study groups in the quality-of-life scores, which remained very low. The authors concluded that for veterans discharged from Veterans Affairs hospitals, the primary care intervention studied increased rather than decreased the rate of re-hospitalisation, although patients in the intervention group were more satisfied with their care.

For the study by **Rich, et al. (1995)** this study is disease specific so only a short summary of its findings will be presented here and readers are referred to the original article for further reading. A prospective randomised trial evaluated a nurse-directed, multidisciplinary intervention on high-risk patients 70 years of age and older who were hospitalised with congestive heart failure. The intervention consisted of intensive education about congestive heart failure and its treatment by an experienced cardiovascular research nurse; individualised dietary assessment and instruction given by a registered dietitian with reinforcement by the study nurse; consultation with social service personnel to facilitate discharge planning and care after discharge; an analysis of medications by a geriatric cardiologist; intensive follow-up after discharge through hospital's home care services, supplemented by individualised home visits and telephone contact with the members of the study team. The control group were eligible to receive all standard treatments and services ordered by their primary physicians. The effect was tested on rates of readmission within 90 days of hospital discharge, quality of life, and costs of care of these high-risk patients. Results showed that survival for 90 days without readmission was achieved significantly in 91 of the 142 patients in the treatment group, as compared with 75 of the 140 patients in the control group on conventional care. There was significantly a higher number of readmissions in the control group than the treatment group (94 patients vs 53 patients). The reduction in the number of readmissions for heart failure (56%) was significantly higher among the intervention group compared to the control (54 vs 24), whereas the reduction in the number of readmissions for other causes (28.5%, 40 intervention vs 29) was statistically not significant. In the control group, 23 patients had more than one readmission, as compared with nine patients (significant). In a subgroup of 126 patients, quality-of-life scores at 90 days improved from baseline for patients in the intervention group (significant). The overall cost of care was US\$460 less per patient in the intervention group because of the reduction in hospital admissions. The authors concluded that a nurse-directed, multidisciplinary intervention can improve quality of life and reduce hospital use and medical costs for elderly patients with congestive heart failure.

The study by **Riegel, et al. (2002)** (a disease-specific study) is a randomised controlled-trial with six months of follow-up which assessed the effectiveness of another model of case management (a standardised telephonic case-management) in reducing resource use in patients with chronic heart failure. Within the intervention group, patients were identified at hospitalisation and assigned to receive a telephonic case management by a registered nurse. Patients were telephoned within five days after hospital discharge and thereafter at a frequency guided by a support software program and case manager judgement based on patients, symptoms, knowledge, and needs. This was compared with usual care for patients in the control group. The usual care group patients presumably received some education regarding HF management prior to hospital discharge (care was not standardised, and no formal telephonic case management program was in existence in the institutions). Results showed that the HF hospitalisation rate was 35.7 percent lower in the intervention group at three months and

47.8 percent lower at six months (significant). HF hospital days and multiple readmissions were significantly lower in the intervention group at six months. Inpatient HF costs were 45.5 percent lower at six months, a cost saving was realised even after intervention costs were deducted, and there was no evidence of cost shifting to the outpatient setting. Patient satisfaction with care was higher in the intervention group. Authors concluded that the reduction in hospitalisations, costs, and other resource use achieved using standardised telephonic case management in the early months after a HF admission is greater than that usually achieved with pharmacologically therapy and comparable with other disease management approaches.

The study by **Landi, et al. (2001)** is a retrospective (before/after) study with 12 months of follow-up, evaluating the effect of a home care program based on comprehensive geriatric assessment and case management on hospital use / cost of frail elderly people. Participants were 1,204 elderly people, with mean age 77 years; eligible for integrated home care services delivered by four different Italian Health Care Agencies. The intervention team was a geriatric multidisciplinary team, case managers were registered nurses with geriatric nursing experience to direct all referrals, perform the initial and follow-up assessments and coordinate services delivery among the agencies. They performed CGA immediately after the request of home care using the Minimum Data Set for Home Care (MDS-HC). All hospital admissions and days spent in hospital during the first year since the implementation of the home care program were determined, and compared to the rate of hospitalisation that the same patients had experienced in the year preceding the implementation of such a program. On average, patients were diagnosed with nearly four clinical conditions. Results showed that following the implementation of the program, there was a significant reduction in the number of hospitalisations (pre 44% vs post 26%) associated with a reduction in hospital days at the individual patient level and for each admission. Further analyses after eliminating the deaths and patients admitted to the program directly after a discharge from hospital showed similar significant reduction in hospitalisation and days spent in hospital. A reduction of 27 percent in costs (saving of US\$1,200 for each patient) was observed with all four health care agencies without significant difference. The authors concluded that an integrated home care program based on the implementation of a comprehensive geriatric assessment instrument guided by a case manager had a significant impact on hospitalisation and is cost-effective.

Discussion on Table 10: Interventions involving home-based modifications

The trial by **Mann, et al. (1999)** assessed the application of intensive assistive technology and home environmental interventions (AT-EI) performed following a comprehensive functional assessment of the home environment of older people. The intervention included an intensive AT-EI which provides for the safety and independence needs of physically frail older persons. This includes a comprehensive functional assessment of the person and the home by an occupational therapist, recommendations for needed assistive devices and/or home modifications, provision of the devices and modifications, training in their use, and continued follow-up with assessment and provision of AT-EIs as needs changed. An interdisciplinary team, which included a nurse and a technician experienced in home modifications, assisted the occupational therapist. This was compared to the control group of older people receiving usual care. A variety of standard care for home-based senior services is available for an older person in need of assistance. These included medically directed services available after hospitalisation and rehabilitation; nursing directed services (provide home health care aids and some medically directed interventions); and primarily non-medical services provided through the Office for Aging agencies across the USA. The non-medical services may include Meals-on-Wheels and assistance with shopping, household chores, and personal care. The trial showed that after the 18-month intervention period, that both the treatment and control groups showed significant decline over time in functional status. This was shown by a significant decline in the functional independence measure (FIM total and motor scores). However, the decline was significantly greater for the control group. In this study, the term "independence" was recognised as the ability to take responsibility for one's own performance and desires. The Functional Status Instrument pain scores increased significantly more for the control group. The treatment group expended more than the control group for the AT and EIs as measured by health care costs, and the control group required significantly more expenditures for institutional care. There was no significant difference in total in-home personnel costs between the two groups and the control group had significantly greater expenditures for nurse visits and case manager visits. The authors concluded that the rate of functional decline can be slowed, and institutional and certain in-home personnel costs reduced through a systematic approach to providing AT and EIs.

Table 2. Interventions to reduce falls rates amongst older people living at home or in residential facilities

| Study citation, source and design | Study sample, inclusion and exclusion criteria | Service design features | Interventions and Outcomes | Comments |
|--|--|---|--|---|
| <p>Gillespie et al. (2003)</p> <p>A Cochrane Database of Systematic Reviews.</p> <p>UK</p> <p>Grade: Level I</p> | <p>The Cochrane Musculoskeletal Group specialised register (Jan 2001), Cochrane Controlled Trials Register (2001), Medline (1966 to Feb 2001), Embase (1988 to 2001), were searched with other five databases, no language restriction, contact with researchers in the field also identified further trials as well as reference lists of articles.</p> <p>40 RCTs were included (13,761 participants), mean age ranged between 57-87 years, in 34 trials the participants were living in the community, 2 of the participants were in long-term care facilities, in 2 trials the participants were in nursing homes and in 2 trials the participants are hospital-based.</p> <p>Subjects were randomised to receive an intervention or group of interventions versus usual care.</p> <p>Inclusion criteria RCTs which included elderly (of either sex) individuals living in the community or in institutional care, and were randomised to intervention/s versus usual care to minimise the effect of, or exposure to, any risk factor for falling. Studies comparing two types of studies were also included. Main outcome measures of interest were the number of fallers, or falls.</p> <p>Exclusion criteria Trials reporting only intermediate outcomes were excluded.</p> | <p>Varieties of interventions were included in this review among the trials, all aimed to minimise the effect of, or exposure to, any risk factor for falling.</p> <p>Exercise/physical therapy interventions (14 studies), nine (2,177 participants) compared a physical exercise or physical therapy intervention alone, with a simple friendly visit, education only, or no intervention.</p> <p>Home hazard modification compared assessment of environmental hazards and supervision of home modification by an experienced OT, with no intervention (1 study with 530 participant). Three other studies evaluated home hazard modification in combination with other interventions.</p> <p>Cognitive/behavioural interventions (6 studies). Two studies concentrated on cognitive/behavioural interventions alone, one (100 participants) compared two risk assessment interviews and a feedback/counselling interview, with a single baseline assessment interview only. The other (n=45) compared a one-hour fall prevention education programme delivered to a group or individually with a control group receiving only general health promotion information. The remaining four studies were complex interventions.</p> <p>Medication withdrawal/adjustment (2 studies). An exercise programme and a placebo-controlled psychotropic medication withdrawal programme.</p> <p>Nutritional/vitamin supplementation (4 studies), three evaluated the efficacy of Vitamin D supplementation, either alone or with calcium co-supplementation, in fracture prevention. One studied the efficacy of a 12-week period of high-energy, nutrient-dense dietary supplementation in older people with low BMI, or recent weight loss.</p> | <p>Interventions of interest were those designed to reduce the incidence of falls in elderly people (living in the community, or institutional or hospital care).</p> <p>Interventions likely to be beneficial (significant differences were reported between the intervention and control groups):</p> <ul style="list-style-type: none"> ▪ a programme of muscle strengthening and balance retraining, individually prescribed at home by a trained health professional (3 trials, 566 participants) ▪ a 15-week Tai Chi group exercise intervention (1 trial, 200 participants) ▪ home hazard assessment and modification that is professionally prescribed for older people with a history of falling (1 trial, 530 participants), with a reduction in falls was seen both inside and outside the home ▪ withdrawal of psychotropic medication (1 trial, 93 participants) ▪ multidisciplinary, multifactorial, health/environmental risk factor screening/intervention programmes, both for unselected community dwelling older people (3 trials, 1973 participants), and for older people with a history of falling, or selected because of known risk factors (2 trials, 713 participants). | <ul style="list-style-type: none"> ▪ a cochrane review ▪ inclusion of trials where the subjects were postmenopausal women (5 trials). Also subjects in certain trials were volunteers, the number of participants in outcome reported in two trials were less than 50 ▪ quality assessment for the methodology was referenced and adequately described, however, this review was limited by the inclusion of trials in which the method of allocation to treatment or control group was inadequately concealed ▪ some studies were with complex interventions, which differed in the details of the assessment, referral, and treatment protocols ▪ the duration of follow-up varied both between and within the studies. Also the period for which the falls were recorded differed markedly between the studies. |

Table 2. Interventions to reduce falls rates amongst older people living at home or in residential facilities (continued)

| Study citation, source and design | Study sample, inclusion and exclusion criteria | Service design features | Interventions and Outcomes | Comments |
|---|--|---|--|----------|
| <p>Gillespie et al. (2003)</p> <p>A Cochrane Database of Systematic Reviews.</p> <p>UK</p> <p>Grade: Level I</p> <p>(Continued)</p> | | <p>Hormonal and other pharmacological therapies (2 studies), one reported incidence of falls as a secondary outcome after administration of HRT to calcium replete, post-menopausal women, the other studied the effect of administering a vaso-active medication to older people presenting to their medical practitioner with a history of a recent fall.</p> <p>Multidisciplinary, multifactorial, health/environmental risk factor screening and intervention (14 studies), all were complex interventions. In most studies, the initial assessment was made by a health professional, or other trained person, who assessed the participants, provided advice, and arranged referrals.</p> <p>The interventions ranged from assessment at onset followed by visits at regular intervals, or screening for environmental, medical, functional and psychosocial problems with feedback to patients to discuss with their physician, or a visit with a questionnaire at three months interval by a non-health professional. Then patients referred to a nurse or geriatrician for assessment and interventions if their ADL scores declined or they fell more than once in the preceding three months. Other interventions were also described.</p> <p>System modifications to prevent falls in high-risk hospital patients (2 hospital-based studies), one evaluated the effectiveness of a bed alarm system and the other evaluated the use of coloured identification bracelets for the prevention of falls in high-risk elderly patients.</p> | <p>Interventions of unknown effectiveness:</p> <ul style="list-style-type: none"> ▪ group-delivered exercise interventions (9 trials, 2,177 participants) ▪ nutritional supplementation (1 trial, 50 participants) ▪ vitamin D supplementation, with or without calcium (3 trials, 679 participants) ▪ home hazard modification in association with advice on optimising medication (1 trial, 658 participants), or in association with an education package on exercise and reducing fall risk (1 trial, 3, 182 participants) ▪ pharmacological therapy (raubasine-dihydrogerogocristine, one trial, 95 participants) ▪ fall prevention programmes in institutional settings ▪ interventions using a cognitive/behavioural approach alone (2 trials, 145 participants) ▪ home hazard modification for older people without a history of falling (1 trial, 530 participants) ▪ HRT (1 trial, 116 participants). <p>Interventions unlikely to be beneficial:</p> <ul style="list-style-type: none"> ▪ brisk walking in women with an upper limb fracture in the previous two years (1 trial, 165 participants). | |

Table 2. Interventions to reduce falls rates amongst older people living at home or in residential facilities (continued)

| Study citation, source and design | Study sample, inclusion and exclusion criteria | Service design features | Interventions and Outcomes | Comments |
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| <p>Lightbody et al. (2002)</p> <p>RCT, single blinded, with a six month follow-up.</p> <p>Liverpool, UK</p> <p>Grade: Level II</p> | <p>177 elderly patients (usual care) median age 75 years, with 72% being women.</p> <p>171 elderly patients (nurse-led falls prevention programme) median age 75 years, with 77% being women.</p> <p>Inclusion criteria Patients aged 65 years or more attending the Accident and Emergency Department at University Hospital Aintree, Liverpool between July and December 1997, with a primary diagnosis of "fall".</p> <p>Exclusion criteria Patients admitted to hospital as a result of the Index fall, lived in institutional care, if they refused or were unable to consent, or were out of the area.</p> | <p>Service description Following some basic training, therapists and clinicians agreed about the nurse's initial assessment and criteria for onward referral, as some areas require specialist assessment – e.g., provision of aids and adaptations.</p> <p>The service assesses risk factors for falls through home assessment and patients were given advice and education about general safety in the home.</p> <p>Study description Within four weeks following the index fall the intervention group received a home assessment to address easily modifiable risk factors for falls. This includes assessments of medication, ECG, blood pressure, cognition, visual acuity, hearing, vestibular dysfunction, balance, mobility, feet and footwear. All patients were given advice and education about general safety in the home.</p> | <p>Patients randomised to falls nurse intervention or usual care.</p> <ul style="list-style-type: none"> ▪ the intervention group showed a statistically non-significant lesser falls and lesser hospital attendance. They also spent lesser time in hospital than the control group ▪ the intervention group showed significantly higher scores in indicators of function and mobility within the community. And they were more functionally independent at six months post-Index fall. | <ul style="list-style-type: none"> ▪ patients were block-randomised consecutively to groups ▪ losses were 16 from the intervention group (11 died, two withdrawn and three were lost to follow-up). From the control group 18 were lost (7 died, 10 withdrawn and 1 lost to follow-up). |
| <p>Nikolaus & Bach (2003)</p> <p>RCT, single blinded with one year follow-up.</p> <p>Germany</p> <p>Grade: Level II</p> | <p>Patients recruited while they were inpatients in a geriatric clinic, 360 patients, mean age 81 years, 181 in the intervention group mean age 81 years, 72% women and 179 patients allocated to the control group mean age 82 years, 74% women.</p> <p>Inclusion criteria Older subjects who lived at home before admission to a geriatric hospital, and showing multiple chronic conditions or functional deterioration after convalescence, and could be discharged to home.</p> <p>Exclusion criteria Patients with terminal illness or severe cognitive decline. Patients who lived > 15 Km for the home intervention team (HIT) to make regular visits were also excluded.</p> | <p>Service and study description Patients were randomly assigned to CGA and post-discharge follow-up home visits from an interdisciplinary HIT or CGA with recommendations followed by usual care at home.</p> <p>The control group did not receive any type of home visits; their GPs were responsible for post-discharge case management.</p> <p>The HIT consisted of three nurses, a physiotherapist, an OT, a social worker, and a secretary. The HI included a diagnostic home visit (during the patients hospital stay), assessing the home for environmental hazards, advice about possible changes, offer of facilities for any necessary home modifications, and training in the use of technical and mobility aids. An additional home visit then made after three months to reinforce the recommendations. After 12 months of follow-up, a home visit was made to all study participants.</p> | <p>CGA followed by diagnostic home visit by multidisciplinary HIT to reduce falls in older people's home compared with CGA with recommendations and usual care at home.</p> <ul style="list-style-type: none"> ▪ there was a significant difference between the two groups with the intervention group having 31% fewer falls than the control (after 1 year). But the proportion of frequent fallers (≥ 2 falls) did not significantly differ between the groups ▪ subgroup analyses suggest that the intervention was particularly effective in participants who reported having had two or more falls during the year before recruitment. | <ul style="list-style-type: none"> ▪ method of randomisation was described ▪ study sample was selected with respect to functional decline, especially deterioration of mobility ▪ baseline characteristics were similar in both groups ▪ mobility aids were prescribed to both groups similarly suggesting that it is less likely to have the effect reported based on prescription of these aids. |

Table 2. Interventions to reduce falls rates amongst older people living at home or in residential facilities (continued)

| Study citation, source and design | Study sample, inclusion and exclusion criteria | Service design features | Interventions and Outcomes | Comments |
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| <p>Robertson et al. (2002)</p> <p>A meta-analysis</p> <p>Nine cities</p> <p>NZ</p> <p>Grade: Level I</p> | <p>Four controlled trials were included with 1,016 community dwelling subjects, age ranged between 65 to 97 with a mean of 82. The trials conducted by the same research group of a home exercise programme to prevent fall in older people (2 RCTs in Dunedin, one RCT in West Auckland and a non-RCT in southern NZ).</p> <p>612 older people were in the intervention group. mean age 82 years, with 25% men and 82% were aged 80 years or above.</p> <p>404 older people were in the control groups with a mean age of 82, with 21% were men and 76% aged 80 years or above.</p> <p>Inclusion criteria Only these trials that were conducted by the same group.</p> <p>Exclusion criteria No other trials were included.</p> | <p>All trials tested the same intervention, which is an individually prescribed home exercise programme.</p> <p>The intervention was a set of muscle strengthening and balance retaining exercise to be individually prescribed in each person's own home and included a walking plan. The exercise instructors involved physiotherapist (2 trials) who delivered the programme during four home visits, community nurse with five home visits (1 trial), and General Practice nurse with five home visits (1 trial). Follow-up periods ranged between 44 weeks to two years.</p> <p>Control group involved Social visits, usual care (no active intervention), and general withdrawal of psychotropic medication.</p> | <p>A home (muscle strengthening) exercise programme compared with control group.</p> <ul style="list-style-type: none"> ▪ there was a significant lesser number of falls in the exercise group than the control group. Also the probability of falling was significantly lower among the exercise group ▪ significant fewer injurious falls (serious or moderate injuries) in the exercise group than the control groups ▪ there was a significant improvement in scores of balance and chair-stand test among the exercise group, whereas no change for balance and worsening chair-test for the control ▪ no differences between the two groups in self-reported health status at follow-up ▪ subgroup analyses showed significantly fewer injurious falls among those 80 years and older compared to younger older people. Also both men and women benefited from the exercise programme. | <ul style="list-style-type: none"> ▪ the findings were consistent with the Cochrane systematic review by Gillespie et al. (2003) which is presented in this evidence table ▪ the age and follow-up periods differed between the trials ▪ one trial included women only ▪ the meta-analysis was carried out by mostly the same group of people that conducted the original trials this may lead to source of conflict ▪ overall, the study provided evidence about the effectiveness of the muscle strengthening programme especially among those 80 and above. |

Table 3a. Enhanced community services for older people – home visiting interventions for health promotion

| Study citation, source and design | Study sample, inclusion and exclusion criteria | Service design features | Interventions and Outcomes | Comments |
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| <p>Elkan et al. (2001)</p> <p>Systematic review and meta-analysis</p> <p>Nottingham, UK</p> <p>Grade: Level I</p> | <p>From Medline (1966-97), CINAHL, Embase, Cochrane Library and the internet mostly 1980 onwards, as well as hand search and individual contact for unpublished work, 1,215 references found of which 102 met the inclusion criteria. Only 15 studies reported outcomes relating to older people, 13 RCTs, two quasi-experimental.</p> <p>Inclusion criteria Older people ≥ 65 years living at home, including frail older people at risk of adverse outcomes.</p> <p>Studies include empirical study with a comparison group, evaluating a home visiting programme. Studies were not restricted to RCTs, so randomised and non-randomised RCTs were included.</p> <p>Exclusion criteria Studies in which the home visitor was a specialist in a branch of nursing other than the health visiting, and those in which the intervention was delivered solely by volunteers. Studies were excluded if they involved only screening and referral, with no other input from the home visitor.</p> | <p>Home visiting programmes that offer health promotion and preventive care to older people across the studies.</p> <ul style="list-style-type: none"> ▪ social support, coordinating community services, distributing aids and modifications ▪ practical advice, health educations, referral to appropriate services ▪ usual health visiting practice: health education, prevention, and referral to other services ▪ assessment, problem identification, referrals to GP if required. Follow-up for medical and social problems, referral if required ▪ screening for medical, functional, and psychosocial problems. Follow-up letter (after initial visit from physician's assistant or nurse) with recommendations ▪ developing personal health skills, goal setting, coordination of and referral to community services ▪ discussion of actual and potential health problems. psychosocial support ▪ identification of problems, health promotion, advice, information, education, and referral ▪ information, advice, social support ▪ comprehensive assessment, health education, making recommendations, and monitoring compliance ▪ assessment of medical and social needs, diagnostic and therapeutic care, follow-up after admission to hospital, referrals, education, and counselling ▪ assessment, case management, service coordination, counselling, referrals, respite, education, medical back up ▪ practical help, providing aids, dealing with problems, companionship ▪ stabilise patients, deal with any problems ▪ increasing preparedness of caregiver, with emphasis on relationship between caregiver and care receiver. | <p>Effectiveness of home visiting programmes that offer health promotion and preventive care to older people.</p> <ul style="list-style-type: none"> ▪ outcome measures were mortality, admission to hospital, admission to institutional care, functional status, and health status ▪ nine studies (group one) assessed members of the general elderly population, and six studies (group two) assessed vulnerable older people who were at risk of adverse outcomes (4 of older people recently discharged from hospital and at risk of further admission, two of frail older people who had been referred to home care agencies) ▪ of the first group, three trials out of eight (measured mortality) a significant reduction in mortality with home visiting. Also mortality was significantly reduced with the intervention in four studies out of five (that measured mortality) of the second group. | <ul style="list-style-type: none"> ▪ although quality assessment of the studies included was by using a referenced scale (Reisch scale), the review is limited by the inclusion of non-randomised trials. Also the inclusion of a poor methodological quality may have added to the heterogeneity observed in relation to the admissions to hospital outcome ▪ the home visiting programmes were various among the studies, and were multifaceted, making it difficult to know which component of the intervention made a difference to any of the outcomes assessed ▪ the review did not provide evidence for improved health and functional status which might be due to the tools used were not sensitive enough to detect modest improvements in health or functional ability. |

Table 3a. Enhanced community services for older people - home visiting interventions for health promotion (continued)

| Study citation, source and design | Study sample, inclusion and exclusion criteria | Service design features | Interventions and Outcomes | Comments |
|--|--|-------------------------|--|---|
| <p>Elkan et al. (2001)</p> <p>Systematic review and meta-analysis</p> <p>Nottingham, UK</p> <p>Grade: Level I</p> <p>(Continued)</p> | | | <ul style="list-style-type: none"> ▪ only one study (of 6 that measured admission to hospital among general elderly) reported significant reduction in the intervention group, whereas meta-analysis of these six studies showed no significant reduction in admission. three studies examined admission to hospital of frail elderly at risk reported no significant effect. (no Meta-analysis because of insufficient information) ▪ none of the studies between the two groups that measured ADLs or other similar measures of functional ability reported significant differences between the intervention and control ▪ meta-analysis of four studies (out of 5 that reported admission to residential nursing homes of general elderly population) indicated a significant effect of home visiting in reducing admissions to LTC. | <ul style="list-style-type: none"> ▪ controversy still exists as to which population benefits more from home visitation. |

Table 3a. Enhanced community services for older people - home visiting interventions for health promotion (continued)

| Study citation, source and design | Study sample, inclusion and exclusion criteria | Service design features | Interventions and Outcomes | Comments |
|---|--|--|---|--|
| <p>Elkan et al. (2000)</p> <p>Systematic review of international literature.</p> <p>NHS, UK</p> <p>Grade: Level I</p> | <p>A systematic review of international of international literature and selective review of British literature addressing home visiting programmes on elderly people and their carers.</p> <p>The search strategy included MEDLINE (1966-1997), CNHAL (1982-1997), EMBASE (1980-1997), the Internet, The Cochrane Library, handsearching (1982-1997), reference lists, PhD theses, contacts with key individuals and organisations. Of 102 articles that met the inclusion criteria, only 17 articles reported outcomes relating to elderly people and/or their carers.</p> <p>Inclusion criteria Studies were included in the review if they evaluated a home visiting programme, included a comparison group, reported relevant health outcomes, personnel involved were not members of a professional group other than health visiting.</p> <p>Exclusion criteria Studies that were excluded were presented in tables as no home visit or home visit involved but not as the intervention, antenatal home visits only, some other designs, client satisfaction surveys, qualitative studies of home visiting, home visiting undertaken by professionals other than health visitors, outcomes too specific, literature reviews, and other miscellaneous.</p> | <p>Service and study description The interventions of interest were home visiting programmes on older people. All programmes included an initial assessment followed by a multifaceted approach to meeting identified needs, including the provision of practical help, information and advice, counselling, education, and referrals.</p> <p>The comparison group is the usual care (Control).</p> | <p>Home visitation versus usual care, with various outcomes.</p> <p>Four studies assessing support to carers all reported positive findings, including a reduction in caregiver stress, reduction in carers' psychological symptoms, and enhanced well-being (not all reached statistical significance).</p> <p>Results of studies of general elderly population:</p> <ul style="list-style-type: none"> ▪ meta-analysis of the results of six studies, all of which were RCTs of home-visiting to members of the general elderly population, reported a significant effect of home visiting in reducing mortality ▪ meta-analysis of the results of five studies of home visiting to members of the general elderly population showed no significant effect of home visiting in reducing admissions in hospital. | <ul style="list-style-type: none"> ▪ this systematic review examined studies on quite different groups of subjects and thus in this table we present only the review of the 17 studies of the older population ▪ inclusion was not specific for the older age group however separate analyses were done for trials of the elderly and distinction was made between general elderly and those at risk ▪ the review included mixed study designs (i.e., randomised trials and others using different allocation methods). This might have contributed as a possible source of heterogeneity ▪ the majority of 'high-quality' studies conducted have had insufficient power to demonstrate an effect. |

Table 3a. Enhanced community services for older people - home visiting interventions for health promotion (continued)

| Study citation, source and design | Study sample, inclusion and exclusion criteria | Service design features | Interventions and Outcomes | Comments |
|--|--|-------------------------|---|---|
| <p>Elkan et al. (2000)</p> <p>Systematic review of international literature.</p> <p>NHS, UK</p> <p>Grade: Level I</p> <p>(Continued)</p> | | | <ul style="list-style-type: none"> ▪ only one study of three assessing the duration of stay in hospital of members of the general elderly people found a significant reduction in LOS in the intervention group ▪ the results of a meta-analysis of three RCTs of home visiting to members of the general elderly population showed no effect of home visiting on admission to ITC institution ▪ meta-analysis of the results of three RCTs showed no significant effect on physical health ▪ meta-analysis of the results of three studies showed no effect of home visiting on functional status, as assessed on scales measuring the ADLs. none of the three remaining studies assessing this outcome reported any significant differences between the two groups ▪ of six studies assessing psychological symptoms, and four studies assessing well-being or quality of life, no significant effect of home visiting was found in any study. | <ul style="list-style-type: none"> ▪ random assignment to intervention group does not always occur, and is often claimed but inadequately documented ▪ many interventions are multifaceted making it difficult to assess the independent effect of home visiting on the outcome measures ▪ unblinded outcome assessment was common increasing the risk that the assessor's awareness of the intervention group may influence their assessment of the outcomes. |

Table 3a. Enhanced community services for older people - home visiting interventions for health promotion (continued)

| Study citation, source and design | Study sample, inclusion and exclusion criteria | Service design features | Interventions and Outcomes | Comments |
|--|--|-------------------------|--|----------|
| <p>Elkan et al. (2000)</p> <p>Systematic review of international literature.</p> <p>NHS, UK</p> <p>Grade: Level I</p> <p>(Continued)</p> | | | <ul style="list-style-type: none"> ▪ of six studies assessing the use of community services, two reported no significant effects on any outcome, and the remaining four reported significant effects on at least one outcome. <p>Results of studies of 'at-risk' elderly population:</p> <ul style="list-style-type: none"> ▪ meta-analysis of the results of five studies of home-visiting to elderly people who were at risk of adverse outcomes demonstrated a significant effect of home visiting on mortality ▪ none of four studies assessing admission to hospital showed any significant effect of home visiting in reducing hospital admission ▪ of two studies assessing the duration of hospital, only one found a significantly reduced LOS, they reported no significant differences between the intervention and control groups ▪ the results of three CTs of home visiting assessing admission to LTC institution suggested that home visiting was successful in reducing admissions to LTC ▪ one study found no significant difference in health status between the intervention and control groups. | |

Table 3a. Enhanced community services for older people - home visiting interventions for health promotion (continued)

| Study citation, source and design | Study sample, inclusion and exclusion criteria | Service design features | Interventions and Outcomes | Comments |
|--|--|-------------------------|---|----------|
| <p>Elkan et al. (2000)</p> <p>Systematic review of international literature.</p> <p>NHS, UK</p> <p>Grade: Level I</p> <p>(Continued)</p> | | | <ul style="list-style-type: none"> ▪ none of the two studies of visits to 'at-risk' elderly people assessing functional status reported any significant differences between the intervention and control. <p>Client satisfaction: elderly people and their carers:</p> <ul style="list-style-type: none"> ▪ five out of 17 studies of elderly people and/or their carers examined client satisfaction ▪ the majority of respondents claimed to have enjoyed the home visit and to have been helped by the home visits ▪ a total of 98% of respondents in two studies intervention group stated they would like to receive further home visits if this were possible compared with only 48% in other study's intervention group ▪ in two studies the satisfaction was found to be higher among carers who had received an intervention than among controls, and other two studies found equal levels of satisfaction among elderly respondents in intervention and control. | |

Table 3a. Enhanced community services for older people - home visiting interventions for health promotion (continued)

| Study citation, source and design | Study sample, inclusion and exclusion criteria | Service design features | Interventions and Outcomes | Comments |
|---|--|--|--|--|
| <p>Gill et al. (2002)</p> <p>RCT, with a 12 month follow-up.</p> <p>Connecticut, USA</p> <p>Grade: Level II</p> | <p>94 frail elderly patients (home-based 6 month intervention program) 85% female, mean age 82.8 years.</p> <p>94 frail elderly patients (educational program 'control group'), 74% women with mean age 83.5 years.</p> <p>Inclusion criteria Physically frail, elderly persons ≥ 75 years of age from busy primary care practices in southern Connecticut.</p> <p>Exclusion criteria Patients unable to walk, were undergoing physical therapy or participating in an exercise program, did not speak English, had a diagnosis of dementia or scored less than 20 on the Mini-Mental State Examination *, had a life expectancy of less than 12 months, or had stroke, hip fracture, or myocardial infarction or had undergone hip or knee-replacement surgery within the previous six months.</p> <p>* (Possible scores range from 0-30, with lower scores indicating worse cognitive status).</p> | <p>Service description Home-based intervention program: a six-month home-based intervention program that included physical therapy and focused primarily on improving underlying impairments in physical abilities, including balance, muscle strength, ability to transfer from one position to another, and mobility.</p> <p>Control group Educational program to provide attention and health education for the participants.</p> <p>Study description Home-based 'intervention group': a physical therapist assesses each participant for potential impairments in physical abilities and home environment. This was designed to include an average of 16 visits over a six month period. On completion of the visits, the physical therapist called the participants for six additional months to answer questions and to provide encouragement.</p> <p>Educational program 'control': during six monthly home visits, a health educator and the participant reviewed general practices promoting good health such as proper nutrition, management of medications, physical activity, sleep hygiene, and other health related areas. On completion of the visits, the health educator called the participants monthly for six additional months to answer questions and to provide encouragement.</p> | <p>Physically frail elderly patients randomised to home-based intervention program versus educational program.</p> <ul style="list-style-type: none"> ▪ participants in the intervention group had less functional decline over time, according to their disability scores, than participants in the control group at three, seven, and 12 months. With disability scores differed significantly between the two groups at seven and 12 months ▪ the frequency of admission to a nursing home did not differ significantly between the two groups. | <ul style="list-style-type: none"> ▪ stratified randomisation ▪ higher proportion of women in the intervention group ▪ the benefit of the intervention was observed among participants with moderate frailty but not those with severe frailty ▪ participation rate (87%), among the intervention group 65% completed the program versus 83% of the control group ▪ six participants in the intervention group (6%) and four in the control group (4%) died during the 12 month follow-up period. |

Table 3b. Enhanced community services for older people – interventions utilising comprehensive assessment

| Study citation, source and design | Study sample, inclusion and exclusion criteria | Service design features | Interventions and Outcomes | Comments |
|--|--|---|---|---|
| <p>Dalby et al. (2000)</p> <p>RCT, single-blinded, with 14 months follow-up.</p> <p>Ontario, Canada</p> <p>Grade: Level II</p> | <p>142 eligible frail elderly aged ≥70 years were randomly assigned to the intervention (assessment and follow-up visits by primary care nurse at patient's home), they were 73 individuals; mean age 79.1 years and 71.2% were female.</p> <p>The control group (usual care) were 69 individuals; mean age 78.1y and 62.3% were female.</p> <p>Inclusion criteria A screening questionnaire was mailed to screen eligible individuals. Inclusion criteria include: Age ≥70 years, reported functional impairment, or admission to hospital or bereavement in the previous six months.</p> <p>Exclusion criteria Those who were living in a nursing home, were involved in another research study, had previously been visited by the nurse in their home or had participated in the pre-test of the survey.</p> | <p>Service description Intervention (Visiting Nurse VN group) is a preventive home visit by a primary care nurse for assessment and 14 months follow-up at patient's home.</p> <p>Control (Usual Care UC) is the usual care.</p> <p>Study description Intervention (VN group), the nurse reviewed each person's medical record and completed a comprehensive assessment addressing physical, cognitive, emotional and social function, medication use, and the safety and suitability of the home environment. A care plan was then developed together with the primary care physician, the patient, the family, caregivers and other health care professionals. Follow-up visits and phone calls were conducted as needed over the course of the 14 month trial to provide vaccinations, monitor promote health and provide psychosocial support.</p> <p>Control (UC group) care service was not described in the study.</p> | <p>Visiting Nurse (VN) intervention group versus usual care (UC) for control group.</p> <ul style="list-style-type: none"> ▪ the two groups did not differ significantly in terms of baseline characteristics except for the proportion of subjects who had lost someone close in the six months before the study ▪ the combined rates of deaths and admissions to an institution did not differ significantly between the two groups ▪ subjects in the VN group tended to make more visits to their family physician and specialists and to experience longer lengths of stay in hospital than those in the UC group, however these were not statistically significant. | <ul style="list-style-type: none"> ▪ age-stratified randomisation using random numbers table ▪ the screening questionnaire was pre-tested and used in another study ▪ eligible subjects in the same household were assigned to the same study group ▪ small sample size may have contributed to the statistically non-significant differences between the two groups ▪ 19% drop-out for the intervention group (14 withdrawn mainly lost to follow-up) and 21.7% drop-out for the control group (15 withdrawn mainly lost to follow-up) ▪ intention to treat analysis was assured ▪ 40% of VN group compared to 20% of UC group lost someone close to them in the six months before the study. |

Table 3b. Enhanced community services for older people – interventions utilising comprehensive assessment (continued)

| Study citation, source and design | Study sample, inclusion and exclusion criteria | Service design features | Interventions and Outcomes | Comments |
|--|---|--|--|--|
| <p>Hebert et al. (2001)</p> <p>RCT, double-blinded with a follow-up of one year.</p> <p>Sherbrook City, Quebec,</p> <p>Canada</p> <p>Grade: Level II</p> | <p>503 elderly individuals (>75y), mean age 80 years at baseline, living at home and at risk of functional decline assessed by postal questionnaire.</p> <p>The study group (n=250) received the program The control group (n=253) continued to benefit from the usual health care.</p> <p>Inclusion criteria Older people living at home (over 75 years) in Metropolitan Sherbrooke and born between 1 December and 30 April, peak English or French.</p> <p>Exclusion criteria No information.</p> | <p>Service description</p> <p>Intervention Home assessment by nurse on 12 dimensions (medication, depressive mood, risk of falls, hearing), report to GP with recommendations for interventions, then a monthly telephone contact by the nurse for surveillance and to verify if the recommendations have been applied.</p> <p>No information about the control service (continued to benefit from the usual health care).</p> | <p>Primary outcomes</p> <ul style="list-style-type: none"> ▪ functional decline (death or admission to an institution or increase of ≥ 5 points on the disability score of the Functional Autonomy Measurement System scale) during the reference year. <p>Secondary outcomes</p> <ul style="list-style-type: none"> ▪ functional autonomy (on the SMAF), well being (General Well-being Schedule), perceived social support (Social Provision Scale) and use of health care services ▪ there were no differences between the two groups on measures of functional decline, functional autonomy, well-being, and perceived social support. <p>Comments (continued)</p> <ul style="list-style-type: none"> ▪ intervention seems largely dependent on physician's compliance with nurses' recommendations ▪ interventions likely involved both outpatient and in-home care. | <ul style="list-style-type: none"> ▪ randomisation was stratified and blocked, using random permuted blocks of four to six. Reviewers were blinded to the assignment for the main outcome and three of the four secondary outcomes, and subjects were unaware of the group to which they were randomised ▪ assessment tool measures were tested for validity (questionnaire) and for efficacy (questionable outcome indicators), also referenced validated clinical assessment instruments were used ▪ the intervention programme was pilot-tested (quasi-experimental study), confirmed its feasibility and suggested a significant effect on the autonomy and well-being of the participants. |

Table 3b. Enhanced community services for older people – interventions utilising comprehensive assessment (continued)

| Study citation, source and design | Study sample, inclusion and exclusion criteria | Service design features | Interventions and Outcomes | Comments |
|---|---|---|--|---|
| <p>Leveille et al. (1998)</p> <p>RCT, single-blinded, with a one year follow-up.</p> <p>A large senior centre and two health maintenance organisations in Seattle, USA</p> <p>Grade: Level II</p> | <p>101 chronically ill older adults seniors mean age 77.2 years, with 63.4% female were allocated to the intervention (disability prevention and disease self-management program).</p> <p>100 patient, mean ages 76.9 years, with 48% female were allocated as a control group.</p> <p>Inclusion criteria ≥ 70y, receiving treatment for at least one chronic condition excluding dementia or terminal disease, ability to walk and perform activities of daily living without help, non-participation in the senior centre programmes, and no cognitive impairment.</p> <p>Exclusion criteria Apart from the above exclusions nothing else was listed.</p> | <p>Service description Intervention (senior-centre-based programme led by GNP): The disability prevention and disease self-management program is a multi-component program led by a geriatric nurse practitioner (GNP).</p> <p>Control (usual senior-centre programmes): The control group was given a tour of the centre, a schedule of events, and access to all centre activities.</p> <p>Study description</p> <p>Intervention The GNP meets with participants at the centre to develop a targeted health management plan that addressed risk factors for disability if present and self-management of chronic illness and then makes follow-up telephone calls; peer support provided by volunteer mentors. Physical activity and self-management of disease emphasised a 14 hours of group educational classes were given and adults were encouraged to take part in specific centre programmes.</p> <p>Control Persons were given a tour of the senior center and a schedule of senior center activities. They did not meet with the GNP; however, they had access to all senior center activities that were available to the intervention group.</p> | <p>Patients randomised to senior-centre-based programme led by GNP or to usual senior-centre programmes. The main outcomes measures were self reported physical function and disability (6 scales), physical performance (5 measures), healthcare utilisation, health behaviours (5 scales), and psychoactive drug use.</p> <ul style="list-style-type: none"> ▪ the intervention group showed statistically significant improvement on the Health Assessment Questionnaire and decreased number of disability days indicating a lesser decline in function compared to the control group ▪ the two groups did not differ for any of the performance measures ▪ the intervention group had significantly fewer total hospital days than the control group and fewer hospitalisations ▪ the intervention group had significantly better scores on two measures of health behaviour. Lower PACE scores (Physician-based Assessment scale and the Counselling for Exercise) and lower PASE scores (Physical Activity Scale for the Elderly) ▪ the intervention group showed significantly lower rates of psychoactive drug use than the control group. | <ul style="list-style-type: none"> ▪ method of randomisation described. Adequate randomisation method single-blinded ▪ there were statistically significant baseline differences between both groups. Among the intervention participants they were more females, live alone, and more intervention participants had diabetes than controls ▪ controls were less likely to report restricted activity days in the baseline years than intervention participants. Adjustment for these categorical variables did not change the findings ▪ more adults in the intervention group than in the control group participated in senior-centre activities (44% vs 19% $p < .001$) and decreased. |

Table 3c. Enhanced community services for older people – general services for older people

| Study citation, source and design | Study sample, inclusion and exclusion criteria | Service design features | Interventions and Outcomes | Comments |
|---|---|--|---|--|
| Master et al. (1980) Comparative descriptive study of a home-care program and teaching hospital. Boston, USA Grade: Level IV | 3,000 ambulatory patients, 280 homebound patients, and 358 nursing-home patients were continuously cared for one year period. No clear information about the age of patients involved however, from the ambulatory group, the mean age was 49 years, home care group 79 years, and nursing home group 75 (total mean age was 55 years). No information about the inclusion and exclusion. | Service description A multidisciplinary system of physicians and mid-level practitioners provides individualised care to chronically ill, elderly, homebound, and nursing-home residents. | <ul style="list-style-type: none"> ▪ in-hospital use, particularly hospital days, was reduced. | <ul style="list-style-type: none"> ▪ the comparable populations were not identical. |

Table 4. Services that facilitate hospital avoidance for older people – hospital at home for acutely unwell older people

| Study citation, source and design | Study sample, inclusion and exclusion criteria | Service design features | Interventions and Outcomes | Comments |
|--|--|---|---|--|
| <p>Shepperd & Iliffe (2001)</p> <p>A Cochrane Database of Systematic Reviews</p> <p>Oxford, UK</p> <p>Grade: Level I</p> | <p>As well as reference lists of articles, nine main databases were used to search for identification of studies from 1966 onwards with an update using the EPOC specialised register based in Aberdeen, UK, last searched on January 2001. Unpublished studies were obtained by contacting providers and researchers within and outside the UK.</p> <p>16 RCTs, included.</p> <p>11 trials the study populations were elderly medical patients, three trials recruited patients following elective surgery, two trials recruited patients with a terminal illness, and a final trial recruited patients with a mix of surgical and medical conditions.</p> <p>Inclusion criteria RCTs (of patients aged 18 years and over) comparing hospital at home with acute hospital in-patient care. Hospital at home has to offer a specific service to patients in their home, which requires health care professionals to take an active part in the patient's care. If hospital at home did not exist then the patient would be admitted to or remain in an acute hospital ward.</p> <p>Studies were included if standardised validated instruments were used to measure subjective outcomes.</p> <p>Exclusion criteria Services providing long-term care; services provided in outpatient settings or post discharge from hospital; self-care by the patient in their home, for example the self-administration of an intra-venous infusion.</p> <p>Trials were excluded if outcomes were assessed by 'opinion'.</p> | <p>Service and study design</p> <p>Schemes include: community-based HAH, hospital based HAH, hospice at home HAH, early discharge HAH, and, admission avoidance HAH.</p> <p>HAH schemes that provide admission avoidance function (3 trials).</p> <p>13 trials evaluated HAH schemes that provided care following early discharge from hospital, two of these trials included early discharge and admission avoidance function.</p> <p>In all but two of the trials, care was provided in the patients' home by community services, the two trials care was provided by a hospital based stroke team in conjunction with community-based services. In another trial a physician based in secondary care co-ordinated the HAH service, although care was provided by community services.</p> <p>Physiotherapy care was provided by 10 of the interventions, OT care by eight of the intervention.</p> <p>A social worker was part of the HAH team in three of the interventions, and one intervention included a dietitian.</p> <p>Access to speech therapist was described in four of the interventions. One trial described access to a cultural link worker.</p> <p>In four trials, 24 hour care was not available as part of the intervention.</p> | <p>The intervention of interest was HAH and the objective of the review was to assess the effects of hospital at home compared with in-patient hospital care.</p> <ul style="list-style-type: none"> ▪ various outcomes were reported within the review among different groups of patients ▪ early discharge for elderly medical patients (9 trials) ▪ only in data combined from two trials there was a significant reduction hospital LOS ▪ in terms of use of other health services, two separate trials, one reported significant increase in the use of home care at six week follow-up by those allocated to hospital care. The other trial reported an increase in referrals for social support for those allocated to HAH ▪ one trial reported a significant increase in cost for GP home and surgery visits in those allocated to HAH ▪ early discharge of patients following elective surgery (4 trials). | <p>A Cochrane systematic review.</p> <p>Methodological qualities of the studies included were judged according to criteria by EPOC. In seven trials the method of randomisation and concealment allocation was clearly described, five trials used sealed envelopes and other three did not describe the method of randomisation.</p> <p>The different measures of patient assessed outcome used in the trials limited meta analysis to mortality, readmission rates, and LOS).</p> <p>The type of care the control group used was not clearly described for the majority of the trials. Also the response rate from the hospital group (control) was poor.</p> <p>The review included studies with population aged from 18 years and over so was not specifically for older age groups.</p> <p>Review included follow-up times varied across the different trials (24 hours to 2 years and 4 months).</p> |

Table 4. Services that facilitate hospital avoidance for older people – hospital at home for acutely unwell older people (continued)

| Study citation, source and design | Study sample, inclusion and exclusion criteria | Service design features | Interventions and Outcomes | Comments |
|--|--|-------------------------|--|---|
| Shepperd & Iliffe (2001) A Cochrane Database of Systematic Reviews Oxford, UK Grade: Level I (Continued) | | | <ul style="list-style-type: none"> ▪ in terms of patient satisfaction only one trial reported significant results compared to those staying in hospital. In terms of carer satisfaction only one trial reported this with less satisfaction in the early discharge group compared to the control group ▪ with health service resources and cost, data combined from two trials revealed significant reduction in hospital LOS for patients allocated to the HAH compared to control. <p>Admission avoidance schemes (3 trials).</p> <ul style="list-style-type: none"> ▪ one trial reported reduction in median LOS in HAH group, other showed an increase in the LOS for the control group ▪ care of terminally ill patients (2 trials) ▪ no significant differences between the two groups were revealed at all levels. | <ul style="list-style-type: none"> ▪ some trials included medical patients, or patients recovering from surgery (e.g., women recovering from hysterectomy although the reviewers did report an exclusion of these women from the analysis). <p>In summary</p> <ul style="list-style-type: none"> ▪ meta-analysis revealed that early discharge hospital at home reduced hospital length of stay, but the provision of hospital at home offset this reduction by increasing to total length of care for schemes providing early discharge care. Admission avoidance schemes achieved a reduction in total length of stay ▪ trials evaluating hospital at home for elderly patients with a mix of medical conditions and those recovering from elective surgery failed to detect a difference for patient health outcomes. |

Table 4. Services that facilitate hospital avoidance for older people – hospital at home for acutely unwell older people (continued)

| Study citation, source and design | Study sample, inclusion and exclusion criteria | Service design features | Interventions and Outcomes | Comments |
|---|---|--|---|---|
| <p>Stessman et al. (1997)</p> <p>Description of home hospitalisation programme after 4 years.</p> <p>Jerusalem, Israel</p> <p>Grade: Level IV</p> | <p>741 older people each received on average 46 days of care in home hospitalisation programme, average age 77 years. Patients either from hospital (referred by medical staff) or from the community (referred by family physician).</p> <p>Inclusion criteria Presence of an acute or subacute infirmity which otherwise require hospitalisation, agreement of the patient and family, home network adequate to ensure basic living needs, residence in the Jerusalem metropolitan area, membership in the Clalit Sick Fund.</p> <p>Exclusion criteria Patients whose conditions required constant medical attention, or extensive and frequent in-hospital laboratory testing, were not suitable for the home hospitalisation programme, were referred for care in a general hospital.</p> | <p>Service description The home hospitalisation programme provides intensive medical care at home through regular home visits by physicians and nursing assessment to determine the need for regular nursing care.</p> <p>The HH team consisted of a treating physician and paramedical supporting nurse/physiotherapist, OT, and social worker, HH last for one month. Acute care was provided to patients at home through the special geriatric emergency room operated within the ED of the hospital.</p> <p>Various interventions were provided through the HH including medical and pharmacological care of patients with HF, IHD, restrictive and obstructive pulmonary diseases and other difficult patients. Also included in the interventions intravenous therapy, abdominal paracentesis, rehabilitation, supportive therapy for oncology terminal patients and families and treatment of wounds.</p> | <p>A home hospitalisation intervention</p> <ul style="list-style-type: none"> ▪ 41% of HH lasted less than one month, 29% up to two months, 18% up to three months and 12% more than three months ▪ referrals were equally distributed between the community and hospital referrals ▪ a postal follow-up survey showed a high patient satisfaction. <p>In the first two years the programme saved \$4 million due to reduced hospital utilisation.</p> | <ul style="list-style-type: none"> ▪ this is a retrospective descriptive study of no comparison control group ▪ recruitment and selection of participants were not adequately described ▪ no description of piloting or validating the survey ▪ intervention was not tested ▪ statistical analysis was not reported. |

Table 5. Services that facilitate hospital avoidance for older people – rapid response services for older people with sub-acute illness

| Study citation, source and design | Study sample, inclusion and exclusion criteria | Service design features | Interventions and Outcomes | Comments |
|---|--|---|---|---|
| <p>Aminzadeh & Dalziel (2002)</p> <p>Systematic review</p> <p>Ontario, Canada</p> <p>Grade: Level III-2</p> | <p>41 studies (prospective, retrospective and randomised trials) were included from an English-language search of MEDLINE, HealthSTAR, CINAHL, Current Contents, and Cochrane Library databases from January 1985 to January 2001 as well as from reference sections of the retrieved publications.</p> <p>11 (prospective and retrospective) large-scale ED use studies by using data from single-site, multicenter, or nationally representative samples.</p> <p>14 (prospective) studies of adverse health outcomes among older emergency patients (one also was an ED use study).</p> <p>The other 17 (non-tabulated) descriptive and randomised studies on hospital / community-based geriatric screening.</p> <p>Inclusion criteria No clear information, however the authors reported that a qualitative approach was used to synthesise the literature on patterns of use of emergency services among older adults, risk factors associated with adverse health outcomes, and effectiveness of intervention strategies targeting this population.</p> <p>Exclusion criteria No information reported, however the authors reported that no studies were excluded because of the methodological limitations.</p> | <p>Service and study description This review compares the patterns of use of emergency services among older adults with younger persons. Also risk factors associated with adverse health outcome, and effectiveness of intervention strategies targeting this population. The review also reviewed the results of the comprehensive geriatric screening and coordinated discharge planning initiatives designed to improve clinical outcomes in older emergency patient.</p> <p>Two multicenter studies tested the use of brief risk-screening tools by emergency nurses or medical students and reported the feasibility of the protocols in identifying at-risk elderly and uncovering health problems among the screened patients. There were no evaluations of the clinical outcomes.</p> <p>Five studies provided comprehensive geriatric evaluation to elderly emergency patients by trained specialised nurses or interdisciplinary teams.</p> <p>Eleven studies used discharge planning, case management, and follow-up strategies (including a single-site British study that used a risk-screening tools by ED staff).</p> <p>In an American study older ED patients with mental health problems were referred to an on-site social worker for counselling and discharge planning. Follow-up contacts were made with the patients at 14 days and with the involved community agencies at 90 days after discharge to verify service use.</p> | <p>Hospital / community-based comprehensive geriatric screening and intervention programmes targeting older people (total 17 studies).</p> <ul style="list-style-type: none"> ▪ a single-site British study reported considerable practical difficulties in encouraging ED staff to use a brief screening questionnaire, contributing factors included time constraints, communication problems between shifts, and uncertainties about whether patients would be admitted ▪ five studies reported some benefits. These include, detecting geriatric syndromes and other missed diagnoses (3 studies); increasing community referral in one study; and avoiding hospital admission on the ED index visit in another study ▪ eleven studies that used the discharge planning, case management and follow-up strategies showed mixed results ▪ for the American study there was a reduction in the number of ED repeat visit after entering the programme. However the follow-up time period was not specified. | <ul style="list-style-type: none"> ▪ limited search methods with limited databases. The search focused on published English-language literature and did not include a search of the EMBASE computer database, which may have identified additional European publications ▪ no information on the assessment of quality of methods for the studies included in the review ▪ no studies were excluded because of the methodological limitations ▪ the number of studies included was not clearly reported, 17 studies were described and not shown on tables ▪ some of the studies included examined health outcomes among older ED patients excluded those living in residential and LTC facilities limiting their results to be generalised to this sub-group of the older population. |

Table 5. Services that facilitate hospital avoidance for older people – rapid response services for older people with sub-acute illness (continued)

| Study citation, source and design | Study sample, inclusion and exclusion criteria | Service design features | Interventions and Outcomes | Comments |
|--|--|---|--|---|
| <p>Aminzadeh & Dalziel (2002)</p> <p>Systematic review</p> <p>Ontario, Canada</p> <p>Grade: Level III-2</p> <p>(continued)</p> | | <p>A Scottish randomised trial evaluated the effect of a health visitor intervention 24 hours after ED discharge among 424 community-living adults aged 75 years and older. The health visitor identified the support needs of the patients and facilitated their access to appropriate community services.</p> <p>In two descriptive studies telephone follow-ups were made by nurses within three days after ED discharge.</p> <p>Four Canadian studies, one American study and one British study incorporated home care into emergency services for older patients.</p> <ul style="list-style-type: none"> ▪ the Canadian studies described a Quick Response Service designed to provide rapid access to home-based services for older emergency patients ▪ the American (non-blinded) trial described the use of department-based coordinators to assess home care needs in preventing admission on the index visit ▪ the British RCT assessed the effect of ED admissions with provided care attendant support of 12 hours a week for two weeks after the first and any subsequent discharge from the hospital. | <ul style="list-style-type: none"> ▪ home assessments in the Scottish study of one month follow-up showed statistically significant higher rates of independence in instrumental ADLs and greater use of community services among the intervention group compared with that in the control group receiving usual care ▪ the two descriptive studies of telephone follow-up did not provide any evaluations of patient outcomes. <p>The five studies that incorporated home care into emergency services showed mixed results:</p> <ul style="list-style-type: none"> ▪ the four Canadian studies (QRS), showed that the programmes were successful in identifying patients requiring home care services and reduced the need for hospital admission on the index visit but did not attempt to evaluate short and long-term patient outcome. | <ul style="list-style-type: none"> ▪ many studies did not use a matched control group (receiving usual care) to examine the programmes' effectiveness ▪ many studies were limited by low intensity of intervention (which was limited to consultation with no case management and long-term follow-up), inadequate targeting of at-risk patients, and the possibility of contamination bias ▪ the majority of prospective studies suffered from methodological weakness with possibility of selection bias among those studies that recruited small single-site samples, used non-probability sampling techniques, and excluded patients who were medically unstable, had cognitive impairment with no proxy informant, and visited the ED on evenings, nights and weekends. |

Table 5. Services that facilitate hospital avoidance for older people – rapid response services for older people with sub-acute illness (continued)

| Study citation, source and design | Study sample, inclusion and exclusion criteria | Service design features | Interventions and Outcomes | Comments |
|--|--|-------------------------|--|--|
| <p>Aminzadeh & Dalziel (2002)</p> <p>Systematic review</p> <p>Ontario, Canada</p> <p>Grade: Level III-2</p> <p>(Continued)</p> | | | <p>The five studies that incorporated home care into emergency services showed mixed results (continued):</p> <ul style="list-style-type: none"> ▪ the American study showed that the use of department-based coordinators to assess home care needs prevented admission on the index visit in one fifth of the referred patients in the judgement of the non blinded involved emergency physicians. And six months after referral, 17% of these patients had been admitted to the hospital at least once, and 4% had died ▪ the British RCT showed a significantly lower proportion of ED readmissions and lower rates of multiple readmissions in the intervention group within the 18-month follow-up period than the control group. also among those living alone, the intervention resulted in significantly fewer mean day of hospital stay. | <ul style="list-style-type: none"> ▪ many studies relied on secondary sources of information resulting in incomplete and potentially biased data on patient outcomes ▪ methodological limitations of the clinical trials of the effectiveness ▪ of various intervention strategies include possibility of cross-contamination, short follow-up time periods and limited power of the interventions because of the low intensity of the intervention, with lack of adequate follow-up and adherence ▪ although this review has limitation it provided a description and overview of many types of services. |

Table 5. Services that facilitate hospital avoidance for older people – rapid response services for older people with sub-acute illness (continued)

| Study citation, source and design | Study sample, inclusion and exclusion criteria | Service design features | Interventions and Outcomes | Comments |
|--|--|--|---|--|
| <p>Fry et al. (1996)</p> <p>A descriptive study (before and after study) with 12 months of follow-up.</p> <p>NSW, Australia</p> <p>Grade: Level IV</p> | <p>Of the initially assessed 2,741 patients, 1,711 required further services by the QRP (Quick Response Programme). Of this group 1,387 required some discharge planning services, and 253 were formally accepted on to the QRP programme.</p> <p>Inclusion criteria All patients 60 years and over presenting to the ED were eligible for assessment and entrance into the programme.</p> <p>Elderly presentations to the ED (tracked by QRP through the Emergency Department Information System EDIS) and being allocated a triage codes of 3, 4 or 5 would undergo an assessment by the QRP for eligibility for discharge and accelerated community support. The ED medical officer (MO) and QRP liaison RN would both assess the patient for admission or possible discharge.</p> <p>Exclusion criteria No information reported.</p> | <p>Service and study description The QRP was established in June 1995 within the St George Hospital ED and the local community of the South Eastern Sydney Area Health Service.</p> <p>The aims of the QRP were to prevent avoidable hospital admissions through the provision of home-based care and to optimise discharge planning for patients discharged from ED. The programme offered ED elderly clients an alternative health care pathway with rapid multidisciplinary community care in consultation with GPs and ED staff, also it assisted in providing intensive community services upon immediate discharge from the ED. QRP made all appropriate discharge arrangements including transporting the patient home. Patients accepted onto the programme were given immediate follow-up in the community for an average of four days. If further community services were required or the patient needed to be brought back to the ED for admission this was arranged through the QRP liaison RN.</p> <p>QRP team includes a coordinator, emergency liaison RN, enrolled nurses, community health nurse (CHN), physiotherapists and occupational therapist. The QRP provided care / treatment for a maximum of 5 days. The QRP CHN reviewed the client's situation and either discharged the client into self care, referred the client to the regular CHN or community services for ongoing care, or considered other options if the patient continued to require intensive services.</p> | <p>Development of QRP in the ED to address the existing problems faced by older ED patients.</p> <p>The following were reported in this study without showing the results:</p> <ul style="list-style-type: none"> ▪ by implementing the programme within the ED and by involving the CHNs and GPs in the area, it was predicted that this programme could enhance the services to the elderly while aiming to be cost effective through decreasing admission rates, lengths of stay and transportation costs ▪ QRP provided an alternative pathway for the older patients presenting to the ED. | <ul style="list-style-type: none"> ▪ this study is a descriptive study with no control group with lack of evidence ▪ the study showed a limited information and no data were presented to support the reported conclusions and descriptions ▪ however, the study presented reported that QRP may have provided the ED staff with a useful aged care management information and crisis intervention which might contribute to improved decision making for the elderly particularly relating to discharge from the ED. |

Table 5. Services that facilitate hospital avoidance for older people – rapid response services for older people with sub-acute illness (continued)

| Study citation, source and design | Study sample, inclusion and exclusion criteria | Service design features | Interventions and Outcomes | Comments |
|---|---|--|---|---|
| <p>Moss et al. (2002)</p> <p>A descriptive analysis (before and after study) with 12 months follow-up.</p> <p>Melbourne, Australia</p> <p>Grade: Level IV</p> | <p>Of 43,405 patients presented to the ED, 2,532 patients were seen by the CCT, and in total 1,199 patients referrals to the community.</p> <p>Inclusion criteria Frail elderly, those living alone, the homeless, frequent ED attenders, and those with complex medical or drug and alcohol problems, those requiring assistance with ADLs, those not eligible for HAH; those requiring complex discharge planning.</p> <p>Exclusion criteria No information reported.</p> | <p>Service and study description</p> <p>A multidisciplinary CCT (Care Coordination Team) to ensure that ED patients were provided with services that would facilitate their return or maintenance in the community.</p> <p>A validated risk screening tool was used by triage staff to identify patients at risk. The CCT undertake a comprehensive discharge risk assessment of suitable patients with priority to patients for whom unnecessary or inappropriate admission could be prevented and then patients awaiting admission who require complex discharge planning.</p> <p>The resource base established by the CCT includes 24 hours, seven days access to home services through an ED post-acute-care facilitation unit client service coordinator. The CCT also implements early effective discharge to the homeless persons nursing programme by using an after-hours referral mechanism.</p> | <ul style="list-style-type: none"> ▪ the CCT service was assessed 12 months after its commencement (analysed descriptively) ▪ a comparison of admissions to the ED in the 12 months before and after the CCT service ▪ the rate of hospital admission from the ED fell significantly compared with the 12 month period before implementation of the CCT ▪ surveys carried out including staff, patients and carers, as well as community service providers, showed a high level of satisfaction with the CCT. | <ul style="list-style-type: none"> ▪ although the authors concluded that the CCT has successfully integrated into the ED, this should be weighted with the generalisability of the results, and the lack of evidence with the descriptive studies. |

Table 6. Services that provide for slow stream inpatient or residential rehabilitation (Nurse-led teams/units)

| Study citation, source and design | Study sample, inclusion and exclusion criteria | Service design features | Interventions and Outcomes | Comments |
|--|--|---|--|---|
| <p>Cameron, et al, (2000)</p> <p>Retrospective descriptive study, data collection of 16 months of the team's operation</p> <p>Livingston, Scotland UK</p> <p>Grade Level: IV</p> | <p>1,065 acute medical admissions of 3,565 patients aged 65 or over for the first 16 months of the team's operation, demographic characters inadequate.</p> <p>No information on inclusion and exclusion, a descriptive report only.</p> | <p>Service description</p> <p>A nurse led multidisciplinary team (MDT) set up in 1997 to work directly in the acute admissions ward of St John's Hospital, Livingston. The team comprised clinical nurse specialist in care of the elderly, senior 2 occupational therapist and senior 1 physiotherapist. The team has close links with consultants in both general and geriatric medicine and also they liaise closely with hospital social workers and community occupational therapists.</p> <p>The target group were acute admissions with functional problems.</p> <p>Team role</p> <p>The team meets each weekday morning and receives a report on all elderly patients in the acute admissions ward. Patients who are seriously ill and unfit for assessment not seen, so will move to the general medical wards. Elderly with lesser medical problems (who are recognised to have problems with activities of daily living or who require review of social care) will be seen immediately. A full assessment of the patients' abilities is made and the clinical nurse specialists relays this information back to the "on call" consultant by early afternoon. The consultant in turn will decide (based on medical status combined with summary on functional and social needs) whether a discharge home or a more prolonged hospital stay is appropriate. If discharge is decided the multidisciplinary team will commonly arrange some form of early support package.</p> | <p>Nurse led multidisciplinary team saw 30% of all acute admissions aged 65 or over. Three reasons were identified as being caused this:</p> <ul style="list-style-type: none"> ▪ the medical status of the patient where the assessment took place only for medically fit so many took several days to improve sufficiently and patients were moved from the Admissions Unit to general medical awards for later assessment for their functional needs ▪ a second group of admissions had pure medical problems with no perceived problems functionally so the team did not become involved with these individuals ▪ admission over the weekend period. <p>A discharge of almost a quarter directly home from the admission ward was considered a success:</p> <ul style="list-style-type: none"> ▪ 40% had direct follow-up by the MDT to expedite early supported discharge ▪ the strategy worked well with only 3% of this frail elderly group readmitted within the 30 days ▪ the early recognition of rehabilitation issues permitted immediate setting of targets and goals ▪ the need for home visits was also recognised early thus reducing planning delays ▪ occupational therapy input began several days sooner because of better targeting of resources. | <ul style="list-style-type: none"> ▪ no comparison group, only retrospective descriptive study. So the impact cannot be scientifically assessed ▪ the authors suggested that putting a multidisciplinary team into Admissions Units represents a useful development. However as mentioned above the study design limits interpreting the impact of this multi-disciplinary team work. |

Table 6. Services that provide for slow stream inpatient or residential rehabilitation (Nurse-led teams/units) (continued)

| Study citation, source and design | Study sample, inclusion and exclusion criteria | Service design features | Interventions and Outcomes | Comments |
|---|--|---|---|---|
| <p>Davies (1994)</p> <p>A quasi-experimental(before and after) descriptive comparative study</p> <p>London, UK</p> <p>Grade Level: IV</p> | <p>Eligible patients to be admitted to the study ward were aged 75 years and over. Team members of 18-bed rehabilitation ward and two other wards.</p> | <p>Service and study design</p> <p>A system of nurse-led team care introduced into a ward providing intensive nursing and rehabilitation to elderly people. This was evaluated on an 18-bed rehabilitation ward within an elderly care unit comprising rehabilitation and long-stay beds in an inner London health authority.</p> <p>The system involved the admission of patients to either acute rehabilitation or continuing care wards according to their needs, rather than admitting patients with very different needs to the same ward. In the continuing care wards this involved limiting the amount of medical assessment and intervention which patients received and encouraging the medical consultant to act in advisory capacity to the nursing staff.</p> <p>Quality of care, job satisfaction, and length of patient stay were compared between the study ward and two similar wards within the unit.</p> | <p>Evaluation of the effects of introducing a system of nurse-led team care on a ward providing intensive nursing and rehabilitation to elderly people compared to two similar wards within the unit.</p> <ul style="list-style-type: none"> ▪ an improvement in the quality of care scores on the study ward but not on the main comparison ward. ▪ admission to the study ward did not adversely affect length of patient stay ▪ there were no differences between nurse job satisfaction between the study and comparison wards throughout the period of evaluation ▪ communication was more structured and focused on the study ward and patient goals were more clearly specified ▪ data from the staff interviews provided some insight into the effects of nurse-lead team care on the quality of patient care, (e.g. a developing partnership with patients, equality between team members, and improved decision making and quality of care). | <ul style="list-style-type: none"> ▪ descriptive study ▪ inclusion criteria not specified ▪ validated assessment tool for quality of patient care used. But validity and reliability for job satisfaction questionnaire not yet established but referenced ▪ no blinding to outcome assessment. |

Table 6. Services that provide for slow stream inpatient or residential rehabilitation (Nurse-led teams/units) (continued)

| Study citation, source and design | Study sample, inclusion and exclusion criteria | Service design features | Interventions and Outcomes | Comments |
|--|--|--|---|---|
| <p>Griffith et al. (2001)</p> <p>RCT, 20 months of data collection</p> <p>Inner London UK</p> <p>Grade Level: II</p> | <p>89 patients in intervention group, mean age 77 years, 36% men.</p> <p>86 patients in usual care group, mean age group 79 years, 29% men.</p> <p>Inclusion criteria No information on.</p> <p>Exclusion criteria Previous participation in the study, not stable, had no nursing needs or had an anticipated stay of less than 4 days.</p> | <p>Service and study description</p> <p>Hospital wards in an acute inner-London National Health Service Trust. Patients received either care on the nursing-led inpatient unit (NLIU) with no routine medical intervention.</p> <p>Or Usual hospital care (with the system of consultant-managed care).</p> <p>NLIU is a 19-bed ward in a medium sized district general hospital and patients are referred from acute wards in the same hospital. Patient care is managed by one of three nurse practitioners. Nurses lead the multi-disciplinary clinical team, and nursing is considered the main therapy. Other therapies are provided on referral and non-urgent medical input is provided on nursing staff's referral by a general practitioner during four 2-hour sessions per week. Emergency care is provided by the usual hospital service.</p> | <p>NLIU with no routine medical intervention compared with system of consultant-managed care (control).</p> <ul style="list-style-type: none"> ▪ there was no significant difference between the groups in discharge destination or in readmissions ▪ there was a significant increase in the length of stay in the treatment group (mean 36.9 days) compared with the usual care group (26 days) ▪ the mean hospital cost per stay was higher in the treatment group compared with the usual care, the reverse was reported for the daily cost. However both findings were non-statistically significant. | <ul style="list-style-type: none"> ▪ the authors concluded that intermediate care in a nursing-led inpatient unit was associated with increased total hospital stay with no benefits gained from this additional stay. And that from the confidence intervals and sensitivity analysis it is very unlikely that the NLIU could yield cost savings and it may be more costly than usual acute care ▪ adequate randomisation method described, but blinding was not done due to the nature of the intervention ▪ validity and reliability of outcome assessment tools not described although validity of statistical analysis tool was indicated. Sensitivity analysis and intention-to-treat analysis were performed ▪ inadequate information on usual care group. |

Table 6. Services that provide for slow stream inpatient or residential rehabilitation (Nurse-led teams/units) (continued)

| Study citation, source and design | Study sample, inclusion and exclusion criteria | Service design features | Interventions and Outcomes | Comments |
|---|--|--|---|---|
| <p>Richardson et al, (2001)</p> <p>single-blinded RCT, (economic evaluation), 22 month follow-up</p> <p>London, UK</p> <p>Grade Level: II</p> | <p>97 patients, mean age 76 years, 39% men in the intervention group (care on a nursing-led ward).</p> <p>80 patients, mean age 77 years, 35% men in the control group (standard care usually on a consultant-led acute ward).</p> <p>Inclusion criteria All inpatients who were referred to the nursing-led intermediate care unit (NLIU) by doctors with authority to make discharge decisions were included in the study.</p> <p>Exclusion criteria No information given.</p> | <p>Study design The study examined the costs and consequences of caring for patients in a nursing-led intermediate care unit (NLIU) in an inner London teaching hospital.</p> <p>Patients from acute units of the hospital randomly received care in either the NLIU or to usual care where they remained on an acute ward that was traditionally managed by consultant.</p> <p>Service description Care on the unit was nurse-managed and modelled on the clinical nursing unit developed in Oxford, UK for elderly and/or chronically ill patients (no age limit). The Oxford model involved an employed doctor (8hours per week) to fulfil the role of the patient's general practitioner (GP) to provide routine medical care.</p> <p>The model implemented in this study was a NLIU as a model of intermediate care for facilitating transition from acute hospital care to the community. The model differs from the one developed in Oxford in that the care for patients was not exclusively delivered by registered nurses but included a number of unqualified auxiliary nurses. This was comparable to that of the elderly care wards that shared the same hospital site, a satellite of a large acute trust.</p> <p>NLIU was defined as: "an in-patient environment offering active treatment to a group of patients where case mix is based on nursing need. The multidisciplinary clinical team is led by nursing staff and nursing is conceptualised as the predominant active therapy. Nurses have authority to admit and discharge patients".</p> | <p>Care on NLIU compared to standard care (consultant-led acute unit):</p> <ul style="list-style-type: none"> ▪ for the clinical outcomes, there were no significant differences between the two groups ▪ for the resource use, the treatment groups showed statistically significant longer length of stay than the control group. However, there was no clear trend towards a specific resource use (e.g. the treatment group used more physiotherapy while the control group used more occupational therapy). The lower resource use among the treatment group resulted in a significantly lower post-discharge cost per month in compared to the control group ▪ inpatient costs were significantly higher among the treatment group than the control patients. Post-discharge costs were significantly lower among the treatment group. | <ul style="list-style-type: none"> ▪ randomisation was computer generated and closed to clinician; no information on method of concealment or blinding ▪ no significant differences in baseline characteristics between the two groups ▪ validity of using test for data analysis was done ▪ post-discharge resource use data estimated from the one month follow-up and the hospital discharge plan ▪ the authors stated that The study was not powered to detect differences in mortality ▪ post-discharge follow-up period was not long ▪ results of the study conflict with earlier studies. |

Table 7. Planned discharge (including a plan and package of care/support)

| Study citation, source and design | Study sample, inclusion and exclusion criteria | Service design features | Interventions and Outcomes | Comments |
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| <p>Parker et al. (2002)</p> <p>A systematic review of clinical trials relating to interventions to improve the discharge of older people from inpatient hospital care.</p> <p>HTA, UK</p> <p>Grade Level: I</p> | <p>Twenty-four databases, providing coverage of health and social sciences literature, grey literature and current research were searched including Medline, Cochrane Library, Cinahl, Embase, HealthSTAR, and others for published and unpublished clinical trials, and with no date limits. Overall 6,972 papers were identified, of which 366 underwent a dual quality and relevance process, resulting in 76 papers for data extraction.</p> <p>Further to full data extraction five studies were excluded ending in 71 studies included, 54 RCTs. In general, the inclusion criteria were RCTs evaluating an intervention intended to modify discharge in patients experiencing discharge from inpatient hospital care, studies that included patients over the age of 65 years experiencing discharge from inpatient hospital care and studies undertaken in an inpatient hospital or in the community after discharge from inpatient hospital care.</p> <p>Studies were only eligible if they described at least one of mortality, length of stay, readmission rate, health status, patient and/or carer satisfaction, use of health and social care resources, and costs.</p> <p>Discharge planning Six RCTs on (4 of them excluded subjects who did not have access to a telephone, were cognitively impaired or were unable to speak English.</p> <p>Inclusion criteria All RCTs included in this section tested the effect of interventions involving standardised actions or interventions carried out by an individual, including assessment, coordination and implementation of the discharge plan, which projected needs post-discharge with the aim of preventing unnecessary readmission, maintaining the health status of patients or lessening the burden on carers. The review included evaluations of discharge planning protocols for patients aged 65 years and over experiencing discharge from inpatients and hospital care.</p> | <p>Service and study descriptions</p> <p>Four categories of intervention were defined:</p> <p>Discharge planning The intervention delivered in hospital by a single professional usually a specialist nurse. Most studies included some form of follow-up (home visit, by telephone or both) after the patient had been discharged from hospital.</p> <p>Discharge support arrangements The interventions were intended to provide an enhanced level of support around the time of discharge and, often, subsequently. They include 'early discharge' schemes, although not all the interventions were specifically designed to hasten discharge, the interventions may be limited to post-discharge telephone contact at one extreme, or, at the other extreme, involve teams of professionals providing services in the patient's home after discharge from hospital.</p> <p>The other two types of interventions were comprehensive geriatric assessment (CGA) programmes and education interventions. CGA programmes were assessed through this review in terms of their impact on the outcomes of older people undergoing discharge from hospital. The effectiveness of the education interventions was addressed within this review in improving aspects of the discharge of older people from inpatient hospital care. Both interventions within this systematic review are beyond the scope of this review thus details will not be reported here in this evidence table. However, will report the outcomes from the combined analysis that included these interventions.</p> | <p>Discharge planning</p> <p>Mortality (6 studies), readmission (6 studies), LOS (7 studies), physical function (2 studies), Mental function (1 study), service use (1 study), cost to service (4 studies), satisfaction (1).</p> <p>The data suggest that generally the initial length of stay in the study groups is shorter and there is a lower readmission rate, with a greater number of days between discharge and readmission. However, the data are not statistically significant.</p> <p>Discharge support arrangements</p> <p>Mortality Was reported in 17 of the trials. There appears to be little difference between the subjects receiving discharge support and those receiving conventional hospital-based alternatives (at 3, 6, and 12 months following discharge).</p> <p>Index length of stay Was reported in six trials, and they did not show a significant effect of the intervention on length of stay.</p> <p>Readmission To hospital was reported in 18 of the trials in forms of number of readmission episodes and the duration of hospital bed use after readmission. There was a statistically significant relative risk reduction in the risk of being readmitted to hospital in two trials (by calculating the RRR').</p> | <p>This review is a comprehensive one with strengths based on the methodology and method of classification of the interventions (referenced to be within the framework of interventions of the Cochrane Collaboration EPOC group). The majority of studies included in the review reported the results of evaluation which would come under the EPOC category of organisational intervention.</p> <p>Inter-rater agreement was calculated for the dual-assessed abstracts, and results indicated moderate reliability between the researchers.</p> <p>The heterogeneity of outcomes reported between studies as well as the differences in the way the same outcomes were reported by these studies might have limited the synthesis of outcome data derived from the included studies.</p> |

Table 7. Planned discharge (including a plan and package of care/support) (continued)

| Study citation, source and design | Study sample, inclusion and exclusion criteria | Service design features | Interventions and Outcomes | Comments |
|--|---|-------------------------|---|---|
| <p>Parker et al. (2002)</p> <p>A systematic review of clinical trials relating to interventions to improve the discharge of older people from inpatient hospital care.</p> <p>HTA, UK</p> <p>Grade Level: I</p> <p>(Continued)</p> | <p>Exclusion criteria Discharge from day hospitals, outpatient settings, nursing homes and other settings.</p> <p>Not providing acute or high technology was excluded.</p> <p>Sample varied from 40 'a pilot study' to 1,599 subjects (1,839 total intervention subjects, 1,718 total control subjects).</p> <p>Discharge support arrangements 33 papers representing 28 RCTs with a total of 8,920 patients were randomised to receive some form of support arrangement focused on patients being discharged from inpatient hospital care.</p> <p>Studies were conducted in older patients, with a tendency towards including patients aged ≥ 70 years.</p> <p>Inclusion criteria All the RCTs selected for inclusion in this section were conducted among patients experiencing discharge from inpatient hospital care.</p> <p>Exclusion criteria Discharge from inpatient facilities not potentially providing acute or high technology care (e.g. nursing homes) or ambulatory care settings (e.g. day hospitals and outpatient departments) were excluded.</p> | | <p>Overall the duration of hospital inpatient stay appears to be similar between the intervention groups and the controls.</p> <p>Combined analysis of all the included study in the review</p> <p>Mortality Was reported in 36 of the trials. No statistically significant effects on mortality were found at any of the three time periods following discharge.</p> <p>Index length of stay Was reported in 19 studies with a positive difference indicating that the intervention reduces length of stay.</p> <p>Readmissions 35 studies were included in the overall synthesis of readmission rates. A reduction in the relative risk for being readmitted in the intervention subjects was statistically significant.</p> <p>Physical and mental functioning Synthesis of the effects of interventions on physical functioning was possible for 14 studies. Although no consistent effects were seen on physical functioning (measured as absolute change), the physical functioning showed a statistically significant improvement among the intervention group in six studies (when measured as OR).</p> | <ul style="list-style-type: none"> ▪ readmission figures (the main positive finding) were favourably affected if the intervention took place in hospital or was on multiple sites overall, the evidence from the included trials did not suggest that discharge arrangements have effects on mortality or length of hospital stay. The review supports the concept that arrangements for discharging older people from hospital can have beneficial effects on subsequent readmission rates. Interventions provided across the hospital-community interface, both in hospital and in the patients' home showed the largest effect ▪ the message from these data seems to be that doing something is better than doing nothing. If what is done extends across the hospital-community interface then it stands a greater chance of having a positive effect on readmission rate. |

Table 7. Planned discharge (including a plan and package of care/support) (continued)

| Study citation, source and design | Study sample, inclusion and exclusion criteria | Service design features | Interventions and Outcomes | Comments |
|---|---|--|---|--|
| <p>Parkes et al. (2003)</p> <p>A Cochrane Database of Systematic Reviews.</p> <p>UK</p> <p>Grade Level: I</p> | <p>Search strategy for identification of studies involved searching 12 databases including Cochrane EPOC Group, Cochrane Controlled Trials, Medline, Embase, Cinahl, EconLit, and others as well as reference lists of articles and other ways, date of searches ranged between 1966 to 1996, with date of most recent update at November 2001.</p> <p>Three reviewers to select the studies for inclusion conducted Independent review. Eight studies (from 46) met all the review inclusion criteria so were included. They involved 4,837 patients (average age ranged among the studies between 53 years to 80 years).</p> <p>Four studies recruited patients with a medical condition, four recruited patients with a mix of medical and surgical conditions, and one of these recruited medical and surgical patients as separate groups.</p> <p>Inclusion criteria RCTs and CTs that assess the effects of discharge planning for patients moving from hospital at home. All patients in hospital (acute, rehabilitation or community) irrespective of age, gender or condition.</p> <p>Exclusion criteria Studies did not include an assessment and implementation phase were excluded. Studies where discharge planning was provided as part of a multifaceted intervention and it was not possible to separate the effects of discharge planning from the other components of the intervention.</p> | <p>Service and study description The intervention of interest is a discharge planning which includes pre-admission assessment, case finding on admission, in-patient assessment and preparation of a discharge plan based on individual patients needs, implementation of the discharge plan and monitoring.</p> <p>The control is a usual care that is a routine discharge for hospital patients.</p> | <p>Discharge planning versus the usual routine discharge for hospital patients.</p> <p>In general comparisons (on nine outcomes) were reported between the effect of discharge planning vs usual care.</p> <ul style="list-style-type: none"> ▪ effect on hospital LOS- for elderly medical patients allocated to discharge planning there was a slight statistically significant reduction in hospital length of stay compared to usual care in four studies ▪ effect on unscheduled readmission rates (6 trials). Only one study reported significant reduction in readmission days among the intervention group at two to six week follow-up but not at longer term. | <p>The review assessed the effectiveness of discharge planning from hospital compared to usual care.</p> <p>Quality assessment of methods for the included studies was judged according to the criteria by EPOC for randomised trials. Given the small number of the included studies, the number of studies with insufficient information to determine if concealment of allocation was attained is not small (5 trials), only three trials reported full concealment this is one limitation of this review. Also blindness assessment of outcomes was only reported in two trials.</p> <p>The studies included were with different study populations, different settings and different ways of implementing the interventions and thus having mixed results. The timing of discharge planning across studies also varied adding to the mixed results included in the review.</p> |

Table 7. Planned discharge (including a plan and package of care/support) (continued)

| Study citation, source and design | Study sample, inclusion and exclusion criteria | Service design features | Interventions and Outcomes | Comments |
|---|--|-------------------------|---|---|
| Parkes et al. (2003) A Cochrane Database of Systematic Reviews. UK Grade Level: I (Continued) | | | <p>Effect on patients' place of discharge (5 trials). Only one trial recruiting both medical and surgical patients reported a significantly greater proportion of patients allocated to discharge planning were discharged home compared with those receiving no formal discharge planning, this difference increased at nine months follow-up.</p> <p>Effect on patient health outcomes (4 trials). This includes functional status, mental well-being, and others. All reported no significant differences, only one trial recruiting patients with medical conditions reported no differences between groups for functional status (but this was statistically non-significant).</p> <p>Effect on patients' and carers' satisfaction (2 trials). These two trials recruiting medical patients reported increased satisfaction at one and three months follow-up.</p> <p>Effect on hospital care costs (2 trials). In one study involving patients with a medical condition no significant differences for costs between the two groups for their initial hospital stay was observed.</p> | <p>The studies included in the review did not provide enough evidence to answer many questions specifically those related to health outcomes. They were small for detecting important differences, did not provide enough details of the intervention and the context in which it was delivered and thus making it difficult to ensure generalisability of results.</p> |

Table 7. Planned discharge (including a plan and package of care/support) (continued)

| Study citation, source and design | Study sample, inclusion and exclusion criteria | Service design features | Interventions and Outcomes | Comments |
|--|--|-------------------------|---|----------|
| <p>Parkes et al. (2003)</p> <p>A Cochrane Database of Systematic Reviews.</p> <p>UK</p> <p>Grade Level: I</p> <p>(Continued)</p> | | | <p>However, a significant difference for hospital costs was detected for total charges including readmission costs at two, and two-six weeks follow-up with patients receiving discharge planning incurring lower costs. No significant difference in costs was detected for patients with surgical condition in the same study. In the other study. However, lower costs were observed for laboratory services for patients receiving discharge planning.</p> <p>No studies provided cost data on effect of discharge planning on community care costs compared to UC.</p> <p>Only one study reported no significant difference for overall health service costs between the two study groups.</p> | |

Table 8. Supported discharge (stand-alone teams offering intensive home-based rehabilitation, education, treatment or support for a finite period) upon hospital discharge

| Study citation, source and design | Study sample, inclusion and exclusion criteria | Service design features | Interventions and Outcomes | Comments |
|---|---|---|--|--|
| <p>Crotty et al (2002)</p> <p>RCT, single-blinded, 4 month follow-up.</p> <p>Adelaide, Australia</p> <p>Grade Level: II</p> | <p>34 elderly randomly received home-based rehabilitation, 62% female, median age 82 years. 32 participants received conventional care, 75% female, median age 83 years.</p> <p>Inclusion criteria If admitted for treatment of a fall related hip fracture to one of three hospitals in Adelaide, treated surgically, 65 years or over, medically stable, adequate physical and mental capacity to participate in a rehabilitation programme, expected to return home after discharge from hospital, had a home environment suitable for rehabilitation.</p> <p>Exclusion criteria Inadequate social support in the community, no telephone at home or did not live in Adelaide's Southern metropolitan Region. Patients also need to agree to hospital readmission should complication occur.</p> | <p>Service and study description Three Metropolitan hospitals in Adelaide. Patients received either accelerated discharge (within 48-hours after randomisation) and home-based rehabilitation or usual care (in which the patient remained in hospital for conventional rehabilitation).</p> <p>Home rehabilitation team consisted of a team coordinator, a physiotherapist, an occupational therapist, a speech pathologist, a social worker and a therapy aid. Study coordinator initially assesses the participants and visited their home environment to organise any modifications, installation of equipment or assistive aids prior to discharge from acute care. Therapists from the team negotiated realistic, short-term and measurable treatment goals with both participant and their carer.</p> <p>Control group received routine hospital care and rehabilitation in hospital, this involves inpatient services, development of care pathways and discharge planning.</p> | <p>Accelerated discharge and home based rehabilitation compared to conventional care.</p> <ul style="list-style-type: none"> ▪ measures of quality of life: Intervention group patients showed significantly more improvement in measures of current ability to perform day-to-day activities (MBI) from randomisation from the control group, and scored higher on the Falls Efficacy Scale at four months. For all other measures of quality of life no differences between the groups ▪ there were no difference in falls rates between the two groups ▪ patients in home-based rehab had shorter stay in hospital but a longer stay in rehabilitation overall ▪ groups were comparable on the rate and length of admissions after discharge, use of community services, need for carer input, and contact with general practitioner after discharge. | <ul style="list-style-type: none"> ▪ baseline characteristics described as not showing differences between groups in age, pre-morbid use of mobility aids, percentage living alone and some assessment scores ▪ selected group of patients with possible selection bias ▪ adequate randomisation method, blinding of assessors to group allocation ▪ small sample size with insufficient power ▪ validity and reliability of assessment tools were not indicated, but referenced. Reliance on medical records for adverse events ▪ description of control group care not adequate. |

Table 8. Supported discharge (stand-alone teams offering intensive home-based rehabilitation, education, treatment or support for a finite period) upon hospital discharge (continued)

| Study citation, source and design | Study sample, inclusion and exclusion criteria | Service design features | Interventions and Outcomes | Comments |
|--|---|--|---|--|
| <p>Hyde et al. (2000)</p> <p>A systematic review</p> <p>Birmingham, UK</p> <p>Grade: Level I</p> | <p>A search of up to 1997 was conducted on Medline, Cinahl, the Cochrane Library, PsycLit and the Social Science Citation Index. Also hand-searching, follow-up of bibliographies and direct enquiry of authors of included studies. Of 1,000 identified studies as being potentially relevant only nine studies were included. The studies involved the allocation of 1,315 patients to supported discharge and 1,286 to control.</p> <p>Inclusion criteria Studies were included if they were only randomised or quasi-randomised studies at supported discharge versus non supported discharge, or highly supported discharge versus normally supported discharge of older people over 65 year of age (or where over 70% of any population examined were over 65 years) with undifferentiated medical problems.</p> <p>Exclusion criteria Not explicitly described but was reported as on the basis of intervention and design as well as age.</p> | <p>Service and study description The intervention of interest was a supported discharge compared to control.</p> <p>The supported discharge was provided to patients or their carers as actual additional support from any source commenced within one week of discharge following an acute admission.</p> <p>The support in the trials was provided for variable durations. The services included:</p> <ul style="list-style-type: none"> ▪ HAH team continued rehabilitation, settled patient, gave advice and training to carers, and established support network for four weeks ▪ geriatric follow-up by home visits; district nurse visit on day of discharge to check provision of services organised by hospital; GP visit two weeks later ▪ geriatric team follow-up by home visits from geriatrician, nurse or physical therapist one, three, eight and 16 weeks after discharge ▪ home treatment team available for six weeks ▪ physician-led primary home care and home assistance service on 24 hour basis ▪ supervised home aide in tasks of continuing care and rehabilitation ▪ additional care attendant support for up to 12 hours/week for two weeks; visit before discharge and on day one at home; provided practical support, encouraged rehabilitation and organised support from statutory services, family and friends ▪ timetable visiting by health visitor assistance; eight visits over nine months (2 at fortnightly, 3 at monthly, and 3 at 2 monthly intervals). | <p>Supported discharge versus usual care.</p> <p>Various groups of outcomes were offered in the included trials; these include patient satisfaction, carer satisfaction, functional status, mortality, institution, at home, and hospitalisation.</p> <ul style="list-style-type: none"> ▪ functional status was assessed in six studies but the attempts to compare changes in supported and normal care groups were effectively invalidated due to high losses to follow-up ▪ meta-analysis of seven studies out of nine that reported mortality showed no effect of the intervention on mortality. ▪ in seven studies a clear, consistent pattern of results favouring supported discharge. The intervention was less likely to result in participants entering long-stay care. However, meta-analysis was not done due to heterogeneity among the studies in terms of variation in how institutionalisation was quantified ▪ patient and carer satisfactions were reported each separately in one trial only ▪ meta-analysis of five studies showed that supported discharge was beneficial in terms of the number of participants who were at home at the end of follow-up. | <ul style="list-style-type: none"> ▪ studies included were not bias-free as mentioned by the authors ▪ relative certainty that more older people remained at home six to 12 months after admission if their discharge had been supported ▪ uncertainty about the effect of supported discharge ▪ there was an absence of thorough research data on functional status, patient and carer satisfaction. <p>Outcomes continued</p> <ul style="list-style-type: none"> ▪ no clear pattern among the eight studies that provided information about hospitalisation was reported. |

Table 8. Supported discharge (stand-alone teams offering intensive home-based rehabilitation, education, treatment or support for a finite period) upon hospital discharge (continued)

| Study citation, source and design | Study sample, inclusion and exclusion criteria | Service design features | Interventions and Outcomes | Comments |
|--|--|--|---|---|
| <p>Martin et al. (1994)</p> <p>RCT with 12 months of follow-up</p> <p>London, UK</p> <p>Grade Level: III-1</p> | <p>29 patients received Home Treatment Team (HTT), mean age 80 years, 83% women.</p> <p>25 patients received conventional community services, mean age 83 years, 80% women.</p> <p>Inclusion criteria Not specified.</p> <p>Exclusion criteria Patients headed two people to assist in transferring to from bed, chair or commode.</p> | <p>Service and study description The HTT team was designed for patients who, after acute medical treatment and rehabilitation, were thought still to be at risk of failing to manage at home with the usual community services, but likely to manage with these services after further recovery within 6 weeks.</p> <p>The HTT consisted of a nurse manager, and ten unqualified health care assistants. The ward teams and HTT nurse manager prepared a care plan for each patient, using a domiciliary visit to identify the objectives for rehabilitation at home. The HTT worker visited the patient up to 3 times daily for up to 6wks. The team withdrew at 6wks or earlier if the patient could then manage with conventional community services (home care, district nursing, day care, etc). Patients with medical problems turned to their GP, although the team had easy access to the hospital elderly care unit if necessary.</p> <p>Conventional community services not described but examples are home care, district nursing, day care, etc.</p> | <p>HTT compared with conventional community services with respect to:</p> <ul style="list-style-type: none"> ▪ patients place of residence at 6 weeks and 12 months ▪ rates of hospital readmission and number of days spent in hospital and at home during 12 weeks, and 12 months ▪ at 6 and 12 weeks, significantly fewer HTT patients were readmitted than controls. More were at home than control at 6 weeks, 12 weeks and 12 months ▪ HTT group spent fewer days in hospital than controls during 12 weeks and more days at home during 12 months ▪ there were no significant changes in mental state or functional abilities over 12 weeks for both groups ▪ cost-effectiveness analysis showed a significant difference in the use of hospital bed between the groups, with reduction in both the use of acute hospital beds and in continuing care. | <ul style="list-style-type: none"> ▪ differences in mean age and in use of services prior to hospital were small but all in the direction to predict a poorer outcome for the control groups ▪ trends of differences in personal and social characteristics (though not statistically significant) may have reflected a greater degree of dependency among the control group ▪ randomisation method described, but the researcher who collected data and carried out all assessment was not remained blind to the treatment group of the patients ▪ inadequate description of the control group conventional care ▪ validity reported for one assessment tools, and referenced for the others, reliability not mentioned ▪ missing data reported. |

Table 8. Supported discharge (stand-alone teams offering intensive home-based rehabilitation, education, treatment or support for a finite period) upon hospital discharge (continued)

| Study citation, source and design | Study sample, inclusion and exclusion criteria | Service design features | Interventions and Outcomes | Comments |
|---|--|--|--|---|
| <p>Parker et al. (2002)</p> <p>A systematic review of clinical trials relating to interventions to improve the discharge of older people from inpatient hospital care.</p> <p>HTA, UK</p> <p>Grade Level: I</p> | <p>Twenty-four databases, providing coverage of health and social sciences literature, grey literature and current research were searched including Medline, Cochrane Library, Cinahl, Embase, HealthSTAR, and others for published and unpublished clinical trials, and with no date limits.</p> <p>Overall 6,972 papers were identified, of which 366 underwent a dual quality and relevance process, resulting in 76 papers for data extraction. Further to full data extraction five studies were excluded ending in 71 studies included, 54 RCTs.</p> <p>In general, the inclusion criteria were RCTs evaluating an intervention intended to modify discharge in patients experiencing discharge from inpatient hospital care, studies that included patients over the age of 65 years experiencing discharge from inpatient hospital care and studies undertaken in an inpatient hospital or in the community after discharge from inpatient hospital care. Studies were only eligible if they described at least one of mortality, length of stay, readmission rate, health status, patient and/or carer satisfaction, use of health and social care resources, and costs.</p> <p>Discharge planning Six RCTs on (4 of them excluded subjects who did not have access to a telephone, were cognitively impaired or were unable to speak English.</p> <p>Inclusion criteria All RCTs included in this section tested the effect of interventions involving standardised actions or interventions carried out by an individual, including assessment, coordination and implementation of the discharge plan, which projected needs post-discharge with the aim of preventing unnecessary readmission, maintaining the health status of patients or lessening the burden on carers. The review included evaluations of discharge planning protocols for patients aged 65 years and over.</p> | <p>Service and study descriptions</p> <p>Four categories of intervention were defined:</p> <p>Discharge planning The intervention delivered in hospital by a single professional usually a specialist nurse. Most studies included some form of follow-up (home visit, by telephone or both) after the patient had been discharged from hospital.</p> <p>Discharge support arrangements The interventions were intended to provide an enhanced level of support around the time of discharge and, often, subsequently. They include 'early discharge' schemes, although not all the interventions were specifically designed to hasten discharge, the interventions may be limited to post-discharge telephone contact at one extreme, or, at the other extreme, involve teams of professionals providing services in the patient's home after discharge from hospital.</p> <p>The other two types of interventions were comprehensive geriatric assessment (CGA) programmes and education interventions. CGA programmes were assessed through this review in terms of their impact on the outcomes of older people undergoing discharge from hospital. The effectiveness of the education interventions was addressed within this review in improving aspects of the discharge of older people from inpatient hospital care. Both interventions within this systematic review are beyond the scope of this review thus details will not be reported here in this evidence table. However, will report the outcomes from the combined analysis that included these interventions</p> | <p>Discharge planning</p> <p>Mortality (6 studies), readmission (6 studies), LOS (7 studies), physical function (2 studies), Mental function (1 study), service use (1 study), cost to service (4 studies), satisfaction (1).</p> <p>The data suggest that generally the initial length of stay in the study groups is shorter and there is a lower readmission rate, with a greater number of days between discharge and readmission. However, the data are not statistically significant.</p> <p>Discharge support arrangements</p> <p>Mortality Was reported in 17 of the trials. There appears to be little difference between the subjects receiving discharge support and those receiving conventional hospital-based alternatives (at 3, 6, and 12 months following discharge).</p> <p>Index length of stay Was reported in six trials, and they did not show a significant effect of the intervention on length of stay.</p> <p>Readmission To hospital was reported in 18 of the trials in forms of number of readmission episodes and the duration of hospital bed use after readmission. There was a statistically significant relative risk reduction in the risk of being readmitted.</p> | <p>This review is a comprehensive one with strengths based on the methodology and method of classification of the interventions (referenced to be within the framework of interventions of the Cochrane Collaboration EPOC group). The majority of studies included in the review reported the results of evaluation which would come under the EPOC category of organisational intervention.</p> <p>Inter-rater agreement was calculated for the dual-assessed abstracts, and results indicated moderate reliability between the researchers.</p> <p>The heterogeneity of outcomes reported between studies as well as the differences in the way the same outcomes were reported by these studies might have limited the synthesis of outcome data derived from the included studies.</p> |

Table 8. Supported discharge (stand-alone teams offering intensive home-based rehabilitation, education, treatment or support for a finite period) upon hospital discharge (continued)

| Study citation, source and design | Study sample, inclusion and exclusion criteria | Service design features | Interventions and Outcomes | Comments |
|---|--|---|---|--|
| <p>Shepperd (2001)</p> <p>A Cochrane Database of Systematic Reviews</p> <p>Oxford, UK</p> <p>Grade: Level I</p> | <p>As well as reference lists of articles, nine main databases were used to search for identification of studies from 1966 onwards with an update using the EPOC specialised register based in Aberdeen, UK, last searched on January 2001. Unpublished studies were obtained by contacting providers and researchers within and outside the UK.</p> <p>16 RCTs, included.</p> <p>11 trials the study populations were elderly medical patients, three trials recruited patients following elective surgery, two trials recruited patients with a terminal illness, and a final trial recruited patients with a mix of surgical and medical conditions.</p> <p>Inclusion criteria RCTs (of patients aged 18 years and over) comparing hospital at home with acute hospital in-patient care. Hospital at home has to offer a specific service to patients in their home, which requires health care professionals to take an active part in the patient's care. If hospital at home did not exist then the patient would be admitted to or remain in an acute hospital ward.</p> <p>Studies were included if standardised validated instruments were used to measure subjective outcomes.</p> <p>Exclusion criteria Services providing long-term care; services provided in outpatient settings or post discharge from hospital; self-care by the patient in their home, for example the self-administration of an intra-venous infusion.</p> <p>Trials were excluded if outcomes were assessed by 'opinion'.</p> | <p>Service and study design</p> <p>Schemes include: community-based HAH, hospital based HAH, hospice at home HAH, early discharge HAH, and, admission avoidance HAH.</p> <p>HAH schemes that provide admission avoidance function (3 trials).</p> <p>13 trials evaluated HAH schemes that provided care following early discharge from hospital, two of these trials included early discharge and admission avoidance function.</p> <p>In all but two of the trials, care was provided in the patients' home by community services, the two trials care was provided by a hospital based stroke team in conjunction with community-based services. In another trial a physician based in secondary care co-ordinated the HAH service, although care was provided by community services.</p> <p>Physiotherapy care was provided by 10 of the interventions, OT care by eight of the intervention.</p> <p>A social worker was part of the HAH team in three of the interventions, and one intervention included a dietician.</p> <p>Access to speech therapist was described in four of the interventions. One trial described access to a cultural link worker.</p> <p>In four trials, 24 hour care was not available as part of the intervention.</p> | <p>The intervention of interest was HAH and the objective of the review was to assess the effects of hospital at home compared with in-patient hospital care.</p> <ul style="list-style-type: none"> ▪ various outcomes were reported within the review among different groups of patients ▪ early discharge for elderly medical patients (9 trials) ▪ only in data combined from two trials there was a significant reduction hospital LOS ▪ in terms of use of other health services, two separate trials, one reported significant increase in the use of home care at six week follow-up by those allocated to hospital care. The other trial reported an increase in referrals for social support for those allocated to HAH ▪ one trial reported a significant increase in cost for GP home and surgery visits in those allocated to HAH ▪ early discharge of patients following elective surgery (4 trials). | <p>A Cochrane systematic review.</p> <p>Methodological qualities of the studies included were judged according to criteria by EPOC. In seven trials the method of randomisation and concealment allocation was clearly described, five trials used sealed envelopes and other three did not describe the method of randomisation.</p> <p>The different measures of patient assessed outcome used in the trials limited meta analysis to mortality, readmission rates, and LOS).</p> <p>The type of care the control group used was not clearly described for the majority of the trials. Also the response rate from the hospital group (control) was poor.</p> <p>The review included studies with population aged from 18 years and over so was not specifically for older age groups.</p> <p>Review included follow-up times varied across the different trials (24 hours to 2 years and 4 months).</p> |

Table 8. Supported discharge (stand-alone teams offering intensive home-based rehabilitation, education, treatment or support for a finite period) upon hospital discharge (continued)

| Study citation, source and design | Study sample, inclusion and exclusion criteria | Service design features | Interventions and Outcomes | Comments |
|--|--|-------------------------|--|---|
| <p>Shepperd (2001)</p> <p>A Cochrane Database of Systematic Reviews</p> <p>Oxford, UK</p> <p>Grade: Level I</p> <p>(Continued)</p> | | | <ul style="list-style-type: none"> ▪ in terms of patient satisfaction only one trial reported significant results compared to those staying in hospital. In terms of carer satisfaction only one trial reported this with less satisfaction in the early discharge group compared to the control group ▪ with health service resources and Cost, data combined from two trials revealed significant reduction in hospital LOS for patients allocated to the HAH compared to control. <p>Admission avoidance schemes (3 trials).</p> <ul style="list-style-type: none"> ▪ one trial reported reduction in median LOS in HAH group. other showed an increase in the LOS for the control group ▪ care of terminally ill patients (2 trials) ▪ no significant differences between the two groups were revealed at all levels. | <ul style="list-style-type: none"> ▪ some trials included medical patients, or patients recovering from surgery (e.g., women recovering from hysterectomy although the reviewers did report an exclusion of these women from the analysis). <p>In summary Meta analysis revealed that early discharge hospital at home reduced hospital length of stay, but the provision of hospital at home offset this reduction by increasing to total length of care for schemes providing early discharge care. Admission avoidance schemes achieved a reduction in total length of stay.</p> <p>Trials evaluating hospital at home for elderly patients with a mix of medical conditions and those recovering from elective surgery failed to detect a difference for patient health outcomes</p> |

Table 9. Services that provide for case management of older people

| Study citation, source and design | Study sample, inclusion and exclusion criteria | Service design features | Interventions and Outcomes | Comments |
|---|--|--|--|--|
| Bernabei (1998) RCT with 1 year follow-up Roverto, Italy Grade Level: II | 99 older people (mean age 81y, 71% women), already receiving conventional community care services, randomly allocated to receive integrated social and medical care and case management. Whereas the remaining 100 older people (mean age 81y, 71% women), received conventional care. People aged 65 and over, who received home health services or home assistance programmes because of multiple geriatric conditions. (No information on inclusion or exclusion). | Service and study description Subjects were randomly assigned to either: receive primary and community care with the conventional and fragmented organisation of services (GP regular ambulatory and home visits, nursing and social services, home aids and meals on wheels). OR Receive case management and care planning by the community geriatric evaluation INIT and general practitioners. | <ul style="list-style-type: none"> ▪ survival analysis showed that admission to hospital or nursing home in the intervention group occurred later and was less common than in controls ▪ health services were used to the same extent, but control subjects received more frequent home visits by GPs ▪ the intervention group had improved physical function (in terms of daily living score), and showed a decline of cognitive status. | <ul style="list-style-type: none"> ▪ although randomised study blinding not mentioned and both patients and physicians were aware of the ongoing project ▪ small sample size ▪ no information on validity of outcome assessment measures although these were referenced |

Table 9. Services that provide for case management of older people (continued)

| Study citation, source and design | Study sample, inclusion and exclusion criteria | Service design features | Interventions and Outcomes | Comments |
|---|--|---|---|----------|
| <p>Challis et al. (1991a & 1991b)</p> <p>Quasi-experimental comparative study with six and 12 months of follow-up.</p> <p>UK</p> <p>Grade: Level IV</p> | <p>101 older people were discharged to the Darlington Project (36 men, 65 women) with an average age of 80 years, mean LOS of 123 days. The control group were 113 older people (40 men, 73 women) with an average age of 81 years and mean LOS of 305 days.</p> | <p>Service and study description The intervention of interest was an intensive case management and care at home compared to long-term hospital care for frail elderly discharged from geriatric or acute medical wards assessed as needing long-term residential care (third of them were stroke).</p> <p>The project provided a community-based alternative to hospital care, the experience through time of project was compared with two other groups of carers (attending day hospital and receiving the usual range of health social services).</p> <p>The project team consisted of a project manager, three service managers (act as case managers), and a team of home care assistants. Case managers were members of the geriatric multidisciplinary team through which all referrals were directed. Geriatric multidisciplinary team do the referral, assessment and review of clients and consist of medical, hospital and community nursing staff, social workers, paramedical staff and the service managers from the project.</p> | <ul style="list-style-type: none"> ▪ most patients in both groups had been in hospital for two years or less ▪ statistically significant longer LOS for control than the project group at the baseline characteristics ▪ in terms of placement at six and 12 months after discharge for the project, 2/3 of the experimental group were still in their homes after six months and only three people were in institutional care. Over half of the intervention group were still at home after 12 months. These were statistically significant ▪ slightly lower mortality among the intervention group than control ▪ higher quality of life and user satisfaction. However no effect on carer burden ▪ slightly fewer acute hospital admissions ▪ overall lower cost. | |

Table 9. Services that provide for case management of older people (continued)

| Study citation, source and design | Study sample, inclusion and exclusion criteria | Service design features | Interventions and Outcomes | Comments |
|--|---|--|--|--|
| <p>Evans et al, (1995)</p> <p>Descriptive data A descriptive study, (before-after), 8 months of follow-up.</p> <p>Pennsylvania USA</p> <p>Grade Level IV</p> | <p>Eligible persons were older people aged more than 65, with complex health problems and are living at home.</p> <p>Inclusion criteria Although the criteria were not specified the service was designed for those chronically ill older adults who need more than simple outpatient rehabilitative services and who are not appropriate candidates for inpatient rehabilitation.</p> <p>Exclusion criteria Was not specified.</p> | <p>Service and study description An outpatient interdisciplinary service designed for community-dwelling, chronically ill older adults, The CARE program (Collaborative Assessment and Rehabilitation for Elders).</p> <p>Overall clinical services and operations are managed by a masters-prepared gerontologic nurse practitioner (GNP). The interdisciplinary team forms of clinical staff and faculty from the relevant rehabilitation departments in the hospital of Pennsylvania, also three departments in the school of medicine and the school of nursing, all directed by the GNP.</p> <p>The team provides care on a day-to-day basis, and for each client a GNP also serves as care manager, coordinating, monitoring, and providing care in close collaboration with team members as well as with the medical director and the client's own primary care provider.</p> | <p>In the first month of operation of the CARE program:</p> <ul style="list-style-type: none"> ▪ the program received 97 referrals, and admitted 53 clients ▪ clients were on average 78 years of age, 77% were women and 58% black ▪ the average stay in the program was 6 weeks, FIM (functional Independence Measure) scores, improved a mean of 2.4 points but these were found to lack sensitivity to the functional improvements achieved by clients. | <ul style="list-style-type: none"> ▪ this study is a descriptive study ▪ no comparison group to evaluate the effect of the program ▪ inclusion and exclusion criteria were not specified ▪ three obstacles identified by the author that faced the program, these were the establishment of a nurse-managed practice with the cooperation of the Medical centre, financial obstacle, and the establishment of a steady referral stream ▪ the program was too small to justify the expense of its own van. |

Table 9. Services that provide for case management of older people (continued)

| Study citation, source and design | Study sample, inclusion and exclusion criteria | Service design features | Interventions and Outcomes | Comments |
|---|---|--|--|---|
| <p>Fitzgerald, (1994)</p> <p>RCT with 1 year follow-up</p> <p>University-affiliated Veterans Affairs medical centre</p> <p>Midwestern city, USA</p> <p>Grade Level: III-I</p> | <p>333 men aged ≥ 45y (mean age 64y) who were discharged from the general medicine inpatient service, were randomly assigned to receive the intervention (a nurse case manager). Whereas 335 men (mean age 64y) were randomised to receive the usual care provided to any patient eligible for care at the VA hospital as a control group.</p> <p>Inclusion criteria Aged ≥ 45y; discharged home from a general medicine inpatient service between Nov.1, 1988 and October 31 1990; access to a telephone; received primary care in the hospital's clinic; and lived in the primary service area of the hospital.</p> <p>Exclusion criteria < 60 days to live.</p> | <p>Service and study description</p> <p>A nurse case manager was assigned to each intervention patient at hospital discharge. The role included instructing patients about their medical problems, and identifying and fulfilling unmet social and medical needs with standard or alternative sources of care. Within 24hours of discharge case managers mailed educational materials and access information, and within 5 days called intervention patients to review and resolve unmet needs, early warning signs, barriers to keeping appointments, and re-admissions. (further details are in page 1723 of the article)</p> <p>The control group patients received the usual care provided to any patient eligible for care at the VA hospital including standard discharge planning available to all inpatients during the course of any admission.</p> | <p>Case management vs usual care:</p> <ul style="list-style-type: none"> ▪ intervention patients made 15% more outpatient visits per month to the general medicine clinic ▪ no significant differences between the two groups in non-elective re-admissions, readmission days, or total re-admissions. | <ul style="list-style-type: none"> ▪ significant baseline differences between the two groups in physical health rating score and days spent in hospital in the previous 6 months ▪ method of randomisation was not adequately described ▪ it was not clear whether study investigators were blinded to group allocation for outcome assessment ▪ assessment tools for baseline and outcome measures were referenced, no information on validity ▪ limited generalisability of results of study to the NZ context as almost entirely male participants in USA Veterans health care setting. |

Table 9. Services that provide for case management of older people (continued)

| Study citation, source and design | Study sample, inclusion and exclusion criteria | Service design features | Interventions and Outcomes | Comments |
|---|---|--|--|--|
| <p>Gagnon et al. (1999)</p> <p>RCT, single blinded with 10 months of follow-up.</p> <p>Montreal,</p> <p>Canada</p> <p>Grade: Level II</p> | <p>427 Canadian community-living frail older persons 70 years and older and at risk for repeated hospital admission. 212 patients were allocated to the intervention (Nurse Case Management "NCM") mean age 81 years, and 43% males. 215 patients were allocated to the control group (Usual Care "UC"), mean age 82 years, and 41% males.</p> <p>Inclusion criteria Age 70 years or older, discharged home from the hospital ED, living in the catchment areas of two (specified) community health centers, speaking English or French, passing the abbreviated Mini-Mental State Exam, requiring assistance with at least one ADL (QARS-ADL scale) or two instrumental ADLs (QARS-IADL scale), and having a probability of 40% or more of admission to hospital as defined by the Boulton assessment tool (measuring self-rated health, admission to hospital in previous 12 months, physician or clinic visit in previous 12 months, ever history of cardiac disease, and current availability of caregiver).</p> <p>Exclusion criteria Admission to the ED from a LTC facility or nursing home, participation in other research studies, currently followed by the geriatric team of the hospital, unavailable for two or more months during the period of the study, having a partner already participating, and hospitalisation at the time of contact.</p> | <p>Service and study description The intervention of interest was a nurse case management (NCM). This consists of coordination and provision of health care services by experienced geriatric nurses, both in and out of the hospital for a 10-month period.</p> <p>The nurse case managers were expected to integrate care from a health maintenance and promotion perspective. This included supporting the older people and their caregivers during times of transition related to health status, environmental changes, and changes in resource needs. The nurse case manager coordinated the work of all health care providers involved in the care of the older persons in order to create and implement a responsive plan of care. During hospitalisation, older people were placed on the Promotion of Autonomy Intervention Framework which consists of a structure of assessments and interventions mapped against a time line and associated with appropriate outcomes to promote the functional autonomy of older adults.</p> <p>Baseline data were obtained during a series of early visits with the older person and, as much as possible, with his or her informal caregiver. During this early period the nurse focused on responding to the strengths and coping abilities of the older person while encouraging his or her maximal autonomy. A monthly phone call and a home visit every six weeks were the minimum standard for all nurse case managed patients. Any additional follow-up was usually by telephone contact although home visits were made when the nurse case manager deemed it appropriate. The control group received a usual care (UC) in which the hospital and community services were provided separately. Hospital care varied because it was determined by a variety of physicians, nurses, and other team members.</p> | <p>Nurse Case Management (NCM) versus Usual Care (UC)</p> <ul style="list-style-type: none"> ▪ no statistically significant baseline characteristics were identified between the two groups ▪ no statistically significant differences or clinically important trends were found in terms of quality of life, satisfaction with care and functional status between the two groups ▪ nurse case-managed patients had a significantly higher mean number of ED readmissions than their usual care counterparts ▪ the intervention group showed a slightly higher mean number of hospital admissions and longer length of hospital stay than the control group but these differences were not statistically significant. <p>Service and study description (continued) Community care was determined by whether the older person was known to the health centre. Definitions of frail and criteria for entry into the community health centres varied by centre.</p> | <p>Results of active treatment comparisons were similar to intention-to-treat analyses.</p> <p>All assessment measure tools were references.</p> <p>The results of the trial concluded that frail older people receiving NCM are more likely to use emergency health services without a concomitant increase in health benefits however, this should be noted with the following limitations:</p> <ul style="list-style-type: none"> ▪ threats to the Internal validity by the cross-contamination of the control that is contamination bias may have occurred ▪ larger sample size would have narrowed the wider confidence intervals in the results and thus improved the statistical power ▪ organisational factors such as lack of authority and credibility might have affected the strength of the intervention ▪ 72% of the subjects remained in the study. |

Table 9. Services that provide for case management of older people (continued)

| Study citation, source and design | Study sample, inclusion and exclusion criteria | Service design features | Interventions and Outcomes | Comments |
|---|---|---|--|---|
| <p>Landi et al. (2001a)</p> <p>Retrospective, before and after study with 12 month follow-up</p> <p>Four different health care agencies</p> <p>Italy</p> <p>Grade Level: IV</p> | <p>1,204 subjects in home care (mean age 77y, 58% female).</p> <p>Inclusion criteria All subjects who between January 1998 and June 1999, were identified as eligible for an integrated home care services delivered by four different Italian Health Care Agencies.</p> <p>Exclusion criteria Not specified.</p> | <p>Service and study description</p> <p>A model implemented within a national project integrates all the community-based services provided either by the health agency or by the municipality into one "single enter" center. The Community Geriatric Evaluation Unit, composed of a geriatrician, a social worker, a physiotherapist and nurses, jointly with the GP, has a key role in the long-term care eligibility determination process and coordinates and integrates services.</p> <p>The service was a home care program based on comprehensive geriatric assessment and case management. Case managers (registered nurses with geriatric nursing experience) as members of the geriatric multidisciplinary team direct all referrals, perform the initial and follow-up assessments and coordinate services delivery among the agencies.</p> <p>They performed CGA immediately after the request of home care using the Minimum Data Set for Home Care (MDS-HC).</p> <p>This tool used to assist the staff in charge of the patient in identifying all health and social needs. The study was undertaken to evaluate the impact of this program on hospital use (hospitalisations and days spent in hospital) during the first 12 months since the implementation of the home care, and to take advantage of the MDS-HC. More details on page 969 of the article.</p> | <p>Before and after study evaluating the implementation of a home care program compared to pre-implementation.</p> <ul style="list-style-type: none"> ▪ on average patients were diagnosed with nearly four clinical conditions ▪ there was a significant reduction of the number of hospitalisations associated with a reduction of hospital days at the individual patient level and for each admission ▪ further analyses (eliminating the deaths and patients admitted to the program directly after a discharge from hospital) showed similar significant reduction in hospitalisation and days spent in hospital ▪ a reduction of 27% in cost (i.e., a saving of US\$1200 for each patient). This was observed with all four health care agencies with no significant differences. | <ul style="list-style-type: none"> ▪ in this study no inclusion criteria specified so might introduce selection bias ▪ although the MDS-HC was well described, validity and reliability of the MDS-HC referenced, not documented ▪ this study reported consistent results with a previous RCT by the same author was based on a previous study (Bernabei, 1998). |

Table 9. Services that provide for case management of older people (continued)

| Study citation, source and design | Study sample, inclusion and exclusion criteria | Service design features | Interventions and Outcomes | Comments |
|--|--|---|--|---|
| <p>Lim et al. (2003)</p> <p>Prospective multicentre, single-blinded RCT with 6 months of follow-up</p> <p>Victoria, Australia</p> <p>Grade Level: II</p> | <p>Participants were aged 65 years and over, discharged between August 1998-October 1999 who required community services after discharge. Intervention: 311 patients mean age 76 y, 40% males received post-acute care (PAC) coordinator.</p> <p>Control group: 287 patients mean age 77, 43% males received usual hospital discharge planning.</p> <p>Inclusion criteria patients were in an acute ward more than 48 hours and were discharged home; expected to live at least one month post-discharge; and patients and carers were able to give informed consent.</p> <p>Exclusion criteria Patients admitted from or discharged to a nursing home or hostel; discharged from ED; and obstetric or psychiatric patients.</p> | <p>Service and study description</p> <p>The PAC coordinators role is to assess patients and help develop a discharge plan, provide more time and expertise than usually available. They also provide short-term case management including telephone follow-up as required; availability to patients, liaison with service providers, coordination of service provision; and ensuring adequate referral before discharge from the PAC programme.</p> <p>PAC coordinators were hospital-based staff with allied health or nursing backgrounds.</p> <p>Control group patients received usual hospital discharge planning, provided by ward nursing staff and the social work department. This is limited to several nursing visits per week as well as community services, such as delivered meals and housekeeping support.</p> | <p>PAC coordinator VS usual discharge planning.</p> <ul style="list-style-type: none"> ▪ no difference in mortality ▪ significantly greater overall QOL scores at one-month follow-up in PAC group ▪ no difference in unplanned readmissions ▪ PAC patients used significantly fewer hospital bed-days in the 6 months after discharge ▪ total costs (including hospitalisation, community services and the intervention) were lower in the PAC group than the control group. | <ul style="list-style-type: none"> ▪ single-blinded where the patients were aware of their study status ▪ no information on the reliability and validity of outcome assessment measures ▪ cost analysis used averages for costs rather than follow-up each individual and each component of admission and community service utilisation ▪ authors concluded that the PAC programme is beneficial in the transition from hospital to the community in older patients. however the study should be interpreted in light of these limitations. |

Table 9. Services that provide for case management of older people (continued)

| Study citation, source and design | Study sample, inclusion and exclusion criteria | Service design features | Interventions and Outcomes | Comments |
|--|--|---|---|--|
| <p>Naylor (1999)</p> <p>RCT with follow-up at 2, 6, 12, and 24 weeks.</p> <p>University hospital and medical centre in Philadelphia USA</p> <p>Grade Level: II</p> | <p>177 elderly people in the Comprehensive Discharge Planning CDP + case management (home follow-up) group included (mean age 75y, 54% men). 186 elderly people in the usual care group included (mean age 75y, 46% men).</p> <p>Inclusion criteria ≥65y old with a particular diagnosis (listed); admitted from own home; speak English; be alert and oriented; contacted by telephone after discharge; reside in the geographic service area; met at least one criterion associated with poor discharge outcomes (listed). More details on page 614 of the article.</p> <p>Exclusion criteria Not mentioned.</p> | <p>Service description and study description</p> <p>More details on page 614-5 of the article.</p> <p>The intervention extended from hospital admission through 4 weeks after discharge. An advanced practiced nurse (APN) assumed responsible for discharge planning during hospitalisation of patients and substituted for the visiting nurse (VN) during the first 4 weeks after the index hospital discharge.</p> <p>The nurse, in collaboration with the patients GP, individualises patient management within the bounds of the protocol. This included an APN visit within 48 hours of hospital admission; APN visits at least every 48 hours during the index hospitalisation; at least 2 home APN visits (1 within 48hours after discharge, a second 7-10 days after discharge); additional APN visits based on patients needs with no limit on number; APN telephone available; and at least weekly APN initiated telephone contact with patients or caregivers.</p> <p>Usual care group patients received discharge planning that was routine for older patients at study hospitals.</p> | <p>CPD+ case management (home follow-up) compared to usual care:</p> <p>Control group patients were more likely to be readmitted at least once than intervention group by week 24.</p> <ul style="list-style-type: none"> ▪ fewer intervention group patients had had multiple readmissions than control group ▪ the mean length of stay for readmitted patients in the control patients was higher than the intervention group ▪ time to first readmission was lengthened in the intervention group ▪ Medicare reimbursements for health services were lower for the intervention group patients than the control group. | <ul style="list-style-type: none"> ▪ baseline characteristics showed some differences between the 2 groups (intervention group predominantly men, and of higher education) but these were not significant ▪ the study targeted a selected group of older people at high risk for poor outcomes after hospital discharge ▪ randomisation method mentioned but not described. Apart from the information on blinding of researchers enrolling the patient for the study groups and hypotheses, it is not clear whether investigators were blinded to group allocation for outcome assessment or not ▪ validity and reliability of assessment tools not demonstrated although these were referenced ▪ high attrition rates at follow-up (total 28%), 30% in the intervention group, and 26% in the control group. Intention to treat analysis was performed and reported no effect on group comparability. |

Table 9. Services that provide for case management of older people (continued)

| Study citation, source and design | Study sample, inclusion and exclusion criteria | Service design features | Interventions and Outcomes | Comments |
|---|---|---|--|---|
| <p>Rich et al. (1995)</p> <p>Prospective randomised trial with a follow-up of 90 days.</p> <p>Jewish hospital at Washington University medical centre</p> <p>USA</p> <p>Grade Level: II</p> | <p>142 patients with congestive heart failure mean age 80years, 68% women, were randomly assigned to receive study treatment (nurse-directed, multidisciplinary intervention).</p> <p>140 older people (mean age 78 and with 59% women) received conventional care.</p> <p>Inclusion criteria Patients with a confirmed heart failure were eligible to participate in the study if they had at least one of the following risk factors for early readmission, as determined in a referenced previous study, prior history of heart failure, four or more hospitalisations for any reason in the preceding five years, or congestive heart failure precipitated by either an acute myocardial infarction or uncontrolled hypertension.</p> <p>Exclusion criteria Residence outside the catchment area of the hospital, planned discharge to a long-term care facility, severe dementia or other serious psychiatric illness, anticipated survival of less than three months, refusal to participate by either the patient or the physician, logistic or discretionary reasons.</p> | <p>Service description and study description</p> <p>The intervention of interest was a comprehensive and intensive education about congestive heart failure and its treatment by an experienced cardiovascular research nurse.</p> <p>The control group received conventional care consisted of all standard treatments and services ordered by their primary physicians.</p> | <p>The primary outcome measure was the survival for 90 days without readmission. This was achieved in 91 of the 142 patients in the treatment group, as compared to 75 of the 140 patients in the control group.</p> <ul style="list-style-type: none"> ▪ there were 53 readmissions for heart failure in the intervention group compared to 94 in the control group ▪ the number of readmission for other causes were not significant in the intervention group, 9 patients had more than one readmission compared to 23 patients in the control group ▪ in a subgroup of 126 patients quality of life scores at 90 days improved more from base line for the treatment group compared to control group ▪ the overall cost of care was reduced by US\$460 per patient in the treatment group. | <ul style="list-style-type: none"> ▪ adequate randomisation (computer generated) ▪ no evidence on blinding ▪ selective inclusion criteria with possibility of selection bias. This is an important limitation where generalisability of the results to other types of heart failure and other general older population are limited ▪ baseline characters were nearly similar except significant differences were seen at two variables, control group where younger, and heart rate was slower than the intervention group ▪ short follow-up period of time ▪ the multidisciplinary nature of the intervention makes it difficult to say which element is more important in reducing readmission and improving the quality of life. |

Table 9. Services that provide for case management of older people (continued)

| Study citation, source and design | Study sample, inclusion and exclusion criteria | Service design features | Interventions and Outcomes | Comments |
|---|---|--|---|--|
| <p>Riegel (2002)</p> <p>RCT with 6 months of follow-up</p> <p>Southern California, USA</p> <p>Grade Level: IV</p> | <p>Physicians were randomised (not the patients).</p> <p>130 patients, mean age 72y (46% female), received the intervention (telephone case management) by registered nurse.</p> <p>228 patients, mean age 75y (54% female) received usual care.</p> <p>Inclusion criteria Patients with a confirmed clinical diagnosis of HF as the primary reason for hospital visit, and who spoke either English or Spanish.</p> <p>Exclusion criteria Patients with cognitive impairment or psychiatric illness, severe renal failure requiring dialysis, terminal disease, discharge to a long-term care facility, or previous enrolment in an HF disease management program.</p> | <p>Service and study description</p> <p>Patients were identified at hospitalisation and assigned to receive 6 months of intervention (telephonic case management).</p> <p>Within 5 days after hospital discharge and thereafter patients were telephoned by a registered nurse using a decision support software. Refer to page 706 in article.</p> <p>Care for the control group (patients in the usual care) was not standardised, and no formal telephonic case-management programme was in existence, they presumably received some education regarding HF management prior to hospital discharge.</p> | <p>Telephone case-management VS usual care:</p> <ul style="list-style-type: none"> ▪ 46% lower HF hospitalisation rate in the intervention group at 3 months, and 48% lower at 6 months than the usual care ▪ HF hospital days and multiple readmissions were significantly lower in the intervention group at 6 months ▪ cost savings were reported with the intervention including cost of acute care compared to usual care ▪ patient satisfaction with care was higher in the intervention group. | <ul style="list-style-type: none"> ▪ the results of the study demonstrated that standardised nurse case management provided to an ill HF patient population by telephone during the early months after an HF admission can achieve significant cost savings, reductions in resource use, and increases in patient satisfaction ▪ in this study randomisation was done for the physicians and not the patients. Possible selection bias ▪ no information on blinding ▪ higher use of beta-blockers and lower incidence of chronic lung disease in intervention group. |

Table 9. Services that provide for case management of older people (continued)

| Study citation, source and design | Study sample, inclusion and exclusion criteria | Service design features | Interventions and Outcomes | Comments |
|--|--|---|---|---|
| <p>Weinberger (1996)</p> <p>RCT, 6 month follow-up</p> <p>9 Veterans Affairs Medical Centres</p> <p>Indianapolis, USA</p> <p>Both this article and Rich (1995) cited by Boulton et al. (1998), JAGS (Systems of care for older populations of the future).</p> | <p>695 veterans randomly assigned to receive an intensive primary care intervention, mean age 63y, 99% men.</p> <p>701 veterans received usual care, mean age 63y, 98% men.</p> <p>Inclusion criteria General medical patients with diabetes mellitus, chronic obstructive pulmonary disease, or congestive heart failure.</p> <p>Exclusion criteria Already receiving continuous care at a primary care clinic, receiving chemotherapy and other listed procedures, living in a nursing home, not speak English, cognitive impairment, no access to telephone, not give informed consent.</p> | <p>Service and study description</p> <p>Intervention: a model of care of an increased access to primary care to prevent readmission, composed of inpatient (before discharge) and outpatient (after discharge) components. The team consisted of a registered nurse and one primary care physician.</p> <p>Before discharge component: Within 3 days before discharge, nurse assessment for post discharge needs, and other needs of the patient provided to the primary care physician. The primary care physician visited the patient within 2 days before discharge for review, then the primary care nurse made an appointment for the patient to visit the primary care clinic within one week of discharge. After discharge component: the nurse call patient within 2 working days after discharge to assess potential difficulties, remind patient of follow-up appointment. Primary care physician and nurse reviewed and updated the treatment plans at the first post-discharge appointment.</p> | <ul style="list-style-type: none"> ▪ patient in the intervention group had significantly higher scores of readmission (0.19 vs 0.14) per month and more days of rehospitalisation (10.2 vs 8.8) ▪ intervention group patients were more satisfied with their care, but there was no difference between the study groups in the quality-of-life score which remained very low. | <ul style="list-style-type: none"> ▪ method of randomisation described. But not blinded ▪ included severely ill patient with major complications of their chronic disease and poor quality of life, so they were at high risk of readmission ▪ they more sick than the control group in the baseline ▪ assessment tools were referenced but no details on reliability and validity ▪ generalisability affected by the presence of systematic differences between the study patients and eligible patients who did not enrol. Authors said that 971 eligible patients declined to participate did not differ from the study patients during the 6 months after screening. |

Table 10. Services that are interventions involving home-based modifications

| Study citation, source and design | Study sample, inclusion and exclusion criteria | Service design features | Interventions and Outcomes | Comments |
|---|---|---|---|--|
| <p>Mann et al. (1999)</p> <p>RCT, single-blinded with 18 month follow-up.</p> <p>Western New York, USA</p> <p>Grade: Level II</p> | <p>Subjects (N= 104 home-based frail elderly persons, with 52 assigned to treatment and 52 to control group) were referred by one of these 3 sources: Community Alternative Systems Agency (n=49 with 20 allocated to treatment and 29 to control). Or Hospital physical medicine and rehabilitation programs (n=49, with 28 allocated to treatment and 21 to control). Or Western New York Visiting Nursing Association (n=6, with 4 allocated to treatment and 2 to control).</p> <p>All referred persons were mailed a letter explaining the study. All who responded favourably underwent an initial assessment.</p> <p>52 frail elderly, mean age 74.3 years, with 65.4% female were assigned to the treatment group.</p> <p>52 frail elderly, mean age 71.6 years, with 75% female were assigned to the standard care.</p> <p>Inclusion criteria Only elderly persons with scores greater than 23 on the Mini-Mental State Examination were included in the investigation.</p> <p>Exclusion criteria Not mentioned.</p> | <p>Service description</p> <p>Following a comprehensive functional assessment and evaluation of the home environment participants receive either: Intervention: (Assistive Technology AT and home Environmental Interventions EIs) based on the results of the evaluation. OR Control: (Usual Care UC services).</p> <p>Study description</p> <p>Intensive AT-EI Services A comprehensive functional assessment of the person and the home by an occupational therapist, recommendations for needed assistive devices and/or home modifications, training in their use, and continued follow-up with assessment and provision of AT-EIs as needs changed. An interdisciplinary team, which included a nurse and a technician experienced in home modifications, assisted the occupational therapist.</p> <p>Standard Care Includes no single "standard" home-based senior service, so there are:</p> <ul style="list-style-type: none"> ▪ medically directed services available after hospitalisation and rehabilitation ▪ nursing-directed services, which provide home health care aids and some medically, directed interventions ▪ primarily non-medical services provided through the Office for Aging agencies across the country. | <p>Outcome measures Functional status as measured by the Functional Independence Measure (FIM) and the Craig Handicap Assessment and Reporting Technique.</p> <p>Pain as measured by the Functional Status Instrument.</p> <p>Health care costs After the 18 months intervention period, the treatment groups showed significant decline for FIM total score and FIM motor score. There was significantly more decline for the control group.</p> <p>Functional Status Instrument pain scores increased significantly more for the control group.</p> <p>In a comparison of health care costs, the treatment group expended more than the control group for AT and EIs. The control group required significantly more expenditure for institutional care.</p> <p>There was no significant difference in total in-home personnel costs, although there was a large effect size. The control group had significantly greater expenditures for nurse visits and case manager visits.</p> | <ul style="list-style-type: none"> ▪ randomisation by means of a computer-generated table of random numbers ▪ initially, the subjects were taken from different sources with different source of medical services. Therefore, although the baseline characteristics were not significantly different between the groups the analysis was not done separately on different sources ▪ at the time of publication it was the only clinical trial on this subject so it is difficult to test comparability of methods, interventions and results with others. |

SECTION 3

Specialist Geriatric Service Guideline and Protocol Analysis

SUMMARY OF SECTION 3

The following is a descriptive overview of the key components of published evidence-based specialist service guidelines and protocols and limited specified expert opinion literature. No attempt has been made to appraise the quality of the publications or the evidence base.

SYNOPSIS

This section is a descriptive summary of actual and proposed health services and service frameworks for specialist geriatric health and hospital-community interface service models and expert opinion. The literature relating to service provision examples tends to be supported by underlying principles of geriatric care, common sense practice and anecdotal evidence, rather than on robust research evidence. Quality indicators are often suggested but have not been evaluated.

Most of the literature describes frameworks of services at a higher level of abstraction concerning service development programmes and service systems and processes appropriate to the principles of geriatric care rather than descriptions of actual services. This level of literature tends to focus on planning at governance level rather than on specific organisational criteria and implementation strategies.

Analyses of service descriptions shows a general consensus on principles of geriatric care and service themes:

- there is a strong focus on functional, social and needs assessment, which although beyond the scope of this report tends to underpin much of the rationale for service structure
- need for comprehensive geriatric services across acute care, post acute care, rehabilitation and long-term care whether integrated or separate
- geriatric care requires a high degree of collaborative, multidisciplinary and interdisciplinary care because of multi-comorbidities, functional and social impact of illness and polypharmacy
- a continuum of care model is supported
- focus on deinstitutionalisation and community and informal care
- specialist and comprehensive education in health care of older people is lacking across and between all disciplines and services – e.g., old age psychiatry and geriatric services
- need for comprehensive information systems that can manage vast complex clinical data with access by and between all health professions and care sites including primary, secondary and tertiary care
- increased, coordinated, global and flexible funding is required
- individualised care where patient, family and carer participation in planning and care management is maximised
- preference for home and community-based care and avoidance or deferral of admission to acute or long stay hospital care or residential care
- more support is required for voluntary and informal carers

- a flexible service integration of health and social services and public, private and voluntary sectors is required
- there are many recommendations for research into service development and care models
- an identified need for more prevention and screening
- need for funding for community services and equipment
- need for monitoring and quality improvement systems.

SEARCH STRATEGY METHODOLOGY

A systematic method of literature searching and selection was employed in the preparation of this review.

Searches were limited to English language material, there was no date restriction. The searches were completed on 9 May 2003.

The following databases were searched:

Bibliographic databases

- Cinahl
- Embase
- Index New Zealand
- Medline
- PsychInfo
- Science Citation Index
- Social Science Citation Index

Review databases

- Best Evidence
- Cochrane Library
- Database of Abstracts of Reviews of Effectiveness
- Health Technology Assessment database
- NHS Economic Evaluation database

The following professional colleges/associations were searched:

- New Zealand
- New Zealand Geriatrics Society
- CDHB
- Elder Care Canterbury

United Kingdom

- British Geriatrics Society
- British Society of Gerontology
- Health Services for the Aged

Australia

- Australian Department of Health and Ageing
- Australian Society for Geriatric Medicine
- Australian Association for Gerontology
- Aged and Community Services Australia
- Council on the Ageing
- Australian Department of Health and Ageing
- National Aged Care Alliance

Canada

- Health Canada
- Division of Ageing and Seniors

Other International

- American Association for Geriatric Psychiatry
- American Geriatrics Society
- The Gerontological Society of America
- The International Association of Gerontology
- National Association for Geriatric Service Providers and Educators (USA)
- National Institute on Ageing (USA)
- National PACE Association (USA)
- United Nations Program on Ageing
- WHO

Search engines

- SearchNZ
- Google

Search terms used

- index terms from Medline (MeSH terms): Health Services for the Aged, exp Societies, Medical, organizational policy, guidelines, practice guidelines, Health Planning Guidelines, Health Planning, Interprofessional Relations
- index terms from Embase: exp *elderly care, exp *health care delivery, *health care planning, *health care policy, medical society, exp *practice guideline, health service
- the above index terms were used as keywords in databases where they were not available and in those databases without controlled vocabulary
- additional keyword searches (not standard index terms): (polic* or statement*), ((health adj2 service*) adj3 (elderly or aged or geriatric)), position statement*, (service* adj3 (elderly or aged or geriatric)).

Table 11. Descriptive overview of published specialist geriatric health and hospital-community interface service models and expert opinion

| Publication title, author and origin |
|---|
| British Geriatrics Society (2003) Standards of medical care for older people England |
| Service concept, setting, staffing and other components |
| <p>Service interface and intermediate care</p> <ul style="list-style-type: none"> ▪ person centred care based on need assessment ▪ rapid response and access ▪ intensive care at home or "step up care" ▪ recuperation/rehabilitation at home or in residential care aimed at reducing need for continuing care ▪ timely access to geriatrician/old age psychiatrist input to facilitate access (GP in rural area) ▪ local protocol for process of accurate medical diagnosis involving primary care with active search for reversible causes ▪ MDT and old age consultant review in community or day hospital of patients receiving intermediate care ▪ focus on re-enablement and discharge from intermediate care process ▪ quality assurance programmes in place ▪ variety of type and level of service. <p>Palliative care</p> <ul style="list-style-type: none"> ▪ palliative care specialist nurses, doctors and counsellors in wards, hospice, community setting or at home ▪ symptom control, nursing care and emotional support ▪ staff education ▪ formal links with palliative care services and hospices regarding referral policy ▪ protocols for common symptoms – e.g., breathlessness and nausea. <p>Health promotion and preventative health care</p> <ul style="list-style-type: none"> ▪ information and education available to patients on lifestyle factors – e.g., nutrition, smoking, alcohol ▪ annual GP health check for those individuals over 75 years ▪ programmes to promote disability prevention – e.g., exercise to prevent falls and immobility. <p>Respite care</p> <ul style="list-style-type: none"> ▪ placement in NHS or social services dependent on need not means ▪ local policy on access to respite care ▪ viewed as an opportunity for ongoing assessment. <p>Outpatient appointment or community assessment</p> <ul style="list-style-type: none"> ▪ should occur within one week ▪ appointment on time or delay explained to patient ▪ GP to receive out patient information within one week. <p>Rehabilitation</p> <ul style="list-style-type: none"> ▪ to reach patients potential ▪ IDT approach ▪ patient centred and carer/family inclusive ▪ flexible programme inpatient, outpatient, home or community-based ▪ access to facilities. <p>Continuing care</p> <ul style="list-style-type: none"> ▪ long-term placement appropriate to needs – e.g., sheltered accommodation, residential home, nursing home, long stay care ward, innovative supported housing schemes ▪ full MDT assessment and consultant opinion before institutional placement ▪ patient to be informed, visits alternatives has choice and right of appeal against placement ▪ arrangements and transfer timely ▪ maximum level of independence autonomy maintained ▪ trained and skilled staff ▪ quality care that meets regulatory standards ▪ GP informed and provides continuing medical supervision ▪ dignity and privacy maintained ▪ consultant opinion/supervision available ▪ access to all health care. |
| Evidence or rationale |
| <p>Discharge planning</p> <ul style="list-style-type: none"> ▪ patient and carers informed, involved and agreeable to discharge arrangements ▪ arrangements made for continuing care as required, and communicated to and agreed to by primary care team, providers and GP ▪ written checklist of plan for continued care ▪ advice on medications and interim hospital supply ▪ staff focus on needs of older people ▪ post discharge home visit by primary health team or hospital MDT member as required ▪ immediate provision of discharge services on leaving hospital ▪ timely provision of equipment required ▪ statutory service framework provided by NHS and local partner agencies promote: <ul style="list-style-type: none"> - prediction and prevention programmes - acute assessment and diagnosis - MDT assessment, treatment, rehabilitation in intermediate or community-based care - prompt access to recovery and independence aids - multi agency supportive continuing care - palliative care - geriatrician responsibility for designing local policy and services. |

Table 11. Descriptive overview of published specialist geriatric health and hospital-community interface service models and expert opinion (continued)

| Publication title, author and origin |
|--|
| British Geriatrics Society (2003) Standards of medical care for older people England |
| Evidence or rationale |
| <p>Services for older people require</p> <ul style="list-style-type: none"> ▪ active partnership between primary and secondary health services and housing, social services, voluntary and private sectors ▪ integrated assessment before long-term care placement or intermediate care ▪ systems in intermediate care setting that ensure immediate acute assessment and specialist care if required ▪ staff training in care homes an essential priority. <p>Quality Indicators</p> <ul style="list-style-type: none"> ▪ evidence based ▪ common sense practice ▪ patients receiving input from palliative care teams ▪ use of medications for symptom control ▪ carer satisfaction with dying process. ▪ number of patients discharged to care facility without old age consultant assessment ▪ number of patients who are admitted to a "step up" (G) intermediate care service who do not return to previous residence or who are admitted acutely to hospital ▪ number of contacts with allied health professionals in care setting ▪ length of stay or treatment in intermediate care ▪ availability of single point of access to respite care. |
| Recommendations |
| <ul style="list-style-type: none"> ▪ none. |

Table 11. Descriptive overview of published specialist geriatric health and hospital-community interface service models and expert opinion (continued)

| Publication title, author and origin |
|---|
| British Geriatrics Society (1997a) NHS medical services for older people. England |
| Service concept, setting, staffing and other components |
| <p>Core policies</p> <ul style="list-style-type: none"> ▪ referral from GP includes assessment at patient's home ▪ dissemination of geriatric ward admission criteria to GP's administrators, health centres and junior staff ▪ policy on age and disability access to service criteria ▪ policy on management of mixed medical and psychiatric illness ▪ policy on respite care ▪ liaison procedures with other departments and specialities. <p>Rehabilitation</p> <ul style="list-style-type: none"> ▪ optimal recovery and appropriate reintegration ▪ Inpatient, outpatient or at home ▪ rehabilitation services for frail elderly, stroke and fractures should be incorporated into a generic geriatric rehabilitation ward. <p>Respite care</p> <ul style="list-style-type: none"> ▪ placement in NHS or social services dependent on need not means ▪ local policy on access to respite care ▪ viewed as an opportunity for ongoing assessment. <p>Outpatient appointment or community assessment</p> <ul style="list-style-type: none"> ▪ should occur within one week ▪ appointment on time or delay explained to patient. <p>GP to receive out patient information within one week</p> <ul style="list-style-type: none"> ▪ respite care a responsibility of NHS ▪ respite care can occur in long-term care facility or in a rehabilitation facility if therapy would be beneficial. <p>General outpatient clinics</p> <ul style="list-style-type: none"> ▪ hospital based outpatient clinics source of non emergency advice for GP for illness relating to multiple pathology and disability ▪ all geriatricians should have outpatient sessions for GP referrals and follow-up. <p>Special clinics in hospital or day hospital</p> <ul style="list-style-type: none"> ▪ for example, for Parkinson's disease, continence assessment, falls and syncope, and memory loss ▪ multidisciplinary and specialist medical, nursing and paramedical staff. <p>Day Hospital</p> <ul style="list-style-type: none"> ▪ functional and medical assessment ▪ multidisciplinary assessment ▪ short-term care – e.g., transfusions that would otherwise require admission ▪ rehabilitation of chronic physical conditions ▪ unique position at interface of hospital and community services assisting older people to stay at home. <p>Domiciliary assessment</p> <ul style="list-style-type: none"> ▪ when patient unable to attend because of medical functional condition ▪ assessment of function at home required. <p>Community and domiciliary services</p> <ul style="list-style-type: none"> ▪ access to services at home – e.g., community nursing, health visiting, continence advice, physiotherapy and occupational therapy, speech therapy, dietetics, chiropody. <p>Discharge home</p> <ul style="list-style-type: none"> ▪ core function of the ward MDT. <p>Continuing Residential Care and Respite Care</p> <ul style="list-style-type: none"> ▪ need for agreed criteria for NHS at local level ▪ efficient needs assessment needed ▪ facilities for long-term care appropriate ▪ patients should be under the care of a named geriatrician or psychogeriatrician. <p>Service interface and intermediate care</p> <ul style="list-style-type: none"> ▪ person centred care based on need assessment ▪ rapid response and access ▪ intensive care at home or "step up care" ▪ recuperation/rehabilitation at home or in residential care aimed at reducing need for continuing care ▪ timely access to geriatrician/old age psychiatrist input to facilitate access (GP in rural area) ▪ local protocol for process of accurate medical diagnosis involving primary care with active search for reversible causes ▪ MDT and old age consultant review in community or day hospital of patients receiving intermediate care ▪ focus on re-enablement and discharge form intermediate care process ▪ quality assurance programmes in place ▪ variety of type and level of service. <p>Discharge planning</p> <ul style="list-style-type: none"> ▪ patient and carers informed, involved and agreeable to discharge arrangements ▪ arrangements made for continuing care as required, and communicated to and agreed to by primary care team, providers and GP ▪ written checklist of plan for continued care ▪ advice on medications and interim hospital supply ▪ staff focus on needs of older people ▪ post discharge home visit by primary health team or hospital MDT member as required ▪ immediate provision of discharge services on leaving hospital ▪ timely provision of equipment required. |

Table 11. Descriptive overview of published specialist geriatric health and hospital-community interface service models and expert opinion (continued)

| Publication title, author and origin |
|--|
| British Geriatrics Society (1997a) NHS medical services for older people. England |
| Evidence or rationale |
| <p>Multidimensional nature of illness in older people demands a multidisciplinary team (MDT) approach</p> <ul style="list-style-type: none"> ▪ MDT collaboration, communication and discharge planning ▪ primary nurse is at the centre coordinating care and discharge ▪ patient centred and lead ▪ multidisciplinary case notes ▪ coordinated care ▪ no overlap ▪ realistic patient centred goals ▪ functionally orientated medical care complimentary to multidisciplinary care. <p>Commissioning of services</p> <ul style="list-style-type: none"> ▪ underpinned by cooperation and collaboration between primary health and social services including housing and voluntary sector and users ▪ strategy ▪ effective contracts ▪ knowledge base ▪ responsiveness to local people ▪ mature relationships with providers ▪ local alliances ▪ organisational capacity. <p>Provision of services</p> <ul style="list-style-type: none"> ▪ community care ▪ must compliment inpatient care ▪ must be responsive to acute emergencies ▪ must provide multidisciplinary assessment and rehabilitation ▪ requires well planned discharge from hospital ▪ cooperation and communication between hospital patient and statutory and voluntary agencies vital. <p>Policies in place for</p> <ul style="list-style-type: none"> ▪ discharge ▪ communication with community services and GP ▪ medication provision ▪ written information for patient on choices, plan and continuing care arrangements ▪ discharge communications received in less than 48 hours ▪ patient discharge satisfaction monitored ▪ number of failed discharges or delays due to equipment provision. |
| Recommendations |
| <ul style="list-style-type: none"> ▪ none. |

Table 11. Descriptive overview of published specialist geriatric health and hospital-community interface service models and expert opinion (continued)

| Publication title, author and origin |
|--|
| American Geriatrics Society (2000b) Care management position statement 2001 USA |
| Service concept, setting, staffing and other components |
| Care management <ul style="list-style-type: none"> ▪ a process of needs identification and health care service coordination and delivery that includes assessment, implementation and monitoring of health outcomes ▪ includes medical, functional, psychological and social domains of health care in the home, community, clinic, hospital, sub-acute and long-term care institutions ▪ individual case manager or team case management ▪ care manager may be a member of service provider organisation ▪ client and family are informed and participate in decision making ▪ communication with all services and individuals involved ▪ linked to the primary medical care provider or health professional – e.g., GP, nurse practitioner. |
| Evidence or rationale |
| <ul style="list-style-type: none"> ▪ increasing demand for complex, multidisciplinary medical and personal care with ageing population ▪ older people often require on going long-term care ▪ complex service provision requires central management and coordination ▪ scarce resources and competition for funding ▪ international focus on community care, informal care and de-institutionalisation ▪ assures appropriate use and allocation of health and social services coordinated with family-provided care ▪ encourages multidisciplinary participation communication, continuity and coordination of long-term care ▪ encourages multidisciplinary insight into client care across all domains of health care ▪ increases services, reduces unmet needs, increases confidence in receipt of care and increased life satisfaction for client ▪ empowers clients and promotes cultural sensitivity ▪ need more research in to case management model ▪ risk for under or over utilisation of services or conflict of interest between care managers and service providers if care manager is a member of the service provider organisation. Need third party quality assurance and utilisation review ▪ federal, state and private sources must recognise and support the role of care management teams to ensure quality and cost effectiveness ▪ critical that the care manager and team members have extensive specialist geriatric focussed knowledge and clinical experience and cultural awareness education. |
| Recommendations |
| <ul style="list-style-type: none"> ▪ none. |

Table 11. Descriptive overview of published specialist geriatric health and hospital-community interface service models and expert opinion (continued)

| Publication title, author and origin |
|---|
| American Geriatrics Society (2002) Improving the quality of transitional care for persons with complex care needs USA |
| Service concept, setting, staffing and other components |
| <p>Transitional care</p> <ul style="list-style-type: none"> ▪ coordinated and continuous planning for health care during transfer of patients between locations or levels of care – e.g., hospitals, acute, post acute and long-term nursing facilities, home, and specialist referral ▪ includes logistical arrangements, patient and family education and coordination among health care professionals in the sending or receiving patients with complex health care needs ▪ experienced health professional acts as transfer coordinator to oversee sending and receiving of patient and liaises with multidisciplinary care team and informal care providers ▪ patients and informal carers involved in planning and know what to expect at next care site ▪ care and management systems meet clinical needs of the patient and the operational needs of the health plan ▪ referral and transfer arrangements completed before transfer ▪ early evaluation of patient at receiving site ▪ personal health information must go with the patient or be accessible to new site – e.g., problem list, medications, medical alerts, advance directives, base line health status and cognitive function, contact information for family and formal and informal care providers. |
| Evidence or rationale |
| <ul style="list-style-type: none"> ▪ people with complex continuous health care needs require care from multiple services in multiple settings ▪ assures appropriate use and allocation of health and social services coordinated with family-provided care ▪ national trends for specialisation of health professionals increases risk for fragmentation of care in patients with multiple co-morbid conditions and complex care needs ▪ during transitions patients at risk for medical errors, service duplication and inappropriate or inadequate care. ▪ health professionals often work independently but care for the chronically ill needs to be a collaborative, multi disciplinary process ▪ communication between caregivers and between care givers and patients is critical to quality care ▪ need performance indicators of effectiveness of transitional care ▪ need monitoring by quality improvement entity ▪ need development of heterogeneous electronic data transfer systems between health care sites ▪ need financial incentives for provision of transitional care – e.g., Medicare benefits for inter-institutional or inter-professional communication for patient care plan coordination ▪ link payment to quality of care including transitional care ▪ need to educate health professionals in care planning, communication (telephonic, electronic and print), coordination, transfer and patient follow-up procedures. |
| Recommendations |
| <p>Recommended research</p> <ul style="list-style-type: none"> ▪ development of patient transfer systems and payment mechanisms ▪ patient and family participation in care preference and self-management including ethnic and racial considerations ▪ development of performance indicators and quality improvement technologies for transitional care ▪ Incentive strategies for improvement of transitional care ▪ Improve effectiveness of training of health care professionals in transitional care ▪ development of information technology systems that facilitate confidential information transfer. |

Table 11. Descriptive overview of published specialist geriatric health and hospital-community interface service models and expert opinion (*continued*)

| Publication title, author and origin |
|---|
| American Geriatrics Society (2000a) Ambulatory geriatric clinical care and services USA |
| Service concept, setting, staffing and other components |
| <p>Senior clinics</p> <ul style="list-style-type: none"> ▪ specialised ambulatory clinical care service centres for older adults providing primary care and health service coordination ▪ does not include dedicated specialist geriatric services – e.g., geriatric assessment clinics ▪ care coordinator or case manager, usually a nurse or social worker, facilitates and coordinates the interface between hospital, community based and home care services and interdisciplinary personnel ▪ emphasis on education, resources, information and facilitation of patient self management of chronic conditions ▪ vary widely in mission, scope, skill of providers and capacity ▪ private – e.g., GP or geriatrician and affiliated clinics. <p>Critical components for high quality senior clinics</p> <ul style="list-style-type: none"> ▪ primary and consultative care model a gold standard ▪ personnel trained in geriatric speciality ▪ interdisciplinary team for physical, social, functional and psychological needs ▪ access appropriate for elders with special needs ▪ geriatric focussed information systems ▪ geriatric focussed quality improvement systems ▪ financially viable for continuing care of elders. |
| Evidence or rationale |
| <ul style="list-style-type: none"> ▪ ageing population makes community-based health services an entrepreneurial opportunity and critical component of health care ▪ geriatric health care complex involves complex and multiple comorbidities, functional deficits, a high rate of mental health problems and complex management ▪ assures appropriate use and allocation of health and social services coordinated with family-provided care ▪ increased choice for elders in primary care services ▪ continuity of multidisciplinary care ▪ appropriate consultation referrals and follow-up ▪ improved clinical outcomes with integration between geriatric assessment and care implementation ▪ interdisciplinary facilitation and communication and decision making through information, communication and documentation systems ▪ need advanced and continuing specialist geriatric education and sensitivity to seniors for multidisciplinary team members. ▪ need special modification of premises access and facilities appropriate to health and mobility needs of elders – e.g., access and longer appointments ▪ need current critical data recorded in systems that can manage vast complex clinical data with access by and transfer to other appropriate sites ▪ need on going quality monitoring of defined health promotion, disease prevention and risk screening programmes for detection, evaluation and management of common conditions and functional disabilities – e.g., falls, incontinence and dementia ▪ need "innovative financial approaches" including expansion of Medicare and supplemental health insurance to include activities critical to complex care needs of elders – e.g., case management, palliative care and family conferences. |
| Recommendations |
| <ul style="list-style-type: none"> ▪ none. |

Table 11. Descriptive overview of published specialist geriatric health and hospital-community interface service models and expert opinion (*continued*)

| Publication title, author and origin |
|--|
| British Geriatrics Society (1997b) Seamless care - obstacles and solutions England |
| Service concept, setting, staffing and other components |
| <p>Reorganisation of services</p> <ul style="list-style-type: none"> ▪ introduction of an internal market in the health services ▪ split between purchasers and providers of health Care. Emphasis on purchasing secondary care from GPs not Health Authorities ▪ Health Authorities have been encouraged to split care into acute care services in hospital arm of their business and rehabilitation and continuing care in the community arm of their business. Potential to fragment services for elderly ▪ some HA (G) may provide both services through one business ▪ more emphasis required on rehabilitation and focus on frail elderly and continuing care rather than continued - emphasis on acute care – e.g., shortening hospital waiting lists by: <ul style="list-style-type: none"> - improving discharge arrangements for frail elderly - defining responsibilities for continuing care - balancing service provision including rehabilitation facilities - policies to avoid premature discharge - to provide for continuing care within the NHS (G) - provision of specialist medical and nursing support within community residential care and nursing homes ▪ LA (G) at the centre of purchasing for social and health care of the elderly (NHS and Community Care Act 1990) ▪ government supporting development of private residential and nursing sector has reduced long-term care in secondary care sector. Evidence of poor transfer of information. |
| Evidence or rationale |
| <ul style="list-style-type: none"> ▪ require a patient centre focus not a services focus to reduce the difficulty for elderly people moving between the compartments of the health care system ▪ need: easy transfer, effective communication, and integration ▪ splitting of acute and continuing care isolates the service ▪ health and social care budgets are separated ▪ barriers at the interface of hospital and community care and within hospitals ▪ older people have complex acute, rehabilitation and social needs that cannot be separated. |
| Recommendations |
| <ul style="list-style-type: none"> ▪ none. |

Table 11. Descriptive overview of published specialist geriatric health and hospital-community interface service models and expert opinion (continued)

| Publication title, author and origin |
|---|
| Royal College of Physicians of London (2001) Intermediate care for the elderly: the role of the specialist England |
| Service concept, setting, staffing and other components |
| <p>Need for specialist assessment and adequate medical workforce.</p> <p>Three key points on care pathway</p> <ul style="list-style-type: none"> ▪ responding to or averting a crisis ▪ rehabilitation following acute hospitalisation ▪ Long-term care provision. <p>Intermediate care</p> <ul style="list-style-type: none"> ▪ aimed at patients who would otherwise be admitted or face prolonged hospital stay or residential care ▪ based on comprehensive assessment and individualised care plan ▪ involves active treatment and rehabilitation ▪ maximise independence and promote ageing in place ▪ involve short-term intervention one to six weeks ▪ IDT single assessment ▪ recorded and shared protocols ▪ involved GP and MDT, care assistants and administrators ▪ shared care with GP and hospital specialists ▪ care protocols and care pathways identify responsibilities ▪ usually involves geriatrician or appropriate sub-speciality consultant – e.g., diabetes ▪ comprehensive geriatric MDT medical and psychosocial, functional, environmental assessment as basis of care and rehabilitation. <p>Complexity of geriatric medicine</p> <ul style="list-style-type: none"> ▪ non-ageist access to facilities ▪ recognition of altered and unusual presentation of health problems – e.g., immobility or incontinence promotes appropriate medical diagnosis and management rather than assigning symptoms to social causes, thus maximising opportunity for appropriate treatment and rehabilitation and use of resources ▪ specialist assessment and diagnostic tests before admission to intermediate care by hospital or community-based assessment teams or day hospital ▪ clear procedural documentation and communication. <p>Workforce</p> <ul style="list-style-type: none"> ▪ planned expansion extra NHS specialists is only equal to current expansion. Not enough trainees or old age consultants in the system and development of intermediate care requires extra. Does not take part time workers into account ▪ requires doubling of consultants by 2009 and increase in trainees ▪ quality care will involve partnerships between primary and secondary care providers and development of services in residential and nursing home sector ▪ requirement for GP training and participation in residential care identified ▪ physicians need to work with GP ▪ development of specialist primary care physicians. |
| Evidence or rationale |
| <ul style="list-style-type: none"> ▪ none. |
| Recommendations |
| <ul style="list-style-type: none"> ▪ none. |

Table 11. Descriptive overview of published specialist geriatric health and hospital-community interface service models and expert opinion (continued)

| Publication title, author and origin |
|---|
| British Geriatrics Society (2000) Discharge of elderly persons From hospital for community care England |
| Service concept, setting, staffing and other components |
| <p>Health and Social Care agencies must collaborate</p> <p>Principles and Values</p> <ul style="list-style-type: none"> ▪ least intrusive interventions ▪ patient/client choice ▪ highest quality health and social care ▪ early GP or MDT assessment and interventions can avoid hospital admission ▪ discharge planning begins on admission using guidelines in Hospital Discharge Workbook ▪ staff training in discharge procedure ▪ discharge ASAP or stay in non acute bed if required ▪ social service referral for complex social discharge with patient access after discharge ▪ reactivation of existing care package from provider by staff on discharge ▪ arrange for reassessment if needs changed ▪ coordination of assessments for MDT care plan ▪ emphasis on rehabilitation and independence with appropriate supports ▪ short-term respite/rehabilitation placement in residential care preferable long-term placement on discharge from acute care ▪ residential care funding based on agreed criteria between health authority and social services ▪ patients well informed and prepared for discharge. <p>The Hospital Experience</p> <ul style="list-style-type: none"> ▪ successful multi support service discharge requires designated leadership within and cooperation between providers, procedures and performance monitoring ▪ early involvement of patient and carers in discharge process and planning ▪ full MDT assessment including community-based health professionals for complex needs. ▪ all departments have access to discharge liaison nurses or social workers who can refer and discharge appropriately ▪ assessment needs based ▪ coordinated rehabilitation to continue in the community after discharge ▪ assessment basis of discharge care plans and service provision ▪ care plan completed before discharge and reviewed ▪ GP is responsible for medical needs of the patient and requires adequate information on discharge. <p>Role of consultant</p> <ul style="list-style-type: none"> ▪ MDT responsible for discharge planning under leadership of consultant geriatrician ▪ discharge strategy planning and staff training should involve consultant geriatrician ▪ also involved in planning and development of intermediate care and community services. |
| Evidence or rationale |
| <ul style="list-style-type: none"> ▪ older people with higher dependency levels and complex health and social care needs are being discharged into the community therefore requires good quality discharge ▪ requires improvements in quality screening and referral practice, distribution of care plans and review, joint continuing care arrangements and development of rehabilitation provision, performance monitoring, coordination and communication within the community-based health and social services. <p>Discharge checklist</p> <p>Hospital</p> <ul style="list-style-type: none"> ▪ accurate diagnosis and treatment ▪ information on social, environmental and accommodation status and baseline functional status ▪ early referral to social worker ▪ discharge coordinator identified – e.g., nurse ▪ patient centred MDT care planning ▪ provision of rehabilitation services ▪ communication recorded ▪ written discharge checklist ▪ pre-discharge patient education ▪ assessment of functional status ▪ early home assessment if required ▪ record of formal and informal support ▪ written discharge summary to GP ▪ care transfer plan ▪ transport and home reception arranged ▪ follow-up arrangements made. <p>Community</p> <ul style="list-style-type: none"> ▪ early access to community-based services ▪ high quality residential or nursing home care available if needed ▪ services include: 24/7 services, day care and day hospital, respite care, flexible service, night sitting and night surveillance, access to equipment and aids, early home adaptations, specialist advice regarding medicines, continence aids and laundry service, community physiotherapy and chiropody services, carer support, patient centred service, bathing service, safety monitoring systems, user friendly information service, joint agency monitoring information. |
| Recommendations |
| <ul style="list-style-type: none"> ▪ none. |

Table 11. Descriptive overview of published specialist geriatric health and hospital-community interface service models and expert opinion (continued)

| Publication title, author and origin |
|---|
| British Geriatrics Society (2001) Intermediate care. Guidance for commissioners and providers of health and social care England |
| Service concept, setting, staffing and other components |
| <p>"Care closer to home" Intermediate care</p> <ul style="list-style-type: none"> ▪ is non-hospital orientated community care ▪ should apply to all ages not just elderly ▪ includes clinical recovery, restoration of health rehabilitation, promotion of independence and palliative care. <p>Role of Geriatrician</p> <ul style="list-style-type: none"> ▪ acute diagnostic assessment and treatment ▪ non-acute community-based rehabilitation ▪ longer term support for disabled older patients. <p>Examples of Schemes</p> <p>Based on diagnosis, age or location or a mix.</p> <ul style="list-style-type: none"> ▪ community hospitals ▪ hospital at home schemes includes acute and post-acute treatment ▪ rapid response teams ▪ community assessment and rehabilitation ▪ nursing and residential home rehabilitation ▪ stroke rehab and outreach ▪ hospital hotels ▪ nurse led units ▪ on-Lok and PACE concept of continuing care in the community (USA). <p>Medical roles (includes consultant and GP)</p> <ul style="list-style-type: none"> ▪ medical arrangements must be explicit to ensure positive outcomes ▪ medical assessment, diagnosis and investigation ▪ medical care, prescribing, monitoring response, referral to specialists and input into MDT care planning and rehabilitation ▪ clinical standards, contribution to governance, auditing, training education and research ▪ professional accountability. |
| Evidence or rationale |
| <ul style="list-style-type: none"> ▪ supports collaboration between health and social services and integrated service provision ▪ avoids unnecessary admission to acute beds ▪ need rehabilitation services for elderly to avoid long-term nursing home placement ▪ evidence that geriatric assessment is more effective when specialists have ongoing responsibility for continuity of care. <p>Evidence</p> <ul style="list-style-type: none"> ▪ evidence is "patchy" due to variety of definitions of intermediate care ▪ local innovation shouldn't be accepted as good practice without clarification of objectives, outcomes and cost effectiveness ▪ schemes must have positive patient outcomes AND be cost effective ▪ evidence requires adequate clinical trials methodology. <p>BGS supports schemes that</p> <ul style="list-style-type: none"> ▪ complement, enhance or replace existing schemes ▪ are planned in an integrated way with appropriate health professionals input ▪ have clear goals, expectations and outcome measures ▪ clearly defined roles ▪ clear admission criteria with comprehensive pre-admission assessment ▪ IDT access ▪ IDT discharge planning ▪ explicit training requirements ▪ explicit governance arrangements ▪ clinical data collection and auditing and quality indicators. <p>Requires</p> <ul style="list-style-type: none"> ▪ precise definitions ▪ evidence of effectiveness ▪ access to trained staff and hospital services as required ▪ need increase in consultant geriatricians with significant or dedicated community activity. <p>Research</p> <ul style="list-style-type: none"> ▪ huge agenda for urgent research programmes and evidence regarding efficacy, financial and safety aspects ▪ development should relate to experience and research evidence ▪ take care not to dismantle established effective services ▪ access to existing hospital based facilities and services if required must be maintained. <p>Staffing</p> <ul style="list-style-type: none"> ▪ MDT mix of health and social services staff ▪ unqualified staff must be trained supervised and audited ▪ "gatekeeper" for patient admission to scheme must be skilled particularly with altered presentation and absence of symptoms common in older people with acute medical conditions. <p>Operational issues</p> <ul style="list-style-type: none"> ▪ what problem is it intended to solve – e.g., hospital admissions, better use of facilities ▪ what clinical need will it meet and what skill mix is required ▪ how does it fit in? For example, link with other services and primary care ▪ single point of access or management? |

Table 11. Descriptive overview of published specialist geriatric health and hospital-community interface service models and expert opinion (continued)

| Publication title, author and origin |
|--|
| British Geriatrics Society (2001) Intermediate care. Guidance for commissioners and providers of health and social care England |
| Evidence or rationale |
| <ul style="list-style-type: none"> ▪ staff responsibilities ▪ division of professional accountabilities? ▪ Provision of vicarious liability? ▪ training? ▪ risk assessment? ▪ Readmission criteria and arrangements ▪ medical assessment, reassessment and arrangements for ongoing care? ▪ staff and skill mix ▪ opportunity cost of establishment and longer term resourcing ▪ funding shift between NHS, Social Services, patients, families? ▪ longer term funding available ▪ contractual incentives and disincentives? |
| Recommendations |
| <ul style="list-style-type: none"> ▪ none. |

Table 11. Descriptive overview of published specialist geriatric health and hospital-community interface service models and expert opinion (continued)

| Publication title, author and origin |
|---|
| British Geriatrics Society Domiciliary assessment visits England |
| Service concept, setting, staffing and other components |
| Domiciliary assessment visits <ul style="list-style-type: none"> ▪ visit at home visit by specialist usually a consultant with GP to advise on diagnosis and treatment when patient cannot attend hospital (traditional definition outdated) ▪ assessment visit where patient is assessed at home for service referral, residential placement or admission. ▪ pre-admission home assessment useful in care of the elderly as a basis for subsequent discharge from hospital. Studies show that this type of visit is useful in geriatric care ▪ pre-admission screening or alternative to outpatient attendance/hospitalisation. |
| Evidence or rationale |
| Advantages of seeing patient in own home <ul style="list-style-type: none"> ▪ less threatening for patient ▪ patient and relatives less inhibited ▪ provides knowledge about home circumstances for future management ▪ essential for non-compliance with appointments. Referral process <ul style="list-style-type: none"> ▪ need improved information transfer ▪ use referral form including access and contacts ▪ direct contact between GP and consultant if possible ▪ detailed referral letter. Visit <ul style="list-style-type: none"> ▪ agreed time frame for urgent and non urgent requests ▪ attendance of other staff for education with patient consent ▪ communication time frames: <ul style="list-style-type: none"> - urgent phone same day, fax or letter within 24 hours - non-urgent within five working days ▪ consult with district nurse/social worker if relevant to management ▪ early access to other services may reduce need for home consultations ▪ requires regular auditing. |
| Recommendations |
| <ul style="list-style-type: none"> ▪ none. |

Table 11. Descriptive overview of published specialist geriatric health and hospital-community interface service models and expert opinion (continued)

| Publication title, author and origin |
|---|
| UK Department of Health (2001) Intermediate care England |
| Service concept, setting, staffing and other components |
| <p>Intermediate care</p> <ul style="list-style-type: none"> ▪ a core Government programme for improving services for older people ▪ increase in health and social services to promote independent living at home ▪ community-based services to avoid acute hospital admission, facilitate discharge and functional independence at home ▪ a seamless continuum of services linking health promotion, prevention, primary care, community health services, social care, support for carers and hospital care ▪ new services that ensure active recovery, rehabilitation and maintenance of independence for older people and other groups ▪ pooled budget between health and social services ▪ intermediate care is not long-term care or support, transitional care or part of acute hospital rehabilitation ▪ service provided in community in clients home or in "step down" (G) facilities on acute hospital sites. <p>Service models</p> <ul style="list-style-type: none"> ▪ rapid response 24 hour access to assessment, diagnosis and treatment/care/support in own home or in "step up" (G) facilities. Can be provided by day hospitals ▪ hospital at home, assessment and intensive support and treatment at home normally given in primary care ▪ residential rehabilitation, short-term admission of one to six weeks to a residential rehabilitation or care facility with MDT rehabilitation and assessment ▪ supported discharge, short-term at home nursing/therapy/home care. May work well in sheltered housing schemes ▪ day rehabilitation, short-term therapeutic support at day centre or day hospital ▪ intermediate care service coordinators provide information about services and develops access protocols and care pathways across health, housing and social services ▪ seamless service across agencies requires pooled funding ▪ funding is free at point of use for NHS services within suggested time constraints (up to six weeks) and councils have discretion to levy part or full charges if care is not an integral part of the care package or is already in place ▪ NHS to have underlying responsibility to ensure national consistency but services jointly planned and funded with the council. This may require some transfer of resources were the council already arranges some elements of care. <p>Role of the independent sector</p> <ul style="list-style-type: none"> ▪ opportunity for NHS and councils to develop services in partnership with voluntary and private sector ▪ model contracts for local health and social care partnerships are being developed ▪ Registration Authority to establish standards and incident and complaint procedures ▪ voluntary sector role in social support. |
| Evidence or rationale |
| <ul style="list-style-type: none"> ▪ identify the potential contribution of community equipment services and housing-based support – e.g., sheltered housing in preventing admissions and residential care ▪ workforce planning covering all agencies – i.e., health, social and independent services ▪ consider information requirements including electronic records to support single assessment process for health and social care. <p>Funding of equipment</p> <ul style="list-style-type: none"> ▪ NHS funding for community-based resources and equipment across integrated health and social services ▪ extra funding from NHS pooled service fund for council provision of support and intermediate care services including equipment provision ▪ local planning for intermediate care to reflect local circumstances ▪ earned autonomy and funds dependent on performance. <p>Planning</p> <ul style="list-style-type: none"> ▪ local health and social service planning to follow NHS guidelines ▪ data required on how investment and activity in intermediate care to be delivered including longer term planning including existing services and expected outcomes and workforce requirements. <p>Evaluation</p> <ul style="list-style-type: none"> ▪ including user/carer experience and clinical outcomes ▪ DOH commissioning research on cost-effectiveness of models of intermediate care and developing systems to national benchmarking and identifying and sharing examples of best practice |
| Recommendations |
| <ul style="list-style-type: none"> ▪ none. |

Table 11. Descriptive overview of published specialist geriatric health and hospital-community interface service models and expert opinion (continued)

| Publication title, author and origin |
|---|
| Aged and Community Services Australia (2002) Rural and remote service delivery models Australia |
| Service concept, setting, staffing and other components |
| Mixed service models/Multipurpose Services (MPS) <ul style="list-style-type: none"> ▪ flexible service model of integrated health services in rural and remote communities ▪ includes residential aged care, hospital care, other health care services, home and community care services, palliative care and paramedical services ▪ health and aged care services are combined ▪ coordinated, cost effective and flexible service delivery under single management structure. |
| Evidence or rationale |
| Problems <ul style="list-style-type: none"> ▪ small scale operation of independent services ▪ lack of aged care services ▪ isolation from mainstream services ▪ cost ineffectiveness of small scale services ▪ staff recruitment difficulties ▪ duplication of resources and infrastructure ▪ inflexible funding arrangements. Benefits <ul style="list-style-type: none"> ▪ enables communities to pool Commonwealth and State Government funds from health and aged care services ▪ aim to let remote communities determine their own priorities and to allocate resources ▪ shared administration services etc ▪ provides aged care services to areas that without services as MPS requires residential care ▪ pooled funding may result in aged care services propping up acute services. |
| Recommendations |
| <ul style="list-style-type: none"> ▪ none. |

| Publication title, author and origin |
|---|
| Davis (1993) Tairāwhiti assessment and support New Zealand Health and Hospital New Zealand |
| Service concept, setting, staffing and other components |
| Coordination of geriatric services for better quality care and support <ul style="list-style-type: none"> ▪ partnership with Department of Social Welfare ▪ area health board coordination of social welfare home help service ▪ networking with consumers and providers ▪ staff education and personal development plans ▪ clinical rather than generic service management ▪ shift of resources from institutional to community and rehabilitation services. |
| Evidence or rationale |
| <ul style="list-style-type: none"> ▪ poor staff morale ▪ no geriatric consultants ▪ no psychogeriatric service ▪ limited home support services. |
| Recommendations |
| <ul style="list-style-type: none"> ▪ none. |

Table 11. Descriptive overview of published specialist geriatric health and hospital-community interface service models and expert opinion (continued)

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| Publication title, author and origin |
| Laracy (1991) New Zealand Doctor Changes improve care for the elderly Auckland District Health Board New Zealand |
| Service concept, setting, staffing and other components |
| <ul style="list-style-type: none"> ▪ emphasis on rehabilitation, assessment, day care respite care and home services ▪ expanding role of the GP with deinstitutionalisation ▪ interdisciplinary approach essential ▪ close communication between all parties ▪ client advocacy ▪ decentralised services to promote access ▪ suggest geriatrician clinics in general practices. |
| Evidence or rationale |
| <ul style="list-style-type: none"> ▪ home assessment more useful and appropriate ▪ lack of funding for community organisations ▪ information available to GPs on services ▪ transport to health services needed ▪ subsidy anomalies. |
| Recommendations |
| <ul style="list-style-type: none"> ▪ none. |
| Publication title, author and origin |
| Edwards (2002) New Zealand GP Waikato's brave new world for the elderly New Zealand |
| Service concept, setting, staffing and other components |
| <p>Waikato DHB/AgeWise project – an integrated continuum of care</p> <ul style="list-style-type: none"> ▪ a district wide older person's network ▪ build on existing skills, agencies and providers ▪ coordination of services for older people ▪ centralised specialist treatment and rehabilitation ▪ single entry point via older persons assessment teams (OPATs) ▪ OPATs will link primary and secondary care ▪ entry point to health and disability services for older people ▪ rural outreach workers in rural areas to link rural communities into the system ▪ consumer input and consultation. |
| Evidence or rationale |
| <ul style="list-style-type: none"> ▪ to simplify access to health care for older people ▪ improve quality of communication between GPs and secondary care ▪ proposed funding transfer for older peoples services from MOH to DHB allows integration of primary and secondary services ▪ services no longer structured around funding streams ▪ structure around funding streams causes service gaps between primary and secondary services and secondary services and disability support services ▪ weakness in current primary /secondary care interface ▪ need to prevent inappropriate admissions and readmissions by plugging the gaps in service and information flow ▪ Increase accessibility to primary care ▪ community management of people who would otherwise be in hospital ▪ integration between services, disciplines, home support services and equipment provision ▪ keeping GPs informed about admissions and discharge and assessment outcomes so that early support is arranged. |
| Recommendations |
| <ul style="list-style-type: none"> ▪ none. |

Table 11. Descriptive overview of published specialist geriatric health and hospital-community interface service models and expert opinion (continued)

| Publication title, author and origin |
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| Coleman (2000a) Pace Programs Part 1 USA |
| Service concept, setting, staffing and other components |
| <p>PACE - Programs of all inclusive care for the elderly</p> <ul style="list-style-type: none"> ▪ focus on frail elderly eligible for nursing home placement ▪ centred on day centre where patients attend weekly for treatment and monitoring ▪ continuum of care from preventative services to primary and acute care for nursing home eligible people over 55 years who wish to remain in the community ▪ care provided at pace centre or at home ▪ 24 hour services with no limitations or conditions ▪ initial assessment then enrollees attend PACE adult day centre two to three times per week ▪ patients socialise, eat lunch, receive treatment and monitored for physical, functional and emotional decline ▪ see PAC#E physician monthly and reassessed by the team quarterly ▪ receive care at home, in the hospital or in the PACE centre ▪ patients who live alone are visited by home health providers ▪ services integrated and coordinated by multidisciplinary teams ▪ daily team meetings to discuss and monitor cases and to update care plans ▪ physicians team members not care leaders ▪ team care management model. <p>Goal</p> <ul style="list-style-type: none"> ▪ to stabilise chronic medical conditions optimising function and avoiding or delaying hospitalisation or long-term residential care. <p>Funding</p> <ul style="list-style-type: none"> ▪ all services provided in exchange for combined Medicare and Medicaid capitation payment. <p>Staffing</p> <ul style="list-style-type: none"> ▪ physicians, nurse practitioners, nurse case managers, social workers, nurse assistants and therapists ▪ pharmacy, hospital, homecare, immediate care facilities, skilled nursing facility, specialty physician and other care and support services are provided contractually ▪ some sites hire nurse practitioners in consultation with physicians to care for enrollees in nursing homes. <p>Services</p> <ul style="list-style-type: none"> ▪ audiology, dentistry, durable medical equipment, ED care, escort services, home health care, homemaker/chore services, hospital services, in-home services, inpatient specialists, laboratory tests/procedures, meals on wheels, medical specialist services, medical transportation/ambulance, nursing services, nursing home, nutritional counselling, optometry, personal care, physical, occupational/ recreational/ speech therapy, physician/nurse practitioner, podiatry, prescriptions, radiology services/procedures, social work, transportation ▪ individualised care including patient and family/carer input through family meetings/conferences. <p>Risk management</p> <ul style="list-style-type: none"> ▪ through aggressive preventative health practices and frequent clinical monitoring and judicious use of resources by the interdisciplinary team. <p>Referral</p> <ul style="list-style-type: none"> ▪ by providers, Medicaid, health and other professionals, self, family and friends. Patient assessed for eligibility and needs. |
| Evidence or rationale |
| <p>History</p> <ul style="list-style-type: none"> ▪ ageing population increase in frail elderly ▪ rising medical costs ▪ lack of care ▪ complex health needs of frail elderly requires complex range of care ▪ fragmented care and multiple sites, professions and organisations involved ▪ lapses in communication, duplication of services, gaps in services, administrative overload, financial challenges and adverse outcomes for patients. <p>PACE</p> <ul style="list-style-type: none"> ▪ cheaper than fee for service programmes ▪ delays nursing home placement ▪ high growth and enrolment rate suggests satisfaction with services ▪ reduce use of institutional care ▪ proven cost savings ▪ disenrolment rate of 6.1 percent – death most frequent reason ▪ less suitable for people who prefer care centred around the home. |
| Recommendations |
| <ul style="list-style-type: none"> ▪ none. |

Table 11. Descriptive overview of published specialist geriatric health and hospital-community interface service models and expert opinion (continued)

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| Publication title, author and origin |
| Coleman (2000b) Pace Programmes Part II USA |
| Service concept, setting, staffing and other components |
| Funding <ul style="list-style-type: none"> ▪ Medicare and Medicaid capitation funds are pooled to provide all acute and long-term services for participating frail elderly people ▪ enters into favourable contracts the hospitals, nursing homes, physicians, homecare agencies, suppliers, medical laboratories and other community health care providers ▪ initial investment is usually covered by foundations and fundraising by sponsors ▪ rely on volunteers to keep costs in check ▪ comprehensive health and social services and cost effective coordinated care delivery and integrated financing. |
| Evidence or rationale |
| <ul style="list-style-type: none"> ▪ pooled funding model "has demonstrated the ability to provide cost-effective quality services" for population at risk for institutional care ▪ PACE is at full risk for all health care expenses of participants ▪ full risk encourages PACE sites to prevent illness and demand for costly services ▪ study showed 12 percent savings in Medicare and Medicaid savings in 1997 and 2 percent less hospitalisation of frail elderly ▪ five to 15 percent savings compared to fee-for-service expenditure for comparable nursing care population ▪ less costly community-based alternative to new nursing home facilities. |
| Recommendations |
| <ul style="list-style-type: none"> ▪ none. |

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| Publication title, author and origin |
| Manchester (2000) Kaitiaki Nursing New Zealand Older people seek services that meet their needs New Zealand |
| Service concept, setting, staffing and other components |
| Elder Care Canterbury: A Health Funding Authority demonstration integration project targeting health services for older people <ul style="list-style-type: none"> ▪ seamless service for older people ▪ participation between GPs, hospitals, service providers, care givers and community groups in service development and delivery ▪ patient focus ▪ looking for new care partnerships and initiatives such as dedicated services – e.g., stroke and clinical care pathways ▪ collaboration and multidisciplinary care. |
| Evidence or rationale |
| <ul style="list-style-type: none"> ▪ aim to keep people out of hospital and in the community ▪ early discharge ▪ reduction of service bottlenecks. |
| Recommendations |
| <ul style="list-style-type: none"> ▪ none. |

Table 11. Descriptive overview of published specialist geriatric health and hospital-community interface service models and expert opinion (continued)

| Publication title, author and origin |
|---|
| Collins et al. (1997) Models for community-based Long-term care for the elderly, in a changing health system USA |
| Service concept, setting, staffing and other components |
| <p>Four nurse led programmes focus on</p> <ul style="list-style-type: none"> ▪ prevention ▪ at-risk elders in their own environment ▪ services for underserved elderly ▪ maximising function and independence in least restrictive settings ▪ more provision by funding structures ▪ use community-based services and decrease costly acute care and institutional care. <p>Iowa Elderly Outreach programme: Mental Health for Rural Elders</p> <ul style="list-style-type: none"> ▪ nurse led multi disciplinary team (nurse, social worker, psychiatrist) ▪ initiated with grant funding ▪ community-based mental health care delivery for rural elders over 55 years ▪ clients non-institutionalised or have potential for community placement ▪ open referrals from anyone ▪ in-home assessment, diagnosis and treatment ▪ weekly team meetings in collaboration with client and other agencies ▪ on-site community screening and case finding ▪ interagency referral, 500 trained lay gate keepers and discharge referrals ▪ services terminated when client established ▪ clients encouraged to come to centre rather than home visiting if able ▪ fee-for-service including Medicare established ▪ services established before point of crisis averting possible hospitalisation and long-term care ▪ participation with other community services. <p>National Centre on Black Aging Estates nurse-Managed Wellness Centre</p> <ul style="list-style-type: none"> ▪ focus on ageing in place ▪ model of behavioural self management replacing problematic behaviours with beneficial health behaviours and client control of health ▪ nurse and patient collaborate to identify problematic behaviours and improve skills, problem solving and decision making including goal setting, daily self monitoring ▪ primary nursing care service of baseline and periodic assessment, screening, teaching, guidance, counselling, referral, coordination and crisis intervention. <p>Continuing Care Retirement Communities: Programme for Assisted Living</p> <ul style="list-style-type: none"> ▪ single contractual arrangement for continuing care in assisted living facilities to promote ageing in place and avoidance or delay of long-term care placement ▪ to promote independence and functioning ▪ most needed services are housekeeping, laundry, transportation, food preparation, security ▪ flexible health care as needed at no extra cost to resident ▪ onsite outpatient care including podiatry, physiotherapy and occupational therapy etc. billed to third party reimbursers. <p>PAL Programme for Assisted Living</p> <ul style="list-style-type: none"> ▪ headed by a social worker and staffed by a RN coordinator and trained geriatric nursing assistants ▪ flexible services to avoid or offset functional decline ▪ RN completes initial assessment identifying service needs and referral as required ▪ include assistance with activities of daily living, transport, escort to appointments, home visits, minor outpatient procedures, assistance or reminders with medications and self-treatments ▪ residents pay for services. <p>OnLok Senior Health Services</p> <ul style="list-style-type: none"> ▪ permanent funding through participants Medicare waiver ▪ for nursing home care eligible elders ▪ adult day care programme with in home health and home services, assessment, treatment, rehabilitation, social, inpatient and specialist services ▪ housing is available but paid for by resident ▪ OnLok pays for all services and is committed to cost effective community care provision ▪ five to 15 percent less than traditional long-term care for frail elders ▪ challenges for management of clients with cognitive and/or mental health problems. |
| Evidence or rationale |
| <ul style="list-style-type: none"> ▪ ageing population ▪ need to deliver health services at home ▪ funding emphasis is on acute care at expense of long-term care ▪ need to focus on preventative, primary care, mental health and home-based care ▪ overemphasis on nursing home care rather than community home care ▪ more funding and focus needed on non-nursing assisted living communities and adult foster care settings ▪ need comprehensive and continuous care for older adults in diverse settings ▪ depression 30 percent, adjustment disorder 26 percent, dementia 23 percent. |
| Recommendations |
| <ul style="list-style-type: none"> ▪ none. |

Table 11. Descriptive overview of published specialist geriatric health and hospital-community interface service models and expert opinion (continued)

| Publication title, author and origin |
|---|
| Rosswurm (2001) Nursing perspectives on the health care of rural elders USA |
| Service concept, setting, staffing and other components |
| <ul style="list-style-type: none"> ▪ primary health care a community-based culturally sensitive approach with focus on health promotion and disease prevention through interdisciplinary collaboration and integration of health economic and social programmes ▪ existing community-based rural programmes seldom meet primary health community care models criteria and care is often fragmented adaptation of urban services <p>Community Nursing Organisation Medicare demonstration</p> <ul style="list-style-type: none"> ▪ one of four sites rural – i.e., Carle Clinic Illinois ▪ a captivated model of nurse managed health care provides community-based care to well elders and those at high risk for poor outcomes ▪ health education and care management by nurses ▪ high client satisfaction and cost effective quality care outcomes. <p>John A. Hartford Foundation</p> <ul style="list-style-type: none"> ▪ two rural of 10 sites provided interdisciplinary team demonstration programmes to improve primary care of frail elders ▪ the Geriatric Care Model with primary care physician and nurse partnership and the University of North Carolina Geriatric interdisciplinary Team Training Project which developed and tested innovative interdisciplinary curriculum for rural health professionals. |
| Evidence or rationale |
| <ul style="list-style-type: none"> ▪ ageing population ▪ need for long-term care ▪ limited access of rural elders to medical and nursing care ▪ inadequate and inflexible financial support and reimbursement for nursing services ▪ problems of rural elderly include economics, occupation and distance to emergency services ▪ diverse health beliefs and practice ▪ difference from urban elderly ▪ higher rates of poverty, less formal education, poorer housing, limited transportation, more chronic health problems and disabilities and more traditional cultural values and practices which may limit willingness to rely on available services ▪ access a major problem ▪ rural nursing homes are main providers of long-term care ▪ transitional care lacks coordination and family consultation ▪ staff recruitment and retention a problem ▪ research. |
| Recommendations |
| <ul style="list-style-type: none"> ▪ more research on rural nursing strategies ▪ integrated systems of care emphasising health education and support services for rural elders ▪ community based and culturally sensitive services and available resources ▪ case management to reduce fragmentation of services ▪ interdisciplinary education and practice models ▪ nurse led collaboration and coordination ▪ further development and evaluation of outreach programmes and telecommunications for education and consultation ▪ reorganisation of flexible and adequate reimbursement policies particularly for advanced practice nursing. |

Table 11. Descriptive overview of published specialist geriatric health and hospital-community interface service models and expert opinion (continued)

| Publication title, author and origin |
|---|
| Szekais (1985) Adult day centres: geriatric day health services in the community USA |
| Service concept, setting, staffing and other components |
| <p>Adult day services centre</p> <ul style="list-style-type: none"> ▪ provides health and rehabilitative services to the impaired elderly ▪ variety of programmes and service models. <p>Day hospital</p> <ul style="list-style-type: none"> ▪ usually hospital-based rehabilitative services for recently discharged patients. <p>Restorative Health Care model</p> <ul style="list-style-type: none"> ▪ usually community-based and emphasises time limited physical rehabilitation. <p>Maintenance Health Care Model</p> <ul style="list-style-type: none"> ▪ not in hospital health supervision with limited rehabilitation and social services for long-term disabilities with emphasis on socialisation and recreation. <p>Psychosocial Care Model</p> <ul style="list-style-type: none"> ▪ usually located in a mental health care centre emphasises rehabilitation for acute or chronic psychiatric disability. <p>Respite Care model</p> <ul style="list-style-type: none"> ▪ physical and social supervision and maintenance to provide family/carer relief. <p>Multi model programmes</p> <ul style="list-style-type: none"> ▪ combine any of the above features. <p>Admission</p> <ul style="list-style-type: none"> ▪ basic screening. Entry criteria ▪ initial home or onsite assessment ▪ trial visits ▪ comprehensive evaluation of function ▪ treatment plans and goals. <p>Services</p> <ul style="list-style-type: none"> ▪ individualised assistance/ therapy or group participation ▪ nursing care, medications, monitoring, occupational therapy, physical therapy, speech therapy, psychotherapy, counselling, recreation and socialisation therapy ▪ education referral to other agencies and community services ▪ discharge planning ▪ other services such as meals, staff education, community resource coordination and development. <p>Staff</p> <ul style="list-style-type: none"> ▪ multidisciplinary and interdisciplinary focus ▪ may include: nurses, caregivers, occupational therapist, physiotherapist, social worker, psychiatric counsellor, activities/recreational therapist, physician, psychiatrist and speech therapist. <p>Settings</p> <ul style="list-style-type: none"> ▪ inpatient, outpatient or non-patient community settings - e.g., churches for range of patients, clients and participants. |
| Evidence or rationale |
| <ul style="list-style-type: none"> ▪ ageing population ▪ need to avoid premature or unnecessary admission to long-term care. |
| Recommendations |
| <ul style="list-style-type: none"> ▪ none. |

Table 11. Descriptive overview of published specialist geriatric health and hospital-community interface service models and expert opinion (continued)

| Publication title, author and origin |
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| Coleman (2000b); Powell and Nixon (1996) Caring for patients in geriatric day hospitals Guidelines on the relationship between primary care physicians and specialist/consultants Canada |
| Service concept, setting, staffing and other components |
| Geriatric Day Hospitals (GDHs) <ul style="list-style-type: none"> ▪ comprehensive assessment and treatment from multidisciplinary teams ▪ most clients live at home ▪ attend for investigation and assessment of physical and mental disabilities and for rehabilitation and occasionally for respite care ▪ referrals come from patients primary care physician, through discharge from inpatient settings, or from community health care workers, families and friends. |
| Evidence or rationale |
| <ul style="list-style-type: none"> ▪ geriatric hospitals an example of interface between institutions and community care and geriatric consulting services interface with continuing primary medical care through shared medical care of patients ▪ need to clarify roles and responsibilities. |
| Recommendations |
| Primary care physicians <ul style="list-style-type: none"> ▪ have a central role in caring for patients ▪ can admit directly to day hospitals ▪ should have written documentation outlining admission criteria and procedures ▪ should be consulted when referral is made by others and asked if they support admission ▪ families, friends and other health care workers should initiate referral through the primary care physician ▪ should provide a written synopsis of patients history, clinical problems, medication, treatments supports and other relevant personal circumstances ▪ should be forwarded copies of referral notes from other sources ▪ patients without a primary care physician should be assisted to find one ▪ share care with GDH physicians and consultants requiring specific and exemplary communication between them especially regarding treatments, on referrals and medications ▪ on referrals should be discussed with the primary care physician ▪ should receive timely documentation of treatments, referrals and medication changes and discharge from GDHs and other agencies ▪ GDH follow-up should be discussed with primary care physician. |

| Publication title, author and origin |
|---|
| Black (2000) The modern geriatric day hospital England |
| Service concept, setting, staffing and other components |
| The role of Geriatric Day Hospitals <ul style="list-style-type: none"> ▪ patients referred for rehabilitation, maintenance, medical intervention, social and respite care and assessment. New roles: <p>Response to subacute crises</p> <ul style="list-style-type: none"> ▪ within one to two days and immediate problem solving approach to avoid deterioration and admission ▪ rapid access to radiology, pathology and senior medical time and opportunity for observation over time and access to primary care teams and social services to expedite immediate changes in required support services Provision of specialist services <ul style="list-style-type: none"> ▪ for example, falls, Parkinson's disease and incontinence clinics etc. Replacing day case beds <ul style="list-style-type: none"> ▪ day hospital admission instead of day care or inpatient beds – e.g., for blood transfusion and pre-procedure preparation. Rehabilitation and multidisciplinary assessment <ul style="list-style-type: none"> ▪ onsite comprehensive assessment with cost effective use of a range multidisciplinary staff compared to restricted home assessment to one or two disciplines. |
| Evidence or rationale |
| <ul style="list-style-type: none"> ▪ evidence for cost effectiveness of GDHs is "controversial" (539) ▪ further research on effectiveness of care is needed ▪ difficulties in running day hospital trials with genuinely randomised patients. |
| Recommendations |
| <ul style="list-style-type: none"> ▪ none. |

Recommended Reading

STAND ALONE REPORTS NOT SUMMARISED IN REVIEW

Canterbury District Health Board (2003). *District nursing and home support*. Christchurch: Canterbury District Health Board.

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Appendix 1a:

Search strategy for Section 2

SEARCH STRATEGIES

Medline – August 2002

- 1 Intermediate Care Facilities/ (424)
- 2 subacute care/ (492)
- 3 PATIENT DISCHARGE/ (8929)
- 4 (intermediate care or subacute care).mp. (1092)
- 5 (hospital adj2 home).mp. (2649)
- 6 (early discharge or supported discharge).mp. (966)
- 7 (domiciliary care or home care or aftercare).mp. (12582)
- 8 home care services, hospital based/ (730)
- 9 home nursing/ (5565)
- 10 or/1-9 (29333)
- 11 health services for the aged/ (8701)
- 12 (geriatric\$ or elder\$ or older or senior\$.ti. (68249)
- 13 or/11-12 (72182)
- 14 10 and 13 (2362)
- 15 limit 14 to yr=1990-2002 (1528)
- 16 program evaluation/ or follow-up studies/ (267141)
- 17 randomized controlled trials/ or randomized controlled trial.pt. (183533)
- 18 controlled clinical trials/ or controlled clinical trial.pt. (63456)
- 19 (evaluat\$ or effectiv\$.mp. (1228111)
- 20 exp evaluation studies/ (419636)
- 21 or/16-20 (1745924)
- 22 15 and 21 (476)
- 23 from 22 keep (selected references)
- 24 (transition\$ adj care).mp. (124)
- 25 (posthospital or post-hospital).mp. (502)
- 26 (postacute or post-acute).mp. (623)
- 27 patient readmission/ (3048)
- 28 continuity of patient care/ (6002)
- 29 aftercare/ (4305)
- 30 or/24-29 (13932)
- 31 13 and 30 (700)
- 32 21 and 31 (215)
- 33 32 not 22 (118)
- 34 limit 33 to yr=1990-2002 (75)
- 35 from 34 keep (selected references)(18)
- 36 (systematic\$ adj3 (review\$ or overview)).mp. (4218)
- 37 meta-analysis/ or meta-analysis.mp. or metaanaly\$.mp. or meta-analytic\$.mp. (10008)
- 38 36 or 37 (13382)
- 39 15 and 38 (12)
- 40 from 39 keep (selected references)(10)

Medline update and expansion – March 2003

- 1 intermediate care facilities/ (447)
- 2 subacute care/ (522)
- 3 patient discharge/ (9483)
- 4 (intermediate care or subacute care).tw. (733)
- 5 (hospital adj2 home).tw. (2816)
- 6 (early discharge or supported discharge).tw. (1036)
- 7 home care services, hospital based/ (812)
- 8 home nursing/ (5776)
- 9 (transition\$ adj care).tw. (142)
- 10 patient readmission/ (3289)
- 11 continuity of patient care/ (6473)
- 12 aftercare/ (4528)
- 13 (posthospital or post-hospital).tw. (515)
- 14 (postacute or post-acute).tw. (660)
- 15 (hospital and community and interface).tw. (69)
- 16 (domiciliary care or home care or aftercare).tw. (9334)
- 17 or/1-16 (39754)
- 18 frail elderly/ (2532)
- 19 (geriatric\$ or senior\$ or elder\$ or older person\$ or older people).ti. (60219)
- 20 health services for the aged/ (9253)
- 21 or/18-20 (66003)
- 22 17 and 21 (2803)
- 23 limit 22 to english (2367)
- 24 program evaluation/ or follow-up studies/ (281925)
- 25 randomized controlled trials/ or randomized controlled trial.pt. (196670)
- 26 controlled clinical trials/ or controlled clinical trial.pt. (65013)
- 27 (evaluat\$ or effectiv\$).mp. (1309673)
- 28 exp evaluation studies/ (453612)
- 29 or/24-28 (1858807)
- 30 meta-analysis/ or meta-analysis.mp. or metaanaly\$.mp. or meta-analytic\$.mp. (11004)
- 31 (systematic\$ adj3 (review\$ or overview\$)).mp. (5124)
- 32 30 or 31 (15109)
- 33 29 or 32 (1864852)
- 34 23 and 33 (636)
- 35 limit 34 to yr=2002-2003 (46)
- 36 limit 34 to yr=1966-1989 (140)
- 37 35 or 36 (186)
- 38 from 37 keep (selected references)(48)
- 39 from 38 keep 1-48 (48)
- 40 23 not 34 (1731)
- 41 case reports/ (1080788)
- 42 (letter or news).pt. (581886)
- 43 40 not (41 or 42) (1590)
- 44 delivery of health care/ (38525)
- 45 delivery of health care, integrated/ (3358)
- 46 health services accessibility/ (18608)
- 47 exp telemedicine/ (5335)
- 48 exp patient care team/ (32283)
- 49 exp comprehensive health care/ (108194)
- 50 exp managed care programs/ (32622)
- 51 Regional Health Planning/ or Health Planning/ (20935)
- 52 service\$.mp. (142516)
- 53 or/44-52 (345590)
- 54 43 and 53 (781)
- 55 from 54 keep (selected references)
- 57 (continuum adj care).tw. (574)
- 58 (collaborative care or extended care or augmented care or expanded care).tw. (669)
- 59 progressive patient care/ (1010)

- 60 or/57-59 (2220)
- 61 21 and 60 (154)
- 62 limit 61 to english (147)
- 63 62 not (54 or 34) (98)
- 64 from 63 keep (selected references)(13)
- 65 ACCIDENTAL FALLS/pc [Prevention & Control] (1389)
- 66 17 and 65 (24)
- 67 from 66 keep (selected references)(2)
- 68 65 and 33 and 21 (169)
- 69 68 not (54 or 34 or 66) (165)
- 70 limit 69 to english (146)
- 71 from 70 keep (selected references) (23)
- 72 64 or 67 or 71 (38)
- 73 "referral and consultation"/ (30637)
- 74 23 and 73 (81)
- 75 74 not (54 or 34) (19)
- 76 og.fs. (188540)
- 77 20 and 76 and 17 (377)
- 78 77 not (34 or 54 or 72) (134)
- 79 limit 78 to english (84)
- 80 from 79 keep (selected references)

Embase – August 2002

- 1 (intermediate care or subacute care or sub-acute care).mp. (276)
- 2 aftercare/ (483)
- 3 (transition\$ adj2 care).mp. (223)
- 4 (posthospital or post-hospital or postacute or post-acute).mp. (671)
- 5 Hospital Discharge/ (5769)
- 6 discharge planning.mp. (336)
- 7 (follow-up care or home follow-up).mp. (546)
- 8 (domiciliary care or early discharge or supported discharge or aftercare).mp. (1565)
- 9 (hospital adj2 home).mp. (1265)
- 10 or/1-9 (9801)
- 11 elderly care/ (6567)
- 12 (geriatric\$ or elder\$ or older\$ or senior\$).ti. (41530)
- 13 or/11-12 (44042)
- 14 10 and 13 (654)
- 15 limit 14 to english (589)
- 16 case report/ or letter/ (680863)
- 17 15 not 16 (558)
- 18 from 17 keep (selected references)

Embase update and expansion – March 2003

- 1 aftercare/ (501)
- 2 (transition\$ adj2 care).mp. (250)
- 3 (intermediate care or subacute care or sub-acute care).mp. (308)
- 4 (posthospital or post-hospital or postacute or post-acute).mp. (724)
- 5 hospital discharge/ (7186)
- 6 discharge planning.mp. (353)
- 7 (follow-up care or home follow-up).mp. (591)
- 8 (domiciliary care or early discharge or supported discharge or aftercare).mp. (1668)
- 9 (hospital adj2 home).mp. (1374)
- 10 or/1-9 (11502)
- 11 elderly care/ (7553)
- 12 (geriatric\$ or elder\$ or older\$ or senior\$).ti. (44328)
- 13 or/11-12 (47259)
- 14 10 and 13 (732)
- 15 limit 14 to english (661)

- 16 case report/ or letter/ (722004)
- 17 15 not 16 (629)
- 18 from 17 keep (selected references)(14)
- 19 from 18 keep 1-14 (14)
- 20 limit 17 to yr=1988-1989 (21)
- 21 from 20 keep (selected references)(4)
- 22 home care/ (6921)
- 23 hospital discharge/ (7186)
- 24 22 or 23 (13791)
- 25 13 and 24 (1290)
- 26 (evaluat\$ or effectiv\$ or outcome\$ or random\$).mp. (1141866)
- 27 25 and 26 (554)
- 28 27 not 14 (266)
- 29 limit 28 to english (239)
- 30 29 not 16 (236)
- 31 from 30 keep (selected references)(9)
- 32 (collaborative care or extended care or augmented care or expanded care).tw. (234)
- 33 (interdisciplinary care or multidisciplinary care or progressive patient care).tw. (222)
- 34 convalescen\$.tw. (2659)
- 35 (continuum adj care).tw. (239)
- 36 (delivery adj service\$).tw. (310)
- 37 integrated care.tw. (227)
- 38 (integrat\$ adj service\$).tw. (272)
- 39 or/32-38 (4136)
- 40 11 and 39 (66)
- 41 39 and 12 (122)
- 42 40 or 41 (154)
- 43 limit 42 to english (134)
- 44 43 not 16 (127)
- 45 44 not (17 or 30) (109)
- 46 from 45 keep (selected references)(4)
- 47 *health care delivery/ (4878)
- 48 *health care planning/ (1777)
- 49 47 or 48 (6598)
- 50 13 and 49 (233)
- 51 50 not 17 (225)
- 52 limit 51 to english (209)
- 53 52 not (17 or 30 or 45) (199)
- 54 from 53 keep (selected references)(3)
- 55 46 or 54 or 21 or 31 (20)

Current Contents – August 2002

- 1 (geriatric\$ or elder\$ or older).mp. (102230)
- 2 (transitional care or subacute care or sub-acute care or posthospital or post-hospital).mp. (233)
- 3 (home adj2 hospital).mp. (933)
- 4 (aftercare or readmission\$ or readmit\$ domiciliary).mp. (2311)
- 5 (intermediate adj2 care).mp. (229)
- 6 home nursing.mp. (156)
- 7 outreach.mp. (1834)
- 8 or/2-7 (5564)
- 9 1 and 8 (888)
- 10 limit 9 to yr=2000-2002 (318)
- 11 (effectiv\$ or outcome\$ or trial\$ or random\$ or evaluat\$ or follow-up).mp. (1364059)
- 12 10 and 11 (235)
- 13 from 12 keep (selected references) (52)
- 14 10 not 12 (83)
- 15 from 14 keep (selected references)(6)
- 16 community-based.ti. (2006)
- 17 1 and 16 (287)

- 18 limit 17 to yr=2000-2002 (111)
 19 18 not 10 (109)
 from 19 keep (selected references)

Cinahl – March 2003

- 1 subacute care/ (526)
 2 after care/ (1337)
 3 Patient Discharge/ (2167)
 4 Early Patient Discharge/ (453)
 5 Home Nursing/ (1122)
 6 Readmission/ (809)
 7 Continuity of Patient Care/ (1706)
 8 (progressive adj care).tw. (34)
 9 (transition\$ adj care).tw. (111)
 10 (collaborative care or extended care or augmented care or expanded care).tw. (285)
 11 (continuum adj care).tw. (390)
 12 convalesce\$.tw. (148)
 13 intermediate care.tw. (185)
 14 (post hospital or posthospital).tw. (127)
 15 ((hospital adj community) or (inpatient adj community)).tw. (509)
 16 (hospital and community and interface).tw. (24)
 17 Early Patient Discharge/ (453)
 18 supported discharge.tw. (19)
 19 (postacute or post-acute).tw. (293)
 20 domiciliary care.tw. (45)
 21 (hospital adj home).tw. (493)
 22 aftercare.tw. (162)
 23 (inclusive care or step down beds or slow stream rehabilitation).tw. (35)
 24 day care/ or day hospital.tw. (797)
 25 quick response team\$.tw. (4)
 26 Gerontologic Care/ (3811)
 27 health services for the aged/ (1891)
 28 (geriatric\$ or senior\$ or elder\$ or older).ti. (20544)
 29 or/26-28 (23406)
 30 or/1-25 (10305)
 31 29 and 30 (1004)
 32 limit 31 to english (993)
 33 (letter or anecdote or audiovisual or case study or chat groups or pamphlet).pt. (75547)
 34 32 not 33 (947)
 35 delivery of health care/ (7675)
 36 delivery of health care, integrated/ (711)
 37 health planning/ or regional health planning/ (911)
 38 exp managed care programs/ (8226)
 39 or/35-38 (16733)
 40 32 and 39 (40)
 41 from 40 keep 2,7,17,20,33,36,40 (7)
 42 (service adj delivery).tw. (1084)
 43 29 and 42 (54)
 44 from 43 keep 2,14,28 (3)
 45 34 not (40 or 43) (906)
 46 from 45 keep (selected references) (76)

Cochrane Controlled Trials Register – March 2003

- 1 Intermediate care facilities/ (3)
- 2 subacute care/ (3)
- 3 patient discharge/ (340)
- 4 (intermediate care or subacute care).tw. (40)
- 5 (hospital adj2 home).tw. (281)
- 6 (early discharge or supported discharge).tw. (142)
- 7 home care services, hospital based/ (52)
- 8 home nursing/ (130)
- 9 (transition\$ adj care).tw. (8)
- 10 patient readmission/ (195)
- 11 continuity of patient care/ (110)
- 12 aftercare/ (188)
- 13 (posthospital or post-hospital).tw. (62)
- 14 (postacute or post-acute).tw. (42)
- 15 (hospital and community and interface).tw. (2)
- 16 (domiciliary care or home care or aftercare).tw. (445)
- 17 or/1-16 (1573)
- 18 frail elderly/ (120)
- 19 (geriatric\$ or senior\$ or elder\$ or older person\$ or older people).ti. (4662)
- 20 health services for the aged/ (120)
- 21 or/18-20 (4752)
- 22 17 and 21 (128)
- 23 case reports/ (1108)
- 24 (letter or news).pt. (3639)
- 25 delivery of health care/ (65)
- 26 delivery of health care, integrated/ (20)
- 27 health services accessibility/ (63)
- 28 exp telemedicine/ (95)
- 29 exp patient care team/ (410)
- 30 exp comprehensive health care/ (1558)
- 31 exp managed care programs/ (272)
- 32 Regional Health Planning/ or Health Planning/ (12)
- 33 service\$.mp. (5666)
- 34 or/25-33 (7103)
- 35 (continuum adj care).tw. (3)
- 36 (collaborative care or extended care or augmented care or expanded care).tw. (33)
- 37 progressive patient care/ (6)
- 38 or/35-37 (41)
- 39 21 and 38 (6)
- 40 ACCIDENTAL FALLS/pc [Prevention & Control] (87)
- 41 "referral and consultation"/ (429)
- 42 23 or 24 (4685)
- 43 22 not 42 (127)
- 44 from 43 keep (selected references)

Psychinfo – March 2003

- 1 (intermediate care or aftercare).tw. (1452)
- 2 (sub-acute care or subacute care).tw. (10)
- 3 (postacute care or post-acute care).tw. (12)
- 4 transition\$ care.tw. (30)
- 5 (posthospital or post-hospital).tw. (294)
- 6 hospital discharge/ (576)
- 7 exp Discharge Planning/ (90)
- 8 ((hospital adj home) or home hospital).tw. (256)
- 9 (hospital and community and interface).tw. (19)
- 10 (hospital adj community).tw. (509)
- 11 (inpatient adj community).tw. (59)

- 12 convalesce\$.tw. (151)
- 13 (augmented care or expanded care or extended care).tw. (124)
- 14 (continuum adj care).tw. (256)
- 15 integrated care.tw. (74)
- 16 collaborative care.tw. (66)
- 17 or/1-16 (3741)
- 18 (geriatric\$ or elder\$ or older or senior\$.ti. (24108)
- 19 17 and 18 (233)
- 20 limit 19 to english (226)
- 21 exp Case Report/ (18727)
- 22 20 not 21 (226)
- 23 from 22 keep (selected references)

Other sources

Other databases and sources for which strategies have not been given were searched using combinations of words from the strategies given above and adapted for the volume and conditions of each individual source.

Appendix 1b: Search methodology and strategy for Section 3

Medline

- 1 Health Services for the Aged/ (9253)
- 2 ((health adj2 service\$) adj3 (elderly or aged or geriatric)).tw. (569)
- 3 1 or 2 (9553)
- 4 position statement\$.tw. (1004)
- 5 exp Societies, Medical/ (33594)
- 6 organizational policy/ (9357)
- 7 guidelines/ or practice guidelines/ (34474)
- 8 Health Planning Guidelines/ (1627)
- 9 Health Planning/ (17276)
- 10 (polic\$ or statement\$).ti. (25619)
- 11 Interprofessional Relations/ (26407)
- 12 or/4-11 (139660)
- 13 3 and 12 (613)
- 14 limit 13 to english language (529)
- 15 from 14 keep [SELECTED REFERENCES] (97)
- 16 triage/ (3254)
- 17 (3 and 16) not 13 (12)
- 18 limit 17 to english language (12)
- 19 from 18 keep [SELECTED REFERENCES] (2)
- 20 og.fs. (188540)
- 21 (3 and 20) not (13 or 18) (2303)
- 22 limit 21 to english language (1978)
- 23 limit 22 to review (144)
- 24 from 23 [SELECTED REFERENCES] (23)
- 25 15 or 19 or 24 (122)

Embase

- 1 exp *elderly care/ (6353)
- 2 (service\$ adj3 (elderly or aged or geriatric)).tw. (910)
- 3 1 or 2 (7020)
- 4 position statement\$.tw. (383)
- 5 exp *health care delivery/ (66807)
- 6 *health care planning/ (1778)
- 7 *health care policy/ (9073)
- 8 medical society/ (13078)
- 9 (polic\$ or statement\$).ti. (10507)
- 10 exp *practice guideline/ (4364)
- 11 health service/ (14749)
- 12 or/4-11 (112908)
- 13 3 and 12 (1732)
- 14 exp *elderly care/ (6353)
- 15 (2 or 14) and 12 (1732)
- 16 limit 15 to english language (1490)
- 17 from 16 keep[SELECTED REFERENCES] (114)

Psychinfo

- 1 elder care/ (813)
- 2 geriatrics/ or geriatric patients/ or geriatric psychiatry/ or gerontology/ or geriatric assessment/ or geriatric psychotherapy/ (8264)
- 3 ((elder\$ or geriatric\$ or older) adj3 (servic\$ or framework\$ or polic\$ or guideline\$ statement)).tw. (2172)
- 4 or/1-3 (10609)
- 5 position statement\$.tw. (118)
- 6 treatment guidelines/ or treatment planning/ (1232)
- 7 health care policy/ (1357)
- 8 health care services/ or mental health services/ or community services/ or integrated services/ or quality of services/ or rehabilitation/ or social services/ (28344)
- 9 4 and 8 (1397)
- 10 limit 9 to english language (1336)
- 11 limit 10 to ("380 aged <age 65 yrs and older>" or "390 very old <age 85 yrs and older>") and yr=1970-2003) (1113)
- 12 from 11 keep [SELECTED REFERENCES] (79)

Cinahl

- 1 Health Services for the Aged/ (1907)
- 2 ((elderly or aged or geriatric or old\$) adj3 (service\$ or program\$ or polic\$)).mp. [mp=title, cinahl subject headings, abstract, instrumentation] (2798)
- 3 Gerontologic Care/ (3851)
- 4 or/1-3 (7684)
- 5 position statement\$.tw. (993)
- 6 og.fs. (11047)
- 7 Health Policy/ (6563)
- 8 exp *"Health and Welfare Planning"/ (10103)
- 9 collaboration/ or interprofessional relations/ (7940)
- 10 PRACTICE GUIDELINES/ (5290)
- 11 (polic\$ or statement\$).ti. (7985)
- 12 *"Health and Welfare Planning"/ (647)
- 13 or/5-12 (44972)
- 14 4 and 13 (925)
- 15 limit 14 to english (922)
- 16 from 15 keep [SELECTED REFERENCES] (64)

SEARCHES FROM OTHER SOURCES

In databases and all other sources without controlled vocabulary combinations of the index terms and additional keywords from the above strategies, were used in the search.

Appendix 2a: Excluded studies of Section 2

RETRIEVED STUDIES EXCLUDED FOR REVIEW

The following studies were retrieved as full text articles but were excluded. The majority were excluded, because they were included in already appraised systematic reviews. Other causes for exclusion were because the studies did not meet the inclusion criteria, were not specifically relevant to the topic, had inadequate descriptions of managing the hospital / community service delivery models or were considered not to add any additional evidence regarding the efficacy of a particular model of service.

Abi-Aad, G., Johnson, L., Mays, N., & Roberts, E. (2003). Primary and community health care professionals in hospital emergency departments: effects on process and outcome of care and resources. Cochrane Protocol. *Cochrane Database of Systematic Reviews*, Issue 1.

Al-Rashed, S. A., Wright, D. J., Roebuck, N., Sunter, W., & Chrystyn, H. (2002). The value of inpatient pharmaceutical counselling to elderly patients prior to discharge. *British Journal of Clinical Pharmacology*, 54, 657-664.

Altoft, L., & Raven, D. (2003). Intermediate care. It takes two. *Health Service Journal*, 113, 28-29.

Anttila, S. K., Huhtala, H. S., Pekurinen, M. J., & Pitkajarvi, T. K. (2000). Cost-effectiveness of an innovative four-year post-discharge programme for elderly patients--prospective follow-up of hospital and nursing home use in project elderly and randomized controls. *Scandinavian Journal of Public Health*, 28, 41-46.

Avlund, K., Jepsen, E., Vass, M., & Lundemark, H. (2002). Effects of comprehensive follow-up home visits after hospitalization on functional ability and readmissions among old patients. A randomized controlled study. *Scandinavian Journal of Occupational Therapy*, 9, 17-22.

Beltz, S. K. (2000). Comprehensive, in-hospital geriatric assessment plus an interdisciplinary home intervention after discharge reduced length of subsequent readmissions and improved functioning... commentary on Nikolaus T, Specht-Leible N, Bach M, et al. A randomized trial of comprehensive geriatric assessment and home intervention in the care of hospitalized patients. *AGE AGEING* 1999 Oct;28(6):543-550. *Evidence-Based Nursing*, 3, 83.

Bentur, N. (2001). Hospital at home: what is its place in the health system? *Health Policy*, 55, 71-79.

Black, D. A. (1997). Emergency day hospital assessments. *Clinical Rehabilitation*, 11, 344-346.

Boling, P. A. (1999). The value of targeted case management during transitional care. *JAMA*, 281, 656-657.

Boston, N. K., Boynton, P. M., & Hood, S. (2001). An inner city GP unit versus conventional care for elderly patients: prospective comparison of health functioning, use of services and patient satisfaction. *Family Practice*, 18, 141-148.

Bours, G. J., Ketelaars, C. A., Frederiks, C. M., Abu-Saad, H. H., & Wouters, E. F. (1998). The effects of aftercare on chronic patients and frail elderly patients when discharged from hospital: a systematic review. *Journal of Advanced Nursing*, 27, 1076-1086.

Bowles, K. H., Naylor, M. D., & Foust, J. B. (2002). Patient characteristics at hospital discharge and a comparison of home care referral decisions. *Journal of the American Geriatrics Society*, 50, 336-342.

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Appendix 2b: Excluded studies of Section 3

RETRIEVED STUDIES EXCLUDED FOR REVIEW

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BGS targets for 2000.

Campbell, J. (1987). Health care of the elderly: an integrated approach. *New Zealand Health Review*, 7, 13-15.

History and principles of geriatric medicine.

Challis, D., Darton, R., Johnson, L., Stone, M., & Traske, K. (1991). An evaluation of an alternative to long-stay hospital care for frail elderly patients: 1. The model of care. *Age & Ageing*, 20, 236-244.

Case management, previously addressed.

Glendinning, C., Coleman, A., & Rummery, K. (2002). Partnerships, performance and primary care: Developing integrated services for elder people in England. *Ageing & Society*, 22, 185-208.

Addresses government policy on funding not service description.

Hall, W. J., & Oskvig, R. O. (1998). Transitional care: Hospital to home. *Clinics in Geriatric Medicine*, 14, 799-812.

Transitional care previously addressed.

Harwood, K. J., & Wenzl, D. (1990). Admissions to discharge: A psychogeriatric transitional program. *Occupational Therapy in Mental Health*, 10, 79-100.

Occupational therapy.

Hicks, B., Raisz, H., Segal, J., & Doherty, N. (1981). The triage experiment in coordinated care for the elderly. *American Journal of Public Health*, 71, 991-1003.

Research study.

Hollander, M. J., & Prince, M. J. (2002). Final report: "the third way": a framework for organizing health related services for individuals with ongoing care needs and their families. Victoria, BC: Hollander Analytical Services Ltd.

Best practices framework.

Kelley, M. L., & MacLean, M. J. (1997). I want to live here for rest of my life. The challenge of case management for rural seniors. *Journal of Case Management*, 6, 174-182.

Case management previously addressed.

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Managed care – American health insurance model.

Parker, S. G., Peet, S. M., McPherson, A., Cannaby, A. M., Abrams, K., Baker, R., Wilson, A., et al. (2002). A systematic review of discharge arrangements for older people. *Health Technology Assessment (Winchester, England)*, 6, 1-183.

Addressed elsewhere in this report.

Ray, S., Yeatts, D. E., List, N., & Folts, W. E. (1994). A model geriatric health care program for community/migrant health care centers. *Journal of Health & Human Services Administration*, 17, 196-212.

Migrant health centres.

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Government policy.

Royal College of Physicians of London, & British Geriatrics Society Intermediate care for the elderly: the role of the specialist: statement by the Royal College of Physicians of London and the British Geriatrics Society. Available from: <http://www.rcplondon.ac.uk>.

Included in complete RCP document.

Zarle, N. C. (1989). Continuity of care. Balancing care of elders between health care settings. *Nursing Clinics of North America*, 24, 697-705.

Principles of geriatric care not service description.

Appendix 3a: Included studies from Section 2

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Appendix 3b: Included studies from Section 3

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