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INTEGRATION, COORDINATION AND MULTIDISCIPLINARY APPROACHES IN PRIMARY CARE:
A SYSTEMATIC INVESTIGATION OF THE LITERATURE

Jennifer Tieman
Dr Geoff Mitchell
Tania Shelby-James
Professor David Currow
Belinda Fazekas
Lorna Jane O'Doherty
Meg Hegarty
Lars Eriksson
Robyn Brown
Desley Reid-Orr

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Australian Primary Health Care Research Institute (APHCRI)
ANU College of Medicine and Health Sciences
Building 62, Cnr Mills and Eggleston Roads
The Australian National University
Canberra ACT 0200

T: +61 2 6125 0766
F: +61 2 6125 2254
E: aphcri@anu.edu.au
W: www.anu.edu.au/aphcri

1. BACKGROUND AND RATIONALE

BACKGROUND TO STREAM FOUR

This research formed part of a series of projects funded by the Australian Primary Health Care Research Institute (APHCRI). The focus of the Institute's research is on 'important sectoral questions relating to the organisation, financing, delivery and performance of primary health care, including its interaction with public health and the secondary and tertiary health care sectors. The intended beneficiaries of APHCRI's work are the Australian consumers of primary health care services.'

This study was part of APHCRI's Stream Four. The aim of this stream was "to systematically identify, review and synthesise knowledge about primary health care organisation, funding delivery and performance and then consider how this knowledge might be applied in the Australian context.' [1]

There were seven topic areas identified in the call for grant submissions. Topic Area 1 was chronic disease management and Topic Area 2 was integration, coordination and multidisciplinary care. The original grant submission was based on investigating integration, coordination and multidisciplinary care as core concepts in primary care and in palliative care and aged populations. Grant funding was awarded contingent upon the policy implications of the National Chronic Disease strategy being actively considered.

THE HUB AND SPOKE APPROACH

APHCRI operated as a "hub and spoke" model. The hub was identified as the administrative and academic team at ANU and the spokes were the priority driven research teams and project groups. This model supported capacity building through not only the allocation of funds but by providing a forum for collaboration and purposeful engagement. The approach also supported a generic framework for standards in searching, documentation and reporting.

The resultant work of the project groups, while independent, contributed to the findings of the whole Stream 4 program.

BACKGROUND TO INTEGRATED, COORDINATED AND / OR MULTIDISCIPLINARY APPROACHES TO CARE

Understanding primary care

The terms Primary Health Care and Primary Health were most often used interchangeably, but recent definitions suggested distinct differences.

APHCRI [2] and CHERTRE [3] discussions both centred on primary health care as encompassing integrated or collaborative, multidisciplinary approaches to care, dealing with not only initial contacts with patients, but also involving health promotion and screening functions to improve both individual patient, and population health.

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[1] ANU 2005 Information for applicants: Stream Four

[2] Australian Primary Health Care Research Institute website http://www.anu.edu.au/aphcri/ [accessed 10th May 2006]

[3] Centre for Health Equity Training, Research and Evaluation, University of NSW Medicine. http://chetre.med.unsw.edu.au/phc/defining_primary_health_care.htm [accessed 10th May 2006]

Additionally, Keleher [1] outlined a distinction between primary health care and primary care, where the first addresses “philosophic[al] and system responses to reducing health inequalities and ameliorating the effects of disadvantage”, which subsumes primary care at the practitioner level, or “a client’s first point of entry into the health system if some sort of active assistance is sought.”

While the project team recognised the role of social and health structures in the community in contributing to primary health care, the focus of this study was the involvement of primary care providers, specifically general practitioner involvement.

Populations of interest

The review focused on three populations – chronic, aged and palliative. Most of Australia’s disease burden in the coming years will relate to chronic disease; the prevalence is increasing. Often encompassing complex and multiple causes, chronic diseases can be characterised by a gradual onset with sudden acute phases, becoming more prevalent with increasing age. Although not exclusively a condition of the aged, chronic diseases are long-term and persistent and lead to a deterioration in health. The significance of chronic disease management within the primary health sector has been recognised within the national health agenda. [4]

The aged were a population of interest as the proportion of aged and the older aged is increasing. The most recent projection released by the ABS indicated that by 2050, almost half the Australian population will be aged above 50, with 28 per cent aged above 65. [5] This has been presumed to be associated with increased health care costs as well as costs associated with care at the end of life.

For palliative populations, quality of life and the nature of care needs were significant. There have been an increasing proportion of non-cancer care needs at the end of life in addition to the well-recognised needs of cancer sufferers. Demographic analysis of palliative populations indicated that palliative approaches to care were directly proportional to ageing.[2] This in combination with the acknowledged ageing trends of Australia’s population increased the imperative to address palliative care and its associated service issues.

Lunney et al [3] highlighted the importance of palliative populations within the health system as they had commonalities with the other groups of interest here. Increasing co morbidities, and high-cost care in the final weeks of life, made this group of significance in any investigation into integrated, coordinated or multidisciplinary care.

Hence, these three groups provided the focus and boundary for search and review purposes at the macro level, and enabled specific reviews to draw upon a particular subpopulation e.g. frail aged, those with diabetes.

Interventions of interest

The focus of the study was to investigate integration, coordination and multidisciplinary care as interventions of interest. These reflected the increasing interest in strategies

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[4] Australian Government Department of Health and Ageing (2005) Chronic Disease Management (CDM) Medicare items (new from 1 July 2005). http://www.health.gov.au/internet/wcms/publishing.nsf/Content/pcd-programs-epc-chronicdisease accessed 16th August 2006

[5] Australian Bureau of Statistics (2006) Publication 3222.0 Populations projections Australia 2004-2101 http://www.abs.gov.au/ausstats/abs@.nsf/mf/3222.0 accessed 16th August 2006

that will sustain or improve quality for increasingly complex care needs while containing costs and resource utilisation. While the focus could be on the individual's experience of care these terms also applied to provider approaches and system and service alignments.
Integration was seen as a focus on the structural or system/service wide strategies. Coordination reflected the informal arrangements between care providers initiated by the individuals rather than required or dictated by the system.

Multidisciplinary care as an intervention not only addressed the complexity of the care needs for the populations of interest, but also an approach that looked at an acknowledged series of relationships ongoing over a period of time

For the purpose of this study, interventions or reviews that dealt with approaches or processes that had coordination of care, multidisciplinary care delivery or integrated care outcomes as a major intent for patients formed the basis of the inclusion criteria. This excluded aspects such as Information Technology (IT) that delivered integrated information for physicians that could improve outcomes as a secondary feature or that enabled ICT activities.

PROJECT AIMS

So, while integration, co-ordination and multidisciplinary care were core concepts in primary care, the meaning of these concepts and the effectiveness of these approaches in guiding practice were not well understood. The aim of this project was:

1. To explore what is meant by these terms and what models existed using these reviews, and
2. To investigate the effectiveness of integration, co-ordination and multidisciplinary approaches in primary care.

PROJECT METHODOLOGY

The challenge for the Project Team was creating an approach and process that would support review and analysis given the complexity of the concepts, the potential breadth of the relevant literature, the relationship to models of service provision locally and internationally, and substantial time and resource constraints.

A six-phased approach to the project was proposed that would enable successive iteration of the topics of interest for the review and address the technical methodological issues in the early phases while encouraging the overall conceptualisation of the content and process.

Phase 1: Identification of project parameters

This was a familiarisation phase enabling investigation of the Hub and Spoke process. It also provided the opportunity for the Project Team to examine various systems for literature management and appraisal and to research the importance of systematic reviews and appraisal schemas with regard to the use of evidence in policy and decision-making. This phase also included the identification of a series of technical and clinical advisors to contribute to the development of the process and to participate in workshop exercises to assess the validity and meaning of the research findings to the Australian context.

Phase 2: Scoping study

This phase consisted of an initial sweep of the literature primarily directed at reviews and a limited search within a single bibliographic database (PubMed / MEDLINE). The purpose of the scoping study was to identify the major review constructs and the range and relative weight of issues in the topic field. This was to be a critical step in refining the approaches and processes based upon a trial investigation of the review questions and processes. The scoping study clarified the significant concepts and issues of concern as well as methods needed to cope with issues and problems associated with the size of the available literature and the number of concepts and elements needing investigation.

Phase 3: Refinement of Project Methodology

Based upon Phases 1 and 2, the final project methodology was developed. The initial set of study questions were reviewed and refined and the project approach finalised.

The project approach was based on a series of “illuminating” systematic reviews each dealing with a sentinel condition (e.g. specific chronic condition) and a particular integration, coordination or multidisciplinary strategy (e.g. case conferencing). These reviews were then assessed for common themes and findings.

This phase described the generic framework for individual systematic review protocols. It also captured the requirements of the Hub and Spoke collaboration.

Phase 4: Conduct of individual reviews

This phase involved the searching, inclusion and quality appraisal and data extraction and data synthesis processes for the specific reviews.

Phase 5: Linkage analysis

The analysis of common themes and learnings from the individual reviews were consolidated during this phase. The project team summarised core findings from the individual reviews and identified recurrent themes. The findings formed the basis for a workshop with policy advisors and clinical specialists to extract relevance and feasibility issues for application within the Australian context.

Phase 6: Development of final report

The final phase involved the synthesis of the findings from the reviews and the workshop within the final report.

The project methodology is outlined below.

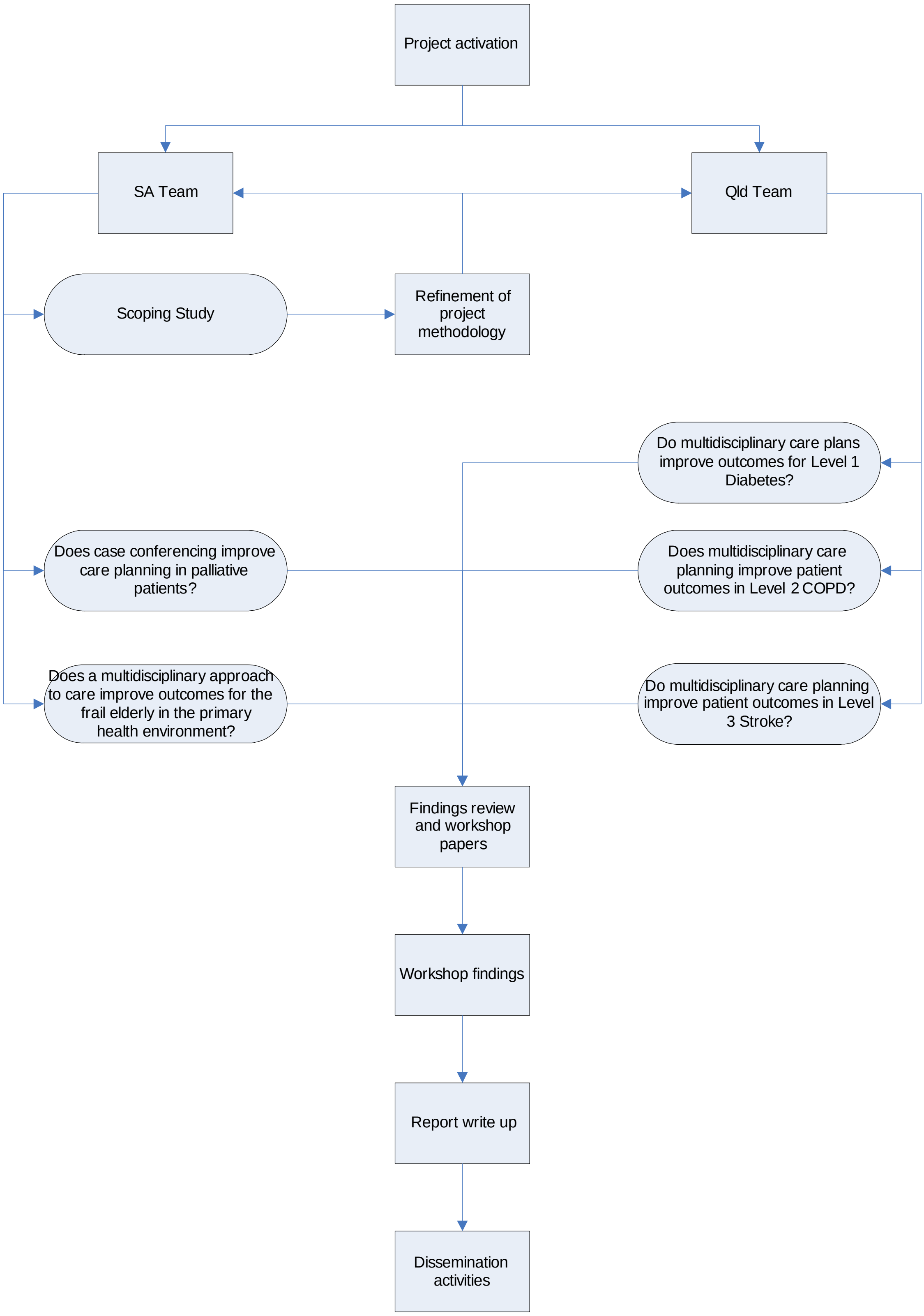


Figure 1: Schematic representation of project methodology

2. SCOPING STUDY

RATIONALE FOR SCOPING STUDY

The investigation of a series of broad concepts such as integration, coordination and multidisciplinary care was logistically difficult; requiring definitional analysis, model review and effectiveness assessment. To help shape and direct the development of the full project, a scoping study was completed, to:

- Locate major Australian policy initiatives
- Assess the potential size of relevant literature for individual concepts and topics
- Determine sources of and organisations with possibly relevant literature
- Assist in the development of search strategies
- Assist in the development of inclusion criteria
- Identify key themes and issues in the literature
- Gain familiarity with the types of methodological approaches used in research and review in these fields

The scoping study was an important step in refining the project questions and in finalising the project methodology.

SCOPING STUDY METHODOLOGY

The scoping methodology comprised three separate but interrelated searches.

- Review of reviews, involving a hand search of major systematic review repositories to locate relevant reviews dealing with integrated, coordinated or multidisciplinary care. Databases searched were Cochrane Database of Systematic Reviews, EPOC, CCOHTA, NICS and NICE.
- Ovid Medline preliminary MeSH term search using a first level pragmatic search strategy based on MeSH terms within Ovid Medline.
- Government delimited Internet search using the Google search engine, which enabled a preliminary sweep of items published on the Internet by Australian government departments.

The results of searches were documented. Citations deemed to be relevant to the reviewer were retrieved for further review. Retrieved articles that were seen to contribute to the Scoping Study purposes were included on the Project database which was developed using Endnote reference management software.

No formal exclusion criteria or quality assessment was used for this preliminary exercise. The indexed articles were then read by a single reviewer who developed a summary table of concepts, issues and themes discussed in the literature. This process continued until there was apparent saturation with no new themes, issues and concepts being identified and discussed.

SCOPING STUDY RESULTS

The preliminary sweep of the literature as described above retrieved the following number of documents:

- Cochrane/EPOC database hand search:	649
- Ovid Medline multi term search strategy:	4 027
- ".gov.au" delimited internet search	1 157

An initial review of the types of material returned was undertaken. Items that did not have an ICM study or discussion as their focus were discarded. Following an agreed approach from the hub and spoke meeting, examination of articles for major themes and concepts continued until saturation occurred. The number of articles finally included as part of the scoping study was 167.

SCOPING STUDY FINDINGS

The scoping study identified a variety of different issues and considerations. Common issues and components were consolidated into a set of considerations for review within the project. They are described below.

Volume and types of literature

A very large volume of potential literature needed to be filtered prior to review and evaluation. Over 5,000 items were identified in the scoping exercise from a single database; the volume would have increased if snowballing or grey literature searching had also been used.

There was a wide variation in the type of material being retrieved, for example, formal research studies, case studies, program reviews, consumer reflections, policy documents, expert opinion and commentaries. Many of these items included relevant material that assisted in contextual understanding or was important in understanding issues that could affect the success of the intervention. Much of the “evidence” fell outside the normal biomedical standard reflected in the NHMRC intervention hierarchy. [4] Frequently occurring non NHMRC evidence categories included organisational analyses, policy documents, program evaluations, economic assessments, and qualitative work, meaning that there would need to be a appraisal system that would support the synthesis and evaluation of the diverse types of available evidence.

Significant issues for most countries with a similar health system

Similar issues were reported to be driving the investigation of these approaches in many different countries. These drivers included the ageing population, chronic disease, cost of health care, quality of care, and providing care at the end of life. [5-7]

All countries in the identified set were looking at the approaches, applications and usefulness of integrated, coordinated and multidisciplinary approaches. The evidence base was evolving with some approaches appearing to be well researched [8] but still uncertainty about the relative weight/value of different approaches and interventions. Many of the change processes reflected seminal studies from Evercare and Kaiser Permanente in USA. These studies reflected the American managed care system. There was ongoing debate within the literature about the economic and service comparisons between countries. [9, 177, 178]

Meanings of terms

No consistent and accepted nomenclature on integration, coordination and multidisciplinary terms was available, [10, 179] although there were elements that related to the terms. Definitions were still evolving.

- For example, WHO (Europe’s) definition of integration [11] highlighted a process approach. “Integrated care is a concept bringing together inputs, delivery, management and organisation of services relating to diagnosis, treatment, care, rehabilitation and health promotion. Integration is a means to improve the services in relation to access, quality, user selection and offering care.”
- Agreement on what was meant by chronic was still evolving (e.g. non-curative, threshold, supportive versus curative)

- Coordination had many meanings and could be tied to case management or care coordinators as well as to coordination between practitioners and/or health services.
- Multidisciplinary had different meanings and could reflect multidisciplinary care or multidisciplinary teams. [12]
- Integration was often applied to the patient's perception of the care received as well as to the level of structural interdependence within and between services.[13]

Models of care

Many papers discussed models. However, the models varied depending on the perspective. For example, a national model of care service arrangements had a very different focus to a model of care delivery to patients in a specific service. Most research had been done at the service or organisational level or with a specific population. There had been some reviews of major structural changes however these reviews were often descriptive with an uncertain relationship between cause and effect. Further as many were broad organisational change programs, the effect of specific aspects such as teams or coordination components could not be isolated and evaluated. There were major issues in transferability/generalisability from small studies of programs or services to system and structural change.

Various models were described in different countries and literature. Generic approaches included:

- Population health (e.g. Chronic care model)
- Disease care management (e.g. asthma management, clinical pathways)
- Case management (Individual needs approach e.g. Kaiser Permanente, Evercare)
- Supportive care (Palliative approaches)
- Patient centred care (Danish health care enrolees, i.e., patients as consumers)
- Network approach (organisational and service relationships)

There were many examples of localised models within Australia such as the aged care interface (e.g. ACRL [180]) or community palliative care provision. [181, 182]

Populations of Interest

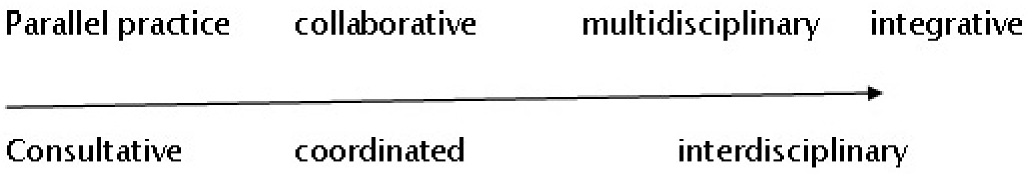
While the use of ICM approaches appeared quite widespread, the use of these approaches seemed to be used more extensively with particular populations. Studies and reviews of ICM approaches were found for the following populations:

- Aged and frail aged, including dementia
- Mental health
- Chronic illnesses
- Intellectual and physical disability
- Palliative

Models of integration and coordination

There was an evolving literature relating to models to articulate interventions in a framework for integration and coordination, primarily:

- Boon, Verhoef et al. [14] proposed a framework that included seven different modes of team oriented health care practice. This approach reflected issues around "integrative health care".



- Leutz's work [15] focused on a 3 phase framework relating to linkage, coordination and full integration.
- Kodner [13] utilised Leutz's 3 phase framework but included a set of 15 factors integral to the development and operationalisation of integrated care.
- Ahgren and Axelsson [16] created an adaptation of Leutz's continuum that can be used as a measure of integration by looking at operational elements such as clinical guidelines, patient referral systems and network managers.
- Nies [17] also extended Leutz's framework by creating a grid that identifies the operational implications of the three options.
- Burgess and Beilby [18] proposed a model that is quadrant based around the size of the patient population and the number of services needed.

Effectiveness

There was not an established body of definitive evidence supporting the effectiveness of ICM approaches. Research had generally been undertaken at the organisation or clinician level. The implications for system wide changes was yet to be assessed.[19]

Economic analysis of effectiveness of ICM approaches was still somewhat limited. Economic measures were normally estimated at the service level without a full understanding of the effect of changes on the health system process and costs.[20, 30, 185]

There needed to be a clearer definition of the desired outcomes and evaluation measures and processes. [6]

Acknowledged precursors/enablers of ICM approaches

Information sharing, particularly patient information, and therefore information and communications technology (ICT) infrastructure [21, 22] was seen as a necessary tool to support ICM.

Shared standards and protocols such as a single assessment point, agreed clinical pathways and guidelines appeared to contribute to coordination and integration activities. [23-25]

Funding mechanisms that supported service interaction or system changes were also identified as a necessary enabler.

Administrative requirements of ICM approaches needed to be recognised and managed in funding and resource arrangements. [18, 26, 27]

Role of primary care

The importance of primary care was acknowledged in many ICM approaches. It was seen not only as the gatekeeper to services but also as the core integrating or coordinating device for the patient. The structure of primary care provision varied between countries and therefore is important in assessing transferability. [7, 28]

POLICY CONSIDERATIONS

1. Coordination approaches will work within existing frameworks. The focus should be on mechanisms that work across services and within and across systems to enable the experience of coherent and seamless care. Integration would require a focus on structural and system change; there would need to be investigation of legislative, funding and political frameworks. Both integration and coordination approaches require moving the clinical and organisational mindset beyond acute episodic care.
2. Increasingly the health and social networks will need alignment if coherent and seamless care for individuals is to be provided, particularly with regard to complex needs (e.g. frail aged, stroke, chronic heart failure). [29-31]
3. Additionally, the role of caregivers needs to be built into models of care and service delivery, and the role of the private health insurers in the Australian context needs clarification. [32]

3. DEFINING THE PROJECT APPROACH: FIVE ILLUMINATING REVIEWS

The key themes of the material and specific issues were then reviewed at the January Project Team meeting. At this meeting refinements to the project questions[6] were made and the project methodology finalised.

IMPLICATIONS OF THE SCOPING STUDY FOR THE REVIEW PROJECT STUDY

For the purposes of the project there needed to be a shared understanding of the terms to facilitate identification of appropriate studies, classifying these studies for use by the review, and developing a better understanding of the implications of specific approaches and interventions for the Australian context. The general approach was to conceptualise coordination as processes and activities that are designed to enhance the relationships, linkages, transitions and responsibility for care within the existing structural arrangements. Hence, coordination activities included such things as shared health records, case conferences, or shared assessment tools that enabled a more seamless flow of care arrangements for the patient. Integration was the development of comprehensive approaches to care provision that depended on formal relationships or structural arrangements to organise and deliver care. Coordination related to the interactions between the participants in the system while integration modified structures in the system. This working definition drew upon the key differences identified by Leutz (1999) [15].

It was clear that it would not be possible to examine all the concepts raised in the scoping study. Finding a mechanism to examine the issues identified in detail while retaining the ability to look at the broader implications of ICM approaches for the Australian context was seen as important. To this end, a series of illuminating reviews that investigated a particular ICM mechanism and a specific population or condition were planned.

This would enable reviews that were manageable in terms of scope and question but could provide an interconnected framework for contributing to the generic questions relating to ICM approaches in primary care. Given the landscape of primary care practice and organisation in Australia, [183,184] the major emphasis for the project was directed to coordination activities. A coordination focus seemed to more appropriately reflect the current status of Australian GP arrangements where GPs function as independent practitioners within the health system.

Other generic inclusion / exclusion criteria were determined and are outlined the methodology and search strategy attachments.

DEVELOPING THE ILLUMINATING REVIEW TOPICS

The selection of topics for the individual illuminating reviews was based on the identification of 'sentinel conditions/populations' and 'sentinel interventions'. This would both contribute to the immediate pool of knowledge for specific groups but also provide the opportunity to potentially identify areas of commonality and difference across the individual reviews.

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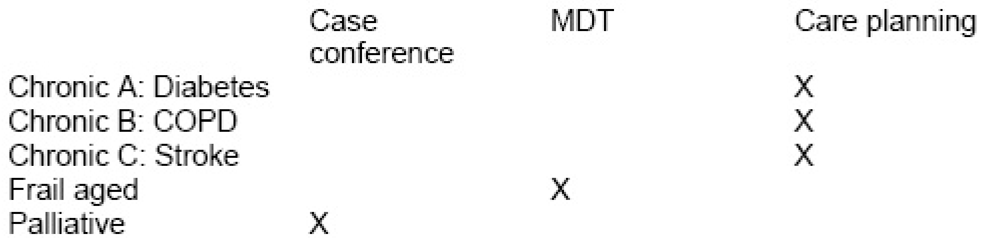
[6] Details of the changes to the project questions have been summarised in Attachment 5.

Populations of interest both from the scoping study and the grant requirements were seen to be chronic, palliative and aged populations. A series of studies were envisaged that would reflect the three populations and within the chronic population would reflect differing care requirements relating to stage and diversity of chronic conditions.

Reflecting continuum of care trajectory, it was agreed that the three separate studies for the chronic population would reflect
a) Steady decline from full function, with a rapid deterioration at the end (Level 1);
b) Steady decline from full function with exacerbations requiring periods of intensive intervention (Level 2); and
c) Steady decline from a low functioning base, with death being the result of a prolonged period of significant impairment (Level 3).

Further, the three conditions that were selected had a high incidence within the Australian community and were of importance to the national health agenda. [33] The diseases selected were
a) Early management of Type 2 diabetes mellitus;
b) Chronic obstructive pulmonary disease; and
c) Completed stroke.

In looking at sentinel interventions, it was agreed to focus on interventions that could be applied within the Australian primary care setting. Key themes reflecting government policy related to care planning, case conferences and multidisciplinary teams were discussed. These were selected as the sentinel interventions for review. The investigation pattern of the individual reviews is outlined below:



	Case conference	MDT	Care planning
Chronic A: Diabetes			X
Chronic B: COPD			X
Chronic C: Stroke			X
Frail aged		X	
Palliative	X		

SELECTING STUDIES

Health service interventions are highly complex and are variously affected by the presence/absence of an evidence-base, methods used, stakeholders and contextual factors. Individual reviews were able to define the specific types of studies for inclusion to reflect the availability of literature, the applicability of study designs to the particular question and the relevance of implementation and transferability issues.

The APHCRI program's focus on health delivery in primary care did however lead to a selection framework restricting study selection to studies that related to the primary care setting, and involved primary health care professionals, particularly general practitioners, in the care planning process.

The generic search and inclusion criteria developed were as follows:

- Countries with comparable health systems (i.e. Australia, New Zealand, Canada, United Kingdom, United States (limited))
- Study types – varied according to the individual review
- Effectiveness - systematic review / RCT
- 1990 – 2006
- English language
- Within the primary health care sector
- Related to integrated, co-ordinated and/or multidisciplinary care

Specific exclusions were as follows:

- Mental health initiatives
- Paediatric service initiatives
- Acute care initiatives
- Studies dealing only with social care or community care with no health focus

Two different tools were used for individual reviews to assess the quality of the included studies. They were the QARI/NOTARI system created by Joanna Briggs Institute for use in systematic reviews and the APRAC rating system described by Aoun and Kristjanson [34]

Quality appraisal and data extraction was completed by each review group. The individual review team determined the particular study designs that would be included for the review. Details of the specific search strategies and included and excluded studies are found in the attachments.

4. INDIVIDUAL REVIEW: DOES CASE CONFERENCING IMPROVE CARE PLANNING IN PALLIATIVE PATIENTS?

BACKGROUND

Ensuring that palliative patients and their families receive holistic care is a fundamental tenet of palliative care. As such, palliative care incorporates a wide range of healthcare providers from varying medical and non-medical disciplines which can make coordination of services difficult. Often there is little communication between various healthcare providers, including the general practitioner [35] resulting in isolated and fragmented care. Communication is particularly important as interactions between GPs and specialist palliative care services have increased, currently 90 per cent of care at the last year of life occurs in the home. [36] Studies have shown that when caring for a patient with a life-limiting illness, multi-professional teams seem to be able to provide better care than the general practitioner working alone. [37] Therefore in palliative care, the optimum model of care needs to be multidisciplinary with a formal process required to ensure that it is available as needed.

In November 1999, the Australian Government introduced the Enhanced Primary Care (EPC) Medicare Items to provide coordinated care for people with complex, chronic or terminal illnesses and established a way of driving integration and partnership between healthcare providers. [38] The EPC package consists of care planning, health assessments for people 75 years or older and case conferencing and provide a mechanism for GPs to claim payment for conducting coordinated services. Until the introduction of the EPC Items there was little financial reward for GPs to communicate with other healthcare professionals. [39]

To date uptake of the EPC Items has been varied with case conferencing, being the least utilised item. In the period from November 1999-October 2001 case conferences made up 3 per cent of all EPC Items claimed. [38] In 2003, there were 20,716 claims for case conferences compared with 228, 250 care plans. [40]

Case conferences provide an opportunity for the GP to organise, or participate in an interactive discussion with two or more health professionals or service providers, in order to identify and discuss the care goals of a patient with a chronic or terminal condition who has multi-disciplinary needs. The case conference model aims to allow the GP to move his or her care from short, episodic and fragmented care to holistic care that is integrated with other healthcare providers. Case conferencing therefore provides the ideal mechanism to enhance the communication between the palliative care team and the GP and to increase the coordination of services.

The purpose of this systematic review is to examine the effectiveness of the case conferencing model in palliative care and to explore potential barriers and facilitators.

FINDINGS OF THE REVIEW

The large diversity of study designs and outcome measures made it difficult to compare studies based on a common outcome factor. In general the studies produced results in two distinct areas, the first focused on implementation, the second smaller subset focused on the impact of case conferencing on a range of health outcomes.

Uptake of case conferences

The formal evaluation conducted by Wilkinson et al [38] demonstrated that while the majority of GPs had claimed at least one of the EPC Items there was a wide variation in the use of different EPC Items and that the case conference EPC Item is not widely used.

Acceptability of case conferences

Case conferences were generally acceptable to GPs with high rates of satisfaction reported by GPs survey within the studies examined in the review. In addition many studies indicated that GPs liked the opportunity to discuss patient care with other healthcare providers involved in the care of the particular patient.

Barriers to conducting case conferences

Ten studies examined the implementation of case conferences and found a number of barriers to case conferencing existed. These could be further broken down into organisational barriers, legislative and remuneration requirements such as complex paperwork, workload issues and timing constraints.

Participant Benefits of case conferences

A number of the studies included in this review documented participant perceived benefits of case conferencing, these included:

- Improved communications between participants
- Increased GP knowledge about the patient’s illness
- Interactive discussions with other healthcare professionals as a result of the face-to-face communication
- Improved inter-professional respect particularly as GPs often did not have a good idea of the roles played by other health providers
- The case conference provided a learning opportunity for all participants
- A mechanism for de-briefing, particularly when dealing with particularly difficult patients
- Reduced professional isolation
- Increased team building and promotion of a team approach to caring for terminally ill patients.

Patient benefits from case conferences

Reported positive benefits from the case conference, included:

- Assisting in discharge from hospital
- Improved practice
- Reduced inappropriate medications, including identification of medication-related problems
- Increase patient and carer awareness of services
- Identification and resolution of problems
- Reduced primary care visits
- Maintenance of function and independence
- Increased use of services

Case conferences did not appear to influence quality of life and did not increase survival in the one study that followed patients longitudinally after the case conference. Case conferences did not appear to benefit all outcomes measures, and were successful in areas that could be influenced directly by the primary care team.

Effect on hospitalisations

Seven studies examined the effect of case conferencing on hospitalisation. In general a single case conference appeared to reduce planned and unplanned hospitalisations. The studies demonstrated no clear benefit on length of stay.

Targeting

Given the resources needed to arrange a case conference, two studies recommended that case conferences should be targeted to specific patient populations, for example those with the most complex conditions that require inputs from multiple healthcare providers.

POLICY IMPLICATIONS

1. Australia still has a structure of individual practices with reduced intra collaborative entity which means there are limits to what an individual can do. In order to facilitate coordination of care, support must be provided to the individuals, above and beyond what currently exists.
2. Medical funding arrangements need to recognise the benefits of a coordinated approach to patient care and acknowledge that case conferences impose a cost on all participants and institutions and should fund all healthcare providers accordingly.
3. Due to workload pressures, responsibility for identifying patients and instigating case conferences may need to become the responsibility of healthcare providers other than GPs. If responsibility is to remain with the GPs assistance must be provided for “EPC-Coordinators”.
4. Alternative mechanisms of conducting case conferences, for example via the Internet or sequencing of discussions should be explored.
5. ”Future promotion of the EPC items by the Department, divisions, professional groups and others should focus on their use within the broader policy framework of care for older Australians and people with chronic and complex conditions” [38]
6. Effective implementation requires changes at multiple levels of the healthcare system.

5. INDIVIDUAL REVIEW: DOES A MULTIDISCIPLINARY APPROACH TO CARE IMPROVE OUTCOMES FOR THE FRAIL ELDERLY IN THE PRIMARY HEALTH ENVIRONMENT?

BACKGROUND TO THE REVIEW

Australia's population is ageing. Over the past decade there has been increasing interest in the changing patterns of Australia's demography and in the ageing of its population. In 2003, the proportion of people aged 65 years or more was estimated to be 13 per cent or over 2.5 million people up from 5 per cent in 1960. [33] The proportion of the very old is also increasing. It is anticipated that by 2051, those over 85 years of age will form 5 per cent of Australia's population. [41]

Recent investigations of statistical trends in disability suggest that additional years of life in Australia do not appear to be additional years of disability free life. Instead there are indications that a proportion of this increase will be spent with light to moderate disabilities. [42] The needs of frail aged have as a consequence become an important part of the reform agenda for health and social services as governments struggle to meet increasing demands for complex care by an increasingly larger proportion of the population while containing healthcare expenditures. There is evidence from America that 82 per cent of those 65 years and older have one or more chronic conditions and 43 per cent have three or more conditions. [43]

New initiatives such as health assessments for the over 75s, care plans and chronic disease management items, and community care arrangements such as CACP and EACH packages demonstrate the Australian government's awareness of the growing impact that this population will have on the demand for health and social services. Frail elderly patients frequently present with multiple and complex needs which require a comprehensive management strategy. Multidisciplinary care represents a direction for care management that might better meet the complex care needs for this group by providing an integrated approach to care management and a broader set of skills in assessment and ongoing care.

Specifically, the review sought to:

- Examine whether the population of frail aged benefited from multidisciplinary team (MDT) involvement, and
- Investigate what aspects of the MDT may affect care and benefit.

METHODOLOGY AND REVIEW INSTRUMENT

Searching was conducted systematically across literature databases on the OVID platform: Medline, CINAHL, Embase, PsycINFO, and Ageline, PubMed, Dissertation Abstracts, Web of Science, Informit, AMED, Cochrane Library databases, and EPOC, using a search strategy structured from a combination of MESH headings, text words, and synonyms for the concepts of multidisciplinary, integrated or coordinated care, primary health, family physicians / general practitioners, frail aged, and outcomes measures.

Retrieved items were independently appraised using a quality assessment tool that was developed for the Australian Palliative Care in Residential Aged Care (APRAC) Project.

There were 697 retrieved items from the bibliographic databases, 102 items from grey literature sources and 8 pages of items from Google. Following preliminary citation analysis, 127 items were retrieved. Application of the inclusion criteria led to 111 items being excluded.

The data extraction and synthesis was done jointly by the two reviewers. Where possible data was accorded a rating as +, - or 0 to indicate the finding with regard to an effect. Because of the heterogeneity of the studies with regard to interventions, settings and outcomes it was decided *a priori* to not statistically poll any results. Instead a narrative synthesis would be undertaken identifying findings from the studies and evaluating whether these related to themes or concepts.

FINDINGS OF THE STUDY

Issues and Definition:

Frail aged: For the purposes of the study it was initially agreed to use the delimiter of the Australian Enhanced Primary Care Package age cut-off of 75 years and older, however this became problematic for many reasons including the definition varied between researchers, changing realities of trajectories of illness, incidence of chronic disease, and longer dying time span. In particular, the Canadian SIPA model detailed by Beland et al [44] considered frailty in the context of the degree of disability compatible with admission to a nursing home.

The focus of this review was on the effect on the older population who were frail, not the "well older aged". In light of this variation, it was agreed that "at risk" might be a better predictor of frailty than age in years.

Multidisciplinary: Teams may be multidisciplinary or interdisciplinary, suggesting a difference of purpose, operation and structure. [45]
The concept of a multidisciplinary team itself implied two variables:

1. Multidisciplinary effect (enriched knowledge base)
2. Team effect (e.g. enhanced communication). [46]

Team: There was uncertainty about what defined a team in this context. A wide range of different multidisciplinary teams were reported in the research literature, with no one model clearly more effective across practice settings or needs. High team functioning did appear to have a positive effect on health outcomes for frail elderly people. [47]

Multidisciplinary Team interventions: Inherent Confounders

Most often, multidisciplinary teams operated as one element of a program or strategy. Common other variables were case management or co-ordination, a single entry point system, comprehensive geriatric assessment, involvement of the primary care physician, clearly defined targeting of services, formal networks, guidelines and protocols, and funding mechanisms. [25, 48, 49] These variables made it difficult to isolate multidisciplinary teams as the significant intervention factor. [50, 51]

Positive Findings

- Case conferencing was shown to improve medication appropriateness in residential aged care facilities. [46]
- Neighbourhood team case management was associated with a significant reduction in health costs, due to reduced hospital days and home help hours, particularly in community care of the elderly with dementia, compared with

centralized, individual case management. They also provided greater support for caregivers and rapid, appropriate response to crises. [52]

- Comprehensive Geriatric assessment and home follow-up by multidisciplinary teams did appear to reduce re-admission to emergency departments for patients over 75 discharged from the Emergency Department. [53]
- Higher team functioning impacted positively on short- and long-term health outcomes for the frail elderly. [47]
- Some integrated care programs (PRISMA, SIPA, some HMO programs) were associated with positive client health outcomes and cost effectiveness. [44, 54-57]
- Co-location of multidisciplinary teams demonstrated no statistically significant difference in measured patient and team outcomes. [58]
- Multidisciplinary teams often failed because of poor expertise in the management of the teams, despite enthusiasm and commitment .[59]
- Frail, elderly people often resisted the "at risk" label, were stoic and reluctant to use community services. [59]

DISCUSSION AND IMPLICATIONS

Practice Implication

- GPs accessing the EPC items to participate in case conferencing with appropriate multidisciplinary professionals could provide better patient outcomes. The patient does not need to be present at the case conference for this intervention to be effective. The case conference could be organised by other members of the multidisciplinary team (e.g. a palliative care or community nurse). GPs needed to be convinced that time spent case conferencing will be worthwhile. Payment for this time via the EPC items was important in making this financially viable for GPs.
- Locally based multidisciplinary teams should be set up to provide community support of the elderly with dementia and their caregivers, caregiver support being crucial in the ability of people with dementia to remain at home. The neighbourhood location of the team provided "more opportunity for case conferences, more familiarity with local community resources…and more awareness of and rapid response to crises in the lives of the patients and their caretakers" and overall was cost effective. [52]
- Emergency Departments should organise Comprehensive Geriatric Assessment for all ED patients over 75 and home follow-up by multidisciplinary team for those needing this.
- Higher team functioning needs to be recognised as a factor in achieving health outcomes and supported by individual practitioners and organisations.
- Education in multidisciplinary team management needs to be undertaken by team leaders and supported by their organisations.
- There needs to be careful use of language such as "at risk" in discussions and other communications with frail elderly people in the community.

Policy Implications

- EPC items provide a mechanism for multidisciplinary team engagement in the country.
- Creating infrastructure and support for neighbourhood team management of elderly people with dementia and their caregivers may be a worthwhile direction.
- Supporting training in the management of multidisciplinary teams, and the training of team leaders / managers to work effectively with divergent agendas,

cross-disciplinary (and at times cross- paradigm) miscommunication and a range of perspectives and visions could result in more effective teams and better outcomes.

- There needs to be a careful use of language such as “at risk” in policy documents.

Conclusion

Unsurprisingly, given the heterogeneity of the studies reviewed, current research demonstrated a lack of consensus in the evidence for the effectiveness of multidisciplinary teams in health outcomes for the frail elderly in primary care. However, there were pockets of evidence and suggestions of components of effectiveness. Case conferencing was shown to improve medication appropriateness in residential aged care facilities. Neighbourhood team case management did reduce hospital days and home help hours in the elderly with dementia. Comprehensive Geriatric assessment and home follow-up by multidisciplinary teams did reduce re-admission to emergency departments for patients over 75 discharged from the ED. Higher team functioning impacted positively on short- and long-term health outcomes for the frail elderly. Some integrated care programs were associated with positive client health outcomes. However, the results were not definitive and a single trend was not evident across all the studies.

Further research is needed to answer the following questions for this population:

1. Which factors in multidisciplinary teams are most significant in achieving health outcomes – breadth of perspectives, effective communication etc?
2. At what points of an elderly person’s care trajectory is a multidisciplinary team most effective?
3. Does a team need to have an ongoing role? Can it simply set coordination in place and assume a future intermittent role?
4. Does a team have a differential effect within a particular setting, or with a particular focus (e.g. pharmacy)?
5. Which composition and roles within teams are most effective?
6. What outcomes best demonstrate the effectiveness of multidisciplinary teams?

Focused research could help to clarify the outcomes that such an approach could have for the frail aged.

6. INDIVIDUAL REVIEW: DOES MULTIDISIPCLINARY CARE PLANNING IMPROVE OUTCOMES FOR LEVEL 1 DIABETES?

INTRODUCTION

The prevalence of Type 2 diabetes is rising, and the routine review of patients is increasingly performed in the community.[60, 61] Patients with Type 2 diabetes are at risk of acute complications in addition to chronic micro- and macro-vascular diseases, such as retinopathy, nephropathy, peripheral vascular disease, coronary heart disease and stroke. This underscores the need for intensive monitoring and management by a multidisciplinary team. Diabetes, and its management, represents a global health conundrum. It is the sixth most common presentation to Australian general practice.[62] Direct health care expenditure on diabetes in this country approximated $784 million (1.7 per cent of total health expenditure) in 2000-1[63]. On a more positive note, the UK Prospective Diabetes Study has demonstrated that rigorous glycaemic control can significantly reduce diabetic complications.[64]

Integration across the primary-secondary interface, co-ordination of care and multidisciplinary care planning represent various approaches to achieving improved clinical outcomes and processes of care in the primary care setting. However, both in Australia and internationally, there appears to be wide variation concerning the content, delivery and effectiveness of interventions in diabetes. This chapter reviews contemporary literature in the field to assess the impact of co-ordinated multi-disciplinary care in primary care (represented by the delivery of formal care planning by primary care teams or shared care across primary-secondary teams) on outcomes in Type 2 diabetes.

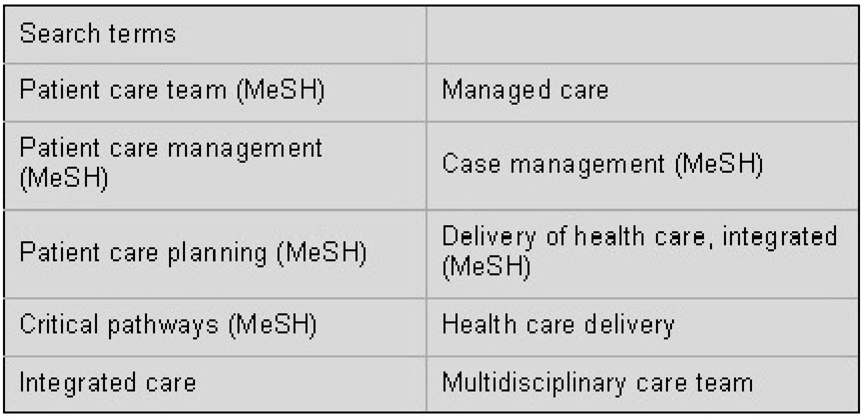
METHODS

Selection criteria

The review included randomised and non-randomised trials, and descriptive and qualitative studies of patients with Type 2 diabetes in the primary care setting, to whom routine care was delivered by a multi-disciplinary primary care team (PCT) or shared by primary and secondary care providers. Selection required that the GP was a member of the team. We also included non-research based material relating to multidisciplinary approaches to diabetes management in primary care to enhance insights derived from quantitative studies. Interventions that targeted health professionals only and studies that evaluated health professional-oriented outcomes only were excluded. Studies were published in English, and originated in countries with comparable health systems and socio-cultural values to Australia.

Identification of articles

Four bibliographic databases and websites listed in the CCOHA Health Technology Assessment list (Table 1) were searched (January 1990 to December 2005) by combining subject headings and synonyms for ‘diabetes’ with various terms relating to models of service delivery (See Box 1). Two reviewers selected articles for inclusion. Where there was discordance, agreement was negotiated with a third reviewer.



Search terms	
Patient care team (MeSH)	Managed care
Patient care management (MeSH)	Case management (MeSH)
Patient care planning (MeSH)	Delivery of health care, integrated (MeSH)
Critical pathways (MeSH)	Health care delivery
Integrated care	Multidisciplinary care team

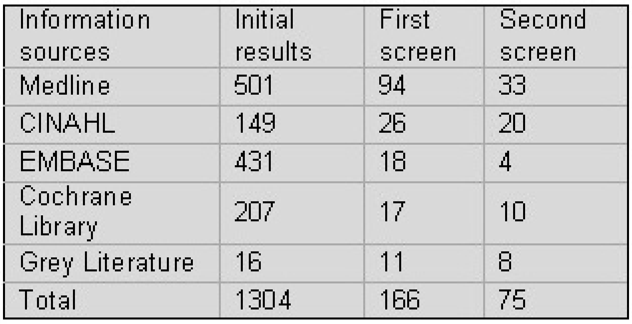
Box 1: Search terms

Assessment of methodological quality and data extraction

The quality criteria presented in the EPOC Data Collection List [65] and NHMRC level of evidence categories (I through IV) [66] guided the methodological assessment of quantitative studies. Qualitative research was appraised using the appraisal tool developed for the APRAC Guidelines project.[67] Lower-level evidence, included for its potential to illuminate findings from the trials, could not be subjected to these assessment standards; fulfillment of inclusion criteria generally sufficed. The descriptive data was extracted by 2 reviewers.

FINDINGS

The combined searches identified 1304 citations (Table 1). Once duplicates and articles clearly unrelated to the objective of the review were excluded, 166 abstracts were considered in selection. Based on full-text review, 75 met the inclusion criteria. Nine studies [68-76] did not meet quality criteria. Thus, data were extracted from 66 articles; 40 of these reported primary research and 10 originated in Australia. There were dissimilarities in relation to i) design; ii) interventions; iii) outcomes measured and; iv) effectiveness. Thus, results were synthesised using a qualitative approach.



Information sources	Initial results	First screen	Second screen
Medline	501	94	33
CINAHL	149	26	20
EMBASE	431	18	4
Cochrane Library	207	17	10
Grey Literature	16	11	8
Total	1304	166	75

Table 1: Source and number of retrieved items

Design of studies

The search identified 3 systematic reviews [61, 77, 78] (Level I) and 13 RCTs,[79-91] which varied in terms of quality and strength of evidence (Level II to III-1). There were 4 controlled before and after studies [92-95] (Level III-2); 5 cohort studies [96-100] (Level III-3) and; 5 pre-test, post-test studies [101-105] (Level IV). Five qualitative studies;[106-110] 1 survey;[111] 1 mixed-methods study [112] and; 3 retrospective, clinical audits [113-115] were included. Finally, the review included 26 non-research based articles, [116-140] consisting of case studies, reviews and guidelines, expert opinion, commentaries and reports.

Characteristics of the interventions

The different interventions emphasised a number of ICM approaches and were characterised by various combinations of components of the chronic care model.[141]

Design of delivery system

This component was common to all interventions. Of the 40 research-based articles, just 10 studies involved the delivery of care by primary care professionals exclusively; the remainder involved communication between primary and secondary providers. The purpose of this interaction varied across studies (e.g. professional education, organisation of care). For example, 7 studies involved the provision of secondary outreach services/mini-clinics to supplement primary care capacity. [85, 88, 89, 95, 98, 113, 115]. Others investigated sharing patient care [61, 79, 81, 91, 92, 96, 110] and/or resources [100] as well as methods for communicating across settings (e.g. videoconference; [101] telemedicine[94]).

All interventions involved a team, including a GP and at least one other health professional (once collaboration through case-management or care planning was specified). The application of these strategies varied across studies, with 11 specifying care planning [83, 89, 93, 94, 99, 103, 105, 112, 113, 115, 133] and 5 indicating case management of patients. [79, 81, 82, 86, 94]. Teams tended to be smaller in studies set exclusively in primary care and to be composed of a trio combination of GP plus practice nurse, dietician, health worker, pharmacist, care co-ordinator, nurse case manager, social worker and/or psychologist. Teams involving secondary care featured more disciplines, extending to endocrinologists, podiatrists, ophthalmologists, diabetes nurse specialists and educators. The purpose of multi-specialist teams was to deliver care (with some also being involved in developing/championing interventions [81, 98]). Again there was considerable variation in the level of secondary input - some interventions featured a visiting endocrinologist/team[88] whereas others (typically structured care initiatives) focused more on the effectiveness of the referral system.[91]

Decision support

The next most common feature of interventions related to the application of evidence-based algorithms, protocols and guidelines to promote optimal clinical care for diabetic patients. The specialist team often represented an educative and/or consultative resource for the primary care team. [84, 97-99, 104, 131]

Clinical information systems

Most studies also targeted systems for organising patient and population data in order to facilitate more efficient and effective care. This included developing patient registries, and introducing recall and reminder systems. [78, 89-91, 96-100, 104, 110, 113, 131]

Support for self-management

Another principal feature of interventions was the promotion of self-management. This was achieved through educating patients about diabetes [84, 85, 89, 90, 95, 98, 103] and self-monitoring [92, 102] explaining medication management [82, 86, 97] encouraging dietary change and exercise [81, 83, 88, 104] goal setting [100, 105] and; identifying barriers to change/adherence. [79, 87] This was often provided as part of group visits [93, 96, 99, 131] In Australia, interventions have promoted education in indigenous communities facilitated by Aboriginal field workers, information sessions and workshops. [131].

Community

Although featured less frequently, this component encapsulates initiatives to deploy community resources such as podiatry and dietetics to meet patient needs by supplementing GP care. [89, 96, 102, 113, 133] A number of interventions in Australia have fostered awareness about indigenous cultural issues in health care providers [131] and engaged local support groups and activities to support patient self-management. [103].

Outcomes measured

Endpoints related to 4 broad categories: biomedical; process of care; secondary and; system. With the exception of 1 study (integrated footcare clinic [84], all interventional studies evaluated effectiveness based on glycaemic control (HbA1c). Cardiovascular risk factors (BMI; BP; lipid control) and vascular complications (visual acuity; retinal fundi; foot lesions) were also extensively measured. Process outcomes included the checking/recording of clinical parameters. System-level variables were GP/specialist consultations; hospitalisation rates and; cost. Secondary outcomes included self-report measures of function; quality of life; satisfaction; compliance and; knowledge. Qualitative studies explored providers' and patients' attitudes to ICM interventions.

Effectiveness

In aggregate, 20 of the 29 interventions that measured glycaemic control reported favourable outcomes. Improvements in BP were found in 11 of 20 studies and lipid control in 7 of 18 studies. There was also extensive improvement in process outcomes.

Of the 12 RCTs that measured HbA1c levels, seven found a significant difference between the treatment and control groups at follow-up. [79, 81-83, 87, 88, 90] There was a trend towards a higher degree of complexity in successful trials, in terms of the number of participating specialities, the level of support, education and feedback provided to patients and the use of clinical information systems. The impact of multifaceted interventions on patient outcomes was mirrored across studies in the review. Inter-disciplinary communication was also linked with the success of interventions. [83, 101] All 3 RCTs of case management by pharmacists reported improvements in control. [82, 83, 90] In fact, the active involvement of the pharmacist in primary care was associated with statistical improvements in HbA1c outcomes across all such studies. [93, 98, 102, 105]

Different inclusion criteria meant that there was considerable variation in HbA1c levels at entry rendering comparisons across studies difficult. In the trials that reported the strongest effects, mean HbA1c tended to be higher at baseline, ranging from 9.6 per cent to 11.6 per cent. [79, 82, 88, 90] This suggests that patients who were poorly controlled at baseline exhibited more improvement than those who had better control. [85] Similarly, an Australian study found poorly controlled patients to benefit most from a program of integrated care involving multidisciplinary mini-clinics, upskilling and care planning with a GP. [115] This contrasts with trials involving patients with good control at baseline that show no change at follow-up. [91, 106] Studies also diverged notably on length of follow-up. Shorter studies (<1 year) were more likely to find differences. [88] One study found that 12-month improvements in glycaemic control had disappeared a year later[87] whilst another, following-up at 18-months, reported no effect of intervention on outcomes. [86] In contrast, a study that had comparable entry HbA1c levels (9.3v9.6) did observe improved outcomes at 2 years and a non-randomised study reported that 12-month improvements persisted a year later. [97]

In general, ICM approaches to delivery of care engendered a high level of acceptability in both service providers [78, 96, 97, 106] and patients. [86, 87, 90, 106] This was reflected in the qualitative findings, with patients indicating satisfaction in terms of better access and communication. Practice nurses were perceived as being equipped with the necessary skills to meet patient needs but without the time constraints of GPs. [108-110] The introduction of a diabetes service in primary care led to increased attendance and importance being ascribed to diabetes and regular review. [109] GPs identified improved communication with specialists as the main gain of integrated services. [107] A UK study found that asymptomatic patients who did not perceive themselves as having a serious health problem were more indifferent to the shift in care, relative to those who felt they had a serious disease. The latter group preferred specialist-delivered clinical care. [108] Many patients described a lack of confidence and knowledge to manage their diabetes in particular situations [108, 110]

The 26 non-research articles described a range of models and services, which were characterised by various ICM approaches. Contextualising much of the primary research in the review, the major themes were: the establishment of teams for screening and counselling, rather than acute care only [122] sustainable IT infrastructure to link providers within the community;[129] a need to fill current gaps in accessing allied health services;[132] the addition of specialist diabetes nurses to the PCT to expand the skill set and to link primary and secondary settings;[119, 132] continuing professional education, mentoring and appraisal;[117, 121, 136] provision of structured time/resources for joint planning[123, 135, 140] and collaborative activities;[140] patient education[127] and; individualised care planning[124, 128]and patient held records.[124]

DISCUSSION

On the whole, studies in the review indicated that ICM approaches to the delivery of care to Type 2 diabetes patients in the primary care setting led to favourable outcomes. This was supported by anecdotal accounts and descriptions of particular services. The clinical data were encouraging given that even modest improvement in glycaemic control has positive implications for long-term vascular outcomes in diabetes.[64] Metabolic control deteriorates with duration of illness.[64] This may explain why some patients' levels of HbA1c failed to improve.[78] Thus, even maintaining levels over time could be viewed as an acceptable outcome. The interventions were slightly less effective in improving cardiovascular risk outcomes, probably due to therapeutic advice being directed at hyperglycaemia only.

It was unclear if clinical improvements could be sustained over time because most studies followed-up within a year. One of the more methodologically rigorous studies that followed-up at 18 months reported no improvements in outcomes. [86] However, the authors note that the sample had a high level of co-morbidity, and many were socially disadvantaged and had relatively good initial glycaemic control. In general, greater team specialisation led to improved performance. Thus, the size of the team in the aforementioned study could have contributed to the lack of effect. There was evidence to suggest that poorly controlled patients benefited most from interventions. PCTs that involved pharmacists emerged as notably efficacious. This was possibly due to their assisting patients in understanding and organising drug regimens, especially in the elderly and those with co-morbidities, and addressing compliance issues, especially in asymptomatic patients. [105] Integration rather than improved referral alone was regarded as important [82] as well as the addition of specialities not traditionally based in primary care. The provision of support for self-management both during and between visits emerged as a key ingredient for success, as was the quality of the communication within and between teams. Overall patients and providers were satisfied with the devolution of services from the secondary to primary setting.

Implications for practice

The effectiveness of interventions was not so much dependent on the strategy used to deliver care (case management, care planning) as on the quality of coordination and the involvement of a diverse, skilled and communicative PCT. The review underscores the intensive needs of this population and suggests that considerable glycaemic control can be achieved in the primary care setting. However, the role of psychosocial factors in mediating the effect of interventions on patient outcomes must be recognised. Even the most intensive monitoring and co-ordination initiatives may be undermined by barriers such as financial difficulties, age, low self-esteem, illness induced anxiety and depression. [118] In working with indigenous communities, it is advisable to include indigenous health workers on the PCT, to advise on cultural issues in program design/delivery and identify barriers to care. [131] Inclusion of the patient in case conferences may serve to increase the salience of diabetes care and elicit more sustainable behavioural change. Interventions in primary care need to be practical and require leadership along with careful planning, co-ordination and team commitment.

Implications for research

Study comparisons were hindered by the lack of control groups and inconsistency in baseline glycaemic control. Thus, RCTs incorporating standard reference values for measuring this variable [78] with longer follow-up periods are warranted. Research is also required to identify how interventions might benefit those with better control at baseline and to investigate methods of inducing behavioural change. There is a paucity of evaluations that quantify, in economic terms, the long-term impact of interventions. Finally, research needs to determine what components add the most value to these ICM models. This would be useful for rolling out interventions with limited resources.

Implications for policy

The risk of diabetic complications, and the exorbitant costs associated with managing this chronic disease, can be greatly reduced through early intervention. [64] Furthermore, many patients are asymptomatic and at risk of under-detection. For these reasons, the importance of general practice involvement in diabetes care is widely recognised [60, 61] and most recently, for delivering preventive services and patient education. However, incorporating components of the chronic disease model into practice is resource-intensive. [87]

Whilst the EPC items serve to promote ICM activity in general practice, incentives need to be directed at supporting protected time for strategic planning and coordination. The remuneration system for GPs could be revised to encourage greater attention to achieving health outcomes, rather than focusing on individualised care planning alone. Increased access to allied health and mobilisation of community health services are also essential to support general practice and meet the extensive screening and management needs of diabetes patients. Divisions of General Practice could potentially play a facilitating role here, particularly for smaller practices. Given that the increasing prevalence of diabetes is likely to be most felt in primary care [118], it is essential that PCTs are equipped with the necessary knowledge and skills. Initiatives to formally integrate primary and secondary care have the potential to significantly enhance the skill set available in the primary care setting, through the transfer of knowledge [101] and to reduce professional isolation and improve co-ordination of care.

Methods for encouraging patients to take a more active role in their management need to be built into policy initiatives. [105] Efforts to resolve the diabetes pandemic also demand an equitable health system, one that not only reaches those in socially and economically disadvantaged areas but also patients and providers in remote locations. This again highlights the need for developing robust IT infrastructures that link rural primary providers with specialist teams in order to facilitate risk stratification, targeted intervention and education. [101] In particular, resources need to reach indigenous communities, given the gravity of this health issue in the indigenous Australian population. The increasing cultural diversity of Australia also calls for training PCTs in communication and in culturally sensitivity and traditions. Finally, policy initiatives need to direct resources at diffusing knowledge throughout the population about the substantial health and social implications of this disease.

In conclusion, this review draws together contemporary evidence to illustrate models of integration, co-ordination and multidisciplinary care as they apply to the management of Type 2 diabetes in primary care. Some theoretical groundwork exists with respect to multidisciplinary teams and co-ordination of care through care planning and case management; however, much fine-tuning through research, clinical practice and policy is as yet required to confront the diabetes pandemic within the community in any consequential way.

7. DOES MULTIDISCIPLINARY CARE PLANNING IMPROVE PATIENT OUTCOMES IN LEVEL 2 COPD?

BACKGROUND

Chronic Obstructive Pulmonary Disease (COPD) refers to irreversible damage to lung parenchyma and/or the bronchial tree, with the vast majority of cases related to cigarette smoking. Smokers have a 20 per cent chance of developing COPD [142]. A minority of cases are due to chronic asthma or rare causes. Smoking causes ongoing irreversible tissue damage and functional impairment worsens. COPD has a relapsing course, with exacerbations from infections or co-existing cardiac disease, and is among the highest consumer of acute medical inpatient beds. The mortality for patients with advanced COPD after an exacerbation is between 36 and 50 per cent.[143] As a result, it attracts considerable attention from hospital-based medical services. As Australia's third leading cause of 'burden of disease' (after ischaemic heart disease and stroke), the AIHW estimates that direct health system costs of COPD are approximately A$300 million. [144]

The aim of this systematic review is to assess the impact of co-ordinated multi-disciplinary care in primary care, represented by the delivery of formal care planning by primary care teams or shared across primary-secondary teams, on outcomes in COPD, relative to usual care.

SEARCH STRATEGY

Health service interventions are highly complex. We examined effectiveness by reviewing controlled trials, but also extended the scope to review qualitative studies and capture participants' views and clinical experience. Finally we described different models of care in which care planning takes place.

We performed a computerised search of MEDLINE (from January 1990 to December 2006), EMBASE (from January 1990 to December 2006), CINAHL (from January 1990 to December 2006), the Cochrane Library (Issue 1 2006), and grey literature from web based searching of web sites listed in the CCOHA Health Technology Assessment list. The search combined synonyms for 'Chronic Obstructive Pulmonary Disease' with 'primary care' and terms relating to methods/delivery of multidisciplinary care. We found 23 papers.

FINDINGS

Interventions

Multidisciplinary care is supported by the literature, with both Australian [145] and UK [146] treatment guidelines supporting team approaches and individual care planning. Several models implementing this approach are described.

The effect of Multi-disciplinary care plans is difficult to quantify, because they take place as part of multi-modal interventions that are the subject of trials. Four models were described:

1. Care planning and subsequent service delivery delivered by outreach teams from hospital-based specialist services, and liaison with primary care professionals.[147-151]
2. Care planning arising from general practice (South Auckland [152, 153],

3. Specialist derived generic care plan initiated in hospital and carried out in the community. [154, 155]
4. Cross-disciplinary care of COPD patients in a single health management organization.

Patient identification is usually at the point of discharge from hospital after admission for and exacerbation of COPD. [148, 149]

In most models of care an individual management plan was devised with the patient. This was done by the hospital based team, with the GP being notified by the team of the management plan. Most model description include close liaison with the GP and primary care team as part of the role description, but GP/primary care involvement in the development of the plan was frequently limited to those cases where the team thought the GP should be involved

Communication between team members was heterogeneous, with a combination of face-to-face meetings, teleconferences, predetermined protocols applied to patients and variations discussed.

The role of primary care

The NICE guidelines [146] defined the role of primary care as assessment of patient symptoms, adequacy of disease control, the development of complications, and timely referral to secondary services. Regular follow-up of patients was thus required. Participation in and coordination of the care offered by multiple health professionals will occur. Australian initiatives have encouraged multi-disciplinary approaches to the care of complex diseases, which has been achieved by funding general practice participation in multidisciplinary care planning for patients with complex disease needs.[156]

Qualitative studies indicated that a tendency to discharge patients early following exacerbations of COPD may leave some severely ill patients vulnerable in the community.

Outcomes

a) Respiratory Function

Respiratory function was reported in two studies.[154, 155] Multi-disciplinary care planning was associated minimal changes, with most measures showing no difference between groups.

b) Functional outcomes

There were improvements in the functional ability of patients in terms of duration of exercise, utilisation of oxygen and reduced fatigue.

Rabow’s studies [157, 158] showed improved outcomes in terms of improved sleep quality and reduced anxiety. Dyspnoea, and the extent to which dyspnoea limited activities, was also significantly improved in the intervention group. The treatment for these conditions was the direct responsibility of the palliative care team. There was no change in depression or pain where recommendations of the team to independent primary care providers about commencing relevant medication were taken up about one fifth of the time.

c) Quality of Life

Most quality of life measures did not change. However, subscales that related to patients' levels of fatigue experienced and mastery over their situations improved in two studies.[152, 154] Hughes found improvements in the quality of life of carers of patients who were not terminally ill. Rabow found improvements in some dimensions of spiritual wellbeing.

d) Service delivery

Use of health services either did not change or increased. Costs where reported increased in the intervention groups.[159] Patient knowledge about the condition increased, as did the frequency of GP/ primary care provider visits. More nurses visited patients and contacted the GP in the intervention groups.[160] Ambulance use in a New Zealand study increased, but emergency room visits did not. [153] Bed day utilisation results were mixed.[152, 161] The use of steroids increased, but of antibiotics did not. [153]

DISCUSSION

Application to Australian context

The drivers of change towards multi-disciplinary care of COPD, including care planning, are attempts to reduce hospital resources and reduce readmission rates. This will lead to pressure to ensure patients remain optimally controlled in the community. The main driver of outreach models is a more efficient use of hospital resources. Service delivery outcomes appeared less favourable than functional and quality of life outcomes. Costs are increased, as are the use of certain services. However, this appears to be the result of increased patient understanding of the necessity to treat infective exacerbations early.

Australia is developing a general practice-based model of chronic disease management. There is less emphasis on specialist outreach in the COPD setting, although examples of specialist outreach are present in disciplines like palliative care. The mixed funding models in Australia, where hospital based services are a state responsibility and primary care services are federally funded place limitations on the degree to which smooth integration of services can be achieved. Specific models that take this into account need to be developed.

Policy implications

1. Multidisciplinary care planning for COPD patients (within the context of different care models) improves functional patient outcomes, but may not reduce services. This may be an appropriate result and may lead to longer term reduction of mortality and morbidity.
2. Models that encourage integration between primary and secondary care will have to be deliberately developed to account for the mixed funding models present in Australia
3. Use of EPC items is an important tool, but programs that encourage specialist services to initiate the process will be required, as this is the source of initiative to develop multidisciplinary care.

8. DOES MULTIDISCIPLINARY CARE PLANNING IMPROVE PATIENT OUTCOMES IN LEVEL 3 STROKE?

BACKGROUND

Stroke covers several processes that cause permanent damage to a part of the brain by sudden loss of perfusion. This can be caused by obstruction to cerebral blood flow or haemorrhage from a vessel into brain tissue. The result of this damage is impaired physical function, the nature of which depends on the part of the brain involved. The most common strokes cause paralysis to large parts of the body, loss or distortion of higher-order functions like language, memory and personality, and alteration of automatic functions like swallowing, speech, and continence. Significant stroke leads to major disability, with normal daily functions requiring constant assistance. Stroke is the third largest cause of death in Australia. In 1997, the annual cost of stroke care was $555m, with the average cost of care twelve months after a first time stroke being $18,956, and the lifetime cost being $44,000 per case. Stroke care accounted for 269,000 GP consultations per annum.[162]

Because of the range and seriousness of the impacts of stroke on patients and their families, multidisciplinary care is essential. However, given structural differences in the way hospitals and community agencies work, this can mean that implementing structured care across the primary/secondary divide is exceedingly difficult to achieve.

The aim of this systematic review was to assess the impact of co-ordinated multi-disciplinary care in primary care, represented by the delivery of formal care planning by primary care teams or shared across primary-secondary teams, on outcomes in stroke, relative to usual care.

SEARCH STRATEGY

A computerised search of MEDLINE (from January 1990 to December 2006), EMBASE (from January 1990 to December 2006), CINAHL (from January 1990 to December 2006), the Cochrane Library (Issue 1 2006), and grey literature from web based searching of web sites listed in the CCOHA Health Technology Assessment list was conducted. The search combined synonyms for ‘stroke’ with ‘primary care’ with synonyms terms relating to methods/delivery of multidisciplinary care. Eighteen papers were retrieved.

INTERVENTIONS

Almost all studies originated from secondary care. Different models of care were identified, depending on the time at which the patient was discharged home if possible. One variant of the model involved patients with completed stroke being managed completely within the community, but supported by a specialist stroke service. No models arose from primary care.

Individual care plans were generated for each patient, and the degree to which primary carers were involved in the generation of the care plan varied substantially, from the GP and other team members being informed at discharge to GPs being major contributors to the plan’s development, and formal involvement in the review process. The types of models also depended on the level of funded options available to the discharge team.

A variant of multidisciplinary care planning occurred where a multidisciplinary team developed generic guidelines for patients, and these guidelines were implemented as routine care in the community.

The role of primary care

General practice was ascribed many roles in guideline documents written by specialist doctors. [163-165] These included the prevention and treatment of the complications of stroke, preventive health to minimise the risk of subsequent strokes, identifying the need for further rehabilitation when progress slows, and acting as a trusted advisor for the patient in such sensitive areas as resumption of driving and sexual activity.

However, GPs may not be filling these roles well.[166] Stroke patients and their caregivers reported that General Practice care is reactive- responding to requests for prescriptions, or to an emergency situation or complication. This was not what patients expected nor medical experts envisaged as the GP role.

Several nurse led models were reported. These followed a case management approach where the nurse led and followed up the care plan. Therapists in the community fulfilled similar roles to those based in secondary care.

PATIENT AND CARER OUTCOMES

a) Function

There were mixed results for the proportion of people being discharged home. There were improvements in favour of the one intervention which featured early discharge and intensive care planning but none in other studies. Similarly, there were marked improvements in the proportion of people achieving independence at 26, and 52 weeks in the Trondheim study [167-169], but none seen otherwise. Patients from this study were home in greater proportions and at an earlier stage than controls.

b) Mortality

There was no difference between intervention and control group mortality in any of the studies. (Trondheim [167-169], Goteberg[170], Askim[171])

c) Quality of Life

Interventions that include multidisciplinary care planning may have improved quality of life. The Trondheim studies showed improvements in quality of life indices at 12 months. The Askim study had improvement in the social subscale of quality of life (one of seven) at 26 weeks, and described this as a trend towards improved quality of life. Neither study showed reductions in caregiver strain, though there was a trend favouring intervention in the Trondheim study at 52 weeks.

d) Service utilisation

There were reduced bed day numbers in the twelve months post-discharge in the Trondheim study.

A financial analysis of rehabilitation of post-stroke patients in semi-rural community-based hospitals in Scotland compared with secondary care found a reduction by 60 per cent of the cost to the health district when this intervention was introduced.[172]

DISCUSSION

Application to Australian context

Stroke management is costly as much is conducted as hospital inpatients. Severe stroke patients who do not progress to a certain level of independence, or a level of dependence commensurate with the capacity of a cohabitating spouse or partner, must be transferred to an aged care facility. Any treatment that improves functional ability should therefore be pursued vigorously. There was good evidence that specialised stroke units improved functional outcomes. This study looked at the next step of multidisciplinary care, part of which care is planning. Intensively planned and support care planning improved the likelihood of functional independence. Lesser levels of primary care involvement in care planning did not appear as effective.

Nurse led stroke care in the community, with appropriate liaison with GPs may provide an appropriate model of care as an alternative model to that of care planning that takes place prior to discharge. This sort of initiative should be trialled in Australia.

However, there were major limitations to the development of integrated care involving hospital based services and community based services. These arose as a result of the mixed funding models where hospitals were state administered and funded, and where community services were either privately funded, or funded by Medicare. The Enhanced Primary Care funding arrangements are important initiatives that enable GPs to be funded to participate in care planning. However, since patients with completed stroke are usually discharged from hospital to home, the use of these funding mechanisms has to be driven by hospital based units.

Multidisciplinary care planning in stroke was usually embedded within a broader service delivery framework which was the subject of the published studies. For this reason, it was not possible to identify the degree to which the planning is responsible for improvements in outcomes.

Policy implications

1. Early discharge to home for stroke patients, which involves intensive multidisciplinary care-planning, should be trialed in Australia.
2. Research to identify facilitators to encourage specialists to implement care planning involving GPs needs to be conducted.
3. Consideration should be given to testing community-based senior nurse lead care coordination.

9. WORKSHOP SUMMARY

RESPONSE TO INDIVIDUAL REVIEW PRESENTATIONS

The project team incorporated a workshop process in order to discuss the interface between the reviews and policy and clinical practice. The participants were drawn from Commonwealth and State Chronic Disease and Palliative Care bodies, Divisions of General Practice, Primary Health peak bodies and Ageing peak bodies.

A number of presentations were made to inform the participants of the project and process, and to outline the main findings of each of the systematic reviews. Time was allocated after each review for discussion; with a concluding session allowing for broader discussions around policy and funding implications.

The main points of these discussions are summarised below.

Scoping study

Although the scoping study was designed to inform the individual reviews, there was discussion on a number of specific themes.

1. Solving questions: Does the literature point to how funding issues related to service coordination might be addressed?
2. System change: The literature does indicate that system change is required, but once started the changes may be difficult to reverse.
3. Practice change: Current funding models are driving innovation, while patient outcomes would be better achieved by applying the evidence we already have. An example discussed was the introduction of EPC items for case conferencing being introduced prior to the results of Australian trials being published. These items are very useful as part of a package in terms of patient care, but the funding model doesn’t provide mechanisms to make individual items work together.
4. Information loss: Literature has been lost over time leaving services, researchers and policy makers without the benefit of prior work. Reports owned by the state health systems get moved during times of re-structure and then misplaced. The owners of the reports change address and can no longer be contacted for report copies, and access to the relevant literature becomes lost due to disaster, non cataloguing or misfiling. Publication loss beyond reports is well recognised (publication bias, never published at all, lost from internet sites).

Chronic illness

The review summaries for coordinated multi-disciplinary care for Type 2 Diabetes, Stroke and COPD were presented and raised a number of discussion points.

1. Applying the principle of ‘teams’ can present inherent difficulties (such as teams comprising many members from the same discipline – different medical specialties, or teams from many medical and non medical disciplines), and what is it about teams that make the difference to patient care and outcomes. Applying a team approach (and thus composition) in the real world is difficult when the characteristics of the treatment population are not clear.
2. System change: The transition from secondary care back to primary care is problematic for communication, engagement of primary carers, and GP management structures (part-time GP’s, down time for planning and coordination activities). Access to broader information such as localised public

health atlas [7] and synchronous communication strategies are considered useful in improving coordinated care.

3. Funding as incentive: Access to funding models are seen as an incentive to improve practice and participate in Primary care programs such as networks, national data bases and team management investment.

Case conferencing

A summary of the review investigating case conferencing to improve planning stimulated discussion around a number of themes.

1. Funding arrangements: The review was able to provide some indication of how funding arrangements of EPC items can be restructured for better effect. Further payment structuring may result in better use of case conferencing as linked to care planning (as both result in enhancement of the other).
2. Planning: Best use of the items may well involve planning of training and resource packages to assist in arranging conferences. Further work should be targeted at the specific item use, or timing to determine when the most improvement is seen, for example at a specific stage in the disease trajectory, or when members of the team change.

Frail aged.

The review focused on multi-disciplinary team approaches in the care of the frail aged and generated discussion around the following issues.

1. Definition: The disciplinary makeup of a team, the location or facility of focus, and the enhancement to care was discussed. The literature had not been clear enough to support widespread change for the frail aged.
2. Planning: Issues around planning were discussed. As with case conferencing, input from teams may be better targeted related to disease trajectory, with input from specific disciplines. This requires further investigation.
3. System change: Training programmes for team management, and funding to support the time required to maintain teams were seen as considerations raised in the literature.

PARTICIPANT FEEDBACK

Workshop participants were asked to comment on the review summaries with respect to 4 key lines of enquiry.

Do our findings have face validity?

Participants commented that the reviews searched, found and reviewed material appropriate to the subject areas and appeared to fit with the requirements of the project and participants' understanding of practice and the literature. The findings can be structured in a way to deliver recommendations across a broad reporting base for recommending future change.

Are our conclusions valid?

The review conclusions are seen as valid and consistent with participants' knowledge of the contemporary environment. The conclusions need to incorporate comments on teams and stakeholders, and involve those who would be affected by any proposed change. The conclusions should be presented in formats described below.

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[7] Adelaide Western General Practice Network Public Health Atlas initiative
http://www.awgpn.org.au/site/index.cfm?display=5462

How to present the findings?

There was discussion on the need to undertake an active program of dissemination to ensure that the findings were available to relevant parties and individuals. Emphasis needs to be given to how to bring about change not merely the need for change. The language needs to be appropriate to the audience. There is a need to emphasise what the evidence does tell us not only the limitations to the evidence.

Can the findings be applied to the Australian health system?

Workshop participants discussed the difficulties of applying primary care research findings into the Australian health system and of not being able to relate research results to improved patient outcomes. A number of discussion points and future considerations are summarised below:

1. The Australian context has unique elements making it difficult to generalise data from other countries,
2. There are boundary issues between medical and social care.
3. There is no unequivocal evidence to promote a particular intervention for policy makers.
4. Integrated care trials results don't appear in policy documents. There was insufficient time to test the trials before policy decisions and this reflects the reality of decision making.
5. Transferability of evidence is an issue. For example, block budgets may work in NZ but Australia has the federal/state divide which would make this approach difficult.
6. General practice and primary care in Australia has a 'small business' mindset. This is a fee-for-service environment which affects initiatives and interventions. Any change at the macro level needs to be practical at the practice level.
7. Financial incentives to shift from GP management plans to case conferencing may be a valuable tool in improving patient outcomes. Simpler processes such as this may be more effective than trying to create system wide change.
8. Much of the primary care knowledge is either lost or difficult to find as it is not published and/or indexed. This means there is no common knowledge base that builds our local understanding.

GENERAL DISCUSSION AND EXCHANGE

A number of pertinent points were raised during the general discussion. They can be summarised as follows:

1. Australia has a well established health system. Working within these parameters using co-ordination and linkage approaches will be most fruitful in the short term.
2. How GPs are involved with processes (i.e. inter-professional respect, timely, planned (not an afterthought), key players) is as important as the act of involving them.
3. While evidence may be ambivalent or indicative rather than conclusive, there is local knowledge and experience that can also be accessed. There is capacity to change and improve incrementally by encouraging and supporting exchange of information about what is currently working and happening in the field.
4. Having key structures such as Divisions and PHCRIS provide process and practical information to the GP. This enables supports to improve the usage of current mechanisms such as EPC items or facilitating discharge relationships and processes between hospital and GPs.

5. Using existing networks and collaborative groups can build awareness of best practice for chronic diseases, and aged and palliative care. The example of the National Primary Care Collaborative was discussed.
6. Providing information and evidence in a context that is relevant to GPs is also important. For example providing information on the benefits of a particular process as an N of 3 to treat.
7. Providing examples and procedures of how you can use the existing mechanisms better (e.g. specialists could book in an appointment slot with GPs during their normal team meetings, encouraging practices to schedule a 1 hour block weekly for conferences with specialists).
8. There are also directions that could be usefully developed relating to practice staff involvement rather than GP involvement for routine care arrangements.

WORKSHOP OUTCOMES

This workshop provided an important opportunity for national leaders to review the current literature around integration, coordination and multidisciplinary care related to frail aged, chronic disease and palliative care, and to have significant input into the report format and conclusions. The project team can use this information in a number of significant ways.

1. Firstly, the input can be used to validate the process and outcome of the systematic reviews for funding reporting purposes.
2. Secondly, the discussions can assist the project team in the planning of a broad dissemination plan for recommending future work such as clinical or service trials.
3. Thirdly, the discussions will enable the project team to target specific recommendations arising from the project to very specific audiences, which will incorporate the collected wisdom of policy and clinical leaders, and will increase the likelihood of any submission documents being successful within any assessment process.
4. Lastly, this workshop assisted all members in becoming aware of the current policy and operational knowledge of the area. Both participants and the project team were able to exchange information concerning current programmes and innovations underway, which can lead to greater collaboration and integration in the future.

10. DISCUSSION OF THE PROJECT'S KEY FINDINGS

While each of the reviews stands alone as an investigation of a component of integration, coordination or multidisciplinary approaches, the review project process has also provided the opportunity to investigate if there are common threads to the reviews. Following completion of the individual reviews, discussions were held within the project team and with the broad workshop group about the common themes that were found across the individual studies. This provided the chance to extrapolate to a broader meaning and to identify aspects that may not be context specific.

The following points provide a summary of the common themes and findings around ICM approaches in primary care from the various project investigations.

- Coordination does appear to improve outcomes and this was found across the individual studies. Although there was variation in the mechanisms used, that is, team or care conference or care plans, there was a trend of demonstrated improvement in patient outcomes where a coordinating process represented an element of the care. Most critical to the outcome was active coordination, that is, a positive interaction between participants (whether as members of a team or case conference group or as a communicating member in care planning such as between the hospital discharge officer and GPs).

- Studies were considerably heterogeneous with regard to study design, population focus, interventions and outcomes presenting difficulties in making direct comparisons. This also created problems in assessing the applicability to the Australian context. The effect of this variable on the outcome is unknown.

- It appears that the more disciplines involved in the ICM approach the greater the improvement in outcomes for the patient. This trend was noted across several of the reviews. Introducing a greater number of disciplines brought different methods of inquiry expertise and responsibility, identified more potential needs and delivered a more comprehensive response to those needs.

- Multidisciplinary care comprises two distinct periods of contribution. The first is at the point of designing a tool or intervention or when designing information, guidelines and other resources. The second is at the point of care delivery. Outcomes could be improved by multidisciplinary input during both periods or during only one period.

- The role of evidence itself in ICM approaches also appears to be an element that is potentially related to outcomes. Many of the studies and interventions utilised evidence based materials such as guidelines, pathways or algorithms. The effect of the ICM approach was therefore strengthened or underpinned by the use of the best available evidence relating to the care need.

- An associated theme relates to the complexity of the interaction. Even though the individual review topics dealt with a single intervention illustrating an ICM approach, most interventions were multi-component. For example, care planning approaches often used standardised tools, care conferencing, case management and a multidisciplinary team. As a result while the intervention was seen to be effective, the relative weight or value of individual components can not be assessed. This is important when looking at generalising to an Australian context, particularly if not all components can be applied.

- Many of the studies and all the reviews suggest that ICM approaches may not necessarily reduce costs. This may be an appropriate outcome. Indeed, several studies indicated that ICM approaches led to the use of more services. Multidisciplinary assessment and guideline based assessment often identified additional needs. Again care against a defined standard or within a team arrangement may have resulted in referral for more services. It was not possible to say whether ICM approaches could lead to longer term benefits by reducing more significant health issues in the future. For many studies the economic analyses were limited both in terms of analytic design and timeframe focusing only on direct cost consequences such as bed days or number of admissions to an inpatient facility.

- For most studies, there was little investigation of the role of the patient as an active participant and/or consumer. While patient satisfaction was often measured, few studies examined the consumer’s goals for care. This omission was surprising especially given the population groups being studied in the ICM interventions were chronic, elderly or palliative. For these groups the focus of care is often supportive rather than curative. Identifying the actual goal of care may therefore be a significant first step in selecting appropriate outcomes and measures of effectiveness.

- The roles of patients within ICM approaches may be even more critical where there are elements of self management within the intervention. One study that identified the patient as an active participant in a case conference found benefits to all participants from the conference. Patient participation in aspects such as self management in chronic care or case conferences warrants further investigation.

- While ICM approaches shared commonalities across populations and diseases, the research indicated that interventions may need to be tailored to the particular characteristics of the population and/or disease. For example, for diabetes patients in the early disease stage, weight may be given to elements such as reminders/recall and self management through education and group support. On the other hand, protocols supporting decisions regarding treatment and the coordination of community services may be more important elements for a stroke patient in the community.

- Finally, there were suggestions from the research that the value of ICM approaches were moderated by local factors relating to how interventions were introduced and managed. To determine the true value of ICM approaches it may be as important to identify the best processes to support the incorporation of ICM approaches within practices, organisations and systems as it is to determine the most important ICM approaches or elements of an ICM approach.

CONCLUSION

While there is only limited evidence, it appears that the co-ordination interventions reviewed as part of the project did improve outcomes for patients within the primary care setting. The strength and validity of this effect is however mitigated by many factors including the patient population, the timing and complexity of the intervention and its generalisability to the Australian context. The economic effects of the coordination interventions could not be determined within the limits of this project.

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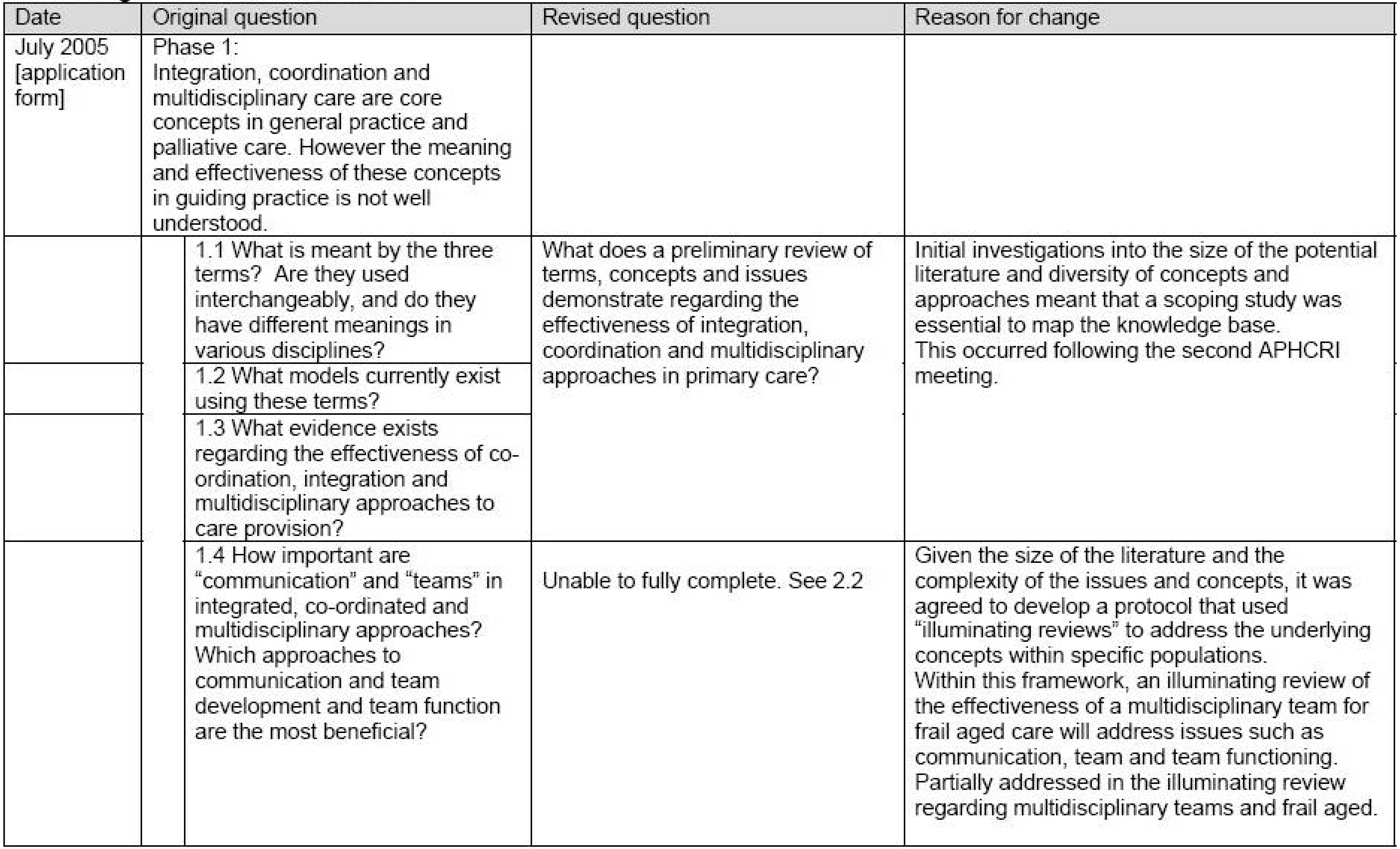
12. APPENDICES

12.1 Changes to the Review Questions



Date	Original question	Revised question	Reason for change
July 2005 [application form]	Phase 1: Integration, coordination and multidisciplinary care are core concepts in general practice and palliative care. However the meaning and effectiveness of these concepts in guiding practice is not well understood.		
	1.1 What is meant by the three terms? Are they used interchangeably, and do they have different meanings in various disciplines?	What does a preliminary review of terms, concepts and issues demonstrate regarding the effectiveness of integration, coordination and multidisciplinary approaches in primary care?	Initial investigations into the size of the potential literature and diversity of concepts and approaches meant that a scoping study was essential to map the knowledge base. This occurred following the second APHCRI meeting.
	1.2 What models currently exist using these terms?		
	1.3 What evidence exists regarding the effectiveness of co-ordination, integration and multidisciplinary approaches to care provision?		
	1.4 How important are "communication" and "teams" in integrated, co-ordinated and multidisciplinary approaches? Which approaches to communication and team development and team function are the most beneficial?	Unable to fully complete. See 2.2	Given the size of the literature and the complexity of the issues and concepts, it was agreed to develop a protocol that used "illuminating reviews" to address the underlying concepts within specific populations. Within this framework, an illuminating review of the effectiveness of a multidisciplinary team for frail aged care will address issues such as communication, team and team functioning. Partially addressed in the illuminating review regarding multidisciplinary teams and frail aged.

	1.5 How effective are models of integrated, co-ordinated and multidisciplinary care in aligning care provision across the social and health sectors?	Unable to complete	Given the large volume of literature to search and review within the given timeframe, it will be unable to undertake this review. The associated literature regarding alignment and boundary spanning and cross sector models proved too large and amorphous to process within the timeframe. This was decided at the Project Team meeting in January. The decision was to some extent validated by discussions at the Nick Mays workshop.
	Phase 2: 2.1 Is there evidence that particular groups receive additional benefits from coordinated, integrated multidisciplinary care? Alternatively is there evidence of particular groups missing out on these benefits?	To be addressed as part of the scoping review and the consolidated findings of the individual reviews	Determined at the January Project Team meeting.
	2.2 Is there evidence that chronic and terminally ill patients receive additional benefits from coordinated, integrated and multidisciplinary care?	Does multidisciplinary care planning improve outcomes for Level 1 Diabetes patients? Does multidisciplinary care planning improve outcomes for Level 2 COPD patients? Does multidisciplinary care planning improve outcomes for Level 3 Stroke patients? Does case conferencing improve care planning in palliative patients? Does a multidisciplinary approach to care improve outcomes for the frail elderly in primary health environment?	Given the size of the literature and the complexity of the issues and concepts, it was agreed to develop a protocol that used "illuminating reviews" to address the underlying concepts within specific populations. Within this framework, illuminating reviews of the effectiveness of case conferences and/or care plans for sentinel conditions would be undertaken. Determined at the January Project Team meeting.

SEARCH STRATEGIES

Covering the period from 1990 to April 2006, Medline, PubMed, Embase, CINHAL, PsycINFO, Informit, Australian Digital Theses and Dissertation Abstracts were searched for studies in English. Additionally, websites of peak bodies in the fields covered by the several reviews were accessed and interrogated to discover items from the grey literature relevant to the review protocols.

Terminology varied between the formal literature databases. Search strategies were initially formulated in Medline, and restructured to reflect the taxonomies of subsequent databases as required.

Case conferencing in palliative care:

1. case management.mp or exp Patient care planning/ or exp case management/
2. case conference$.mp
3. (family meeting$ or care plan$ or end of life or care of the dying or managed care).mp
4. exp critical pathways/
5. Managed Care Programs/ or Patient Care Planning/ or care plan.mp
6. care pathway$.mp
7. or/1-6
8. palliative care/
9. exp terminal care/
10. terminally ill/
11. attitude to death/
12. exp bereavement/
13. right to die/
14. exp euthanasia/
15. hospices/
16. respite care/
17. palliate$.tw
18. (terminal ad6 care$).tw
19. (terminal ad6 caring$).tw
20. (terminal ad6 ill$).tw
21. hospice$.tw
22. bereave$.tw
23. (grief or griev$).ti or (grief or griev$).ab
24. euthanas$.tw
25. (attitude$ adj6 death$).tw
26. (assist$ adj6 death$).tw
27. (assist$ adj6 die$).tw
28. (assist$ adj6 suicide$).tw
29. (help$ adj6 death$).tw
30. (help$ adj6 die$).tw
31. (help$ adj6 suicide$).tw
32. (aid$ adj6 death$).tw
33. (aid$ adj6 die$).tw
34. (aid$ adj6 suicide$).tw
35. (right$ adj6 die$).tw
36. (respite$ adj6 care$).tw
37. (respite$ adj6 caring$).tw
38. “living will$”.tw
39. “advance$ directive$”.tw

40. “life support care”.tw
41. “advance care planning”.tw
42. (end life” adj6 care).tw
43. “end life care”.tw
44. or/8-43
45. 7 and 44
46. limit 45 to yr=”1990 – 2006”
47. “Delivery of health care”/ or exp “Family practice/ or exp Primary health care/ or primary health.mp
48. exp physicians, family/
49. 45 and (47 or 48)
50. Limit 49 to (case reports or clinical trial, or clinical trial, phase I, or clinical trial, phase ii, or clinical trial, phase iii, or clinical trial, phase iv or controlled clinical trial or evaluation studies or multicenter study or randomized controlled trial or review, multicase, or “review of reported cases”
51. limit 50 to English language

Multidisciplinary teams in frail aged

1. exp patient care team/ or (multidisciplin$ or multi-disciplin$ or (interdisciplin$ or inter-disciplin$) or (transdisciplin$ or trans-disciplin$) or (multiprofession$ or multi-profession$) or (interprofession$ or inter-profession$) or (transprofession$ or trans-profession$)).mp. or exp interprofessional relations/
2. exp Australia/
3. New Zealand/
4. exp Great Britain/
5. Netherlands/
6. exp United States/
7. exp Canada/
8. or/2-7
9. exp "Outcome Assessment (Health Care)"/ or exp "Outcome and Process Assessment (Health Care)"/ or exp Treatment Outcome/
10. outcome measure$.mp.
11. effectiveness.mp.
12. 9 or 10 or 11
13. exp primary care/
14. exp physicians, family/
15. exp family practice/
16. family pract$.mp.
17. (physician$ or doctor$).mp.
18. family medicine.mp.
19. family phys$.mp.
20. general pract$.mp.
21. primary health care.mp.
22. (primary adj2 care).mp.
23. or/13-22
24. frail elderly/
25. health services for the aged/
26. (late life or elder$ or aged or old age or geriatric or seniors or middle age$).tw.
27. ((old or older or aging or senior) adj3 (person or people or adult$ or subject$ or patient$ or consumer$ or male$1 of female$)).tw.
28. exp aged/ or aging/ or middle age/
29. or/24-28
30. 1 and 8 and 12 and 23 and 29

31. limit 30 to (humans and english language and ("all aged (65 and over)" or "aged (80 and over)") and yr="1990 - 2006")

Effectiveness of ICM in primary health

1. exp patient care team/ or (multidisciplin$ or multi-disciplin$ or (interdisciplin$ or inter-disciplin$) or (transdisciplin$ or trans-disciplin$) or (multiprofession$ or multi-profession$) or (interprofession$ or inter-profession$) or (transprofession$ or trans-profession$)).mp. or exp interprofessional relations/
2. exp primary health care/ or exp physicians, family/ or general pract$.mp or exp family practice/
3. exp “outcome Assessment (Health Care)”/ or exp “Outcome and Process Assessment (Health Care)”/ or exp Treatment Outcome/
4. outcome measure$.mp
5. 3 or 4
6. 1 and 2 and 5

Further limited to countries of interest, specified date range, English language and RCT/SR filter

Care planning for [chronic diseases]

The search strategy involved the following search sequence:
First element + intervention + chronic illness

First Element

1. Primary Health Care
2. Physicians, Family
3. Family Practice
4. primary medical care
5. family practi$
6. family physician$
7. general practitioner
8. general practice
9. family medicine
10. primary care

Intervention

1. Managed care
2. Health care delivery
3. Patient care management
4. Patient care planning
5. Integrated care
6. Delivery of Health Care, Integrated (MESH)
7. Critical Pathways (MESH)
8. Patient Care Planning (MESH)
9. Patient care management (MeSH)
10. Patient Care Team (MeSH)
11. Multidisciplinary Care Team
12. Case Management (MeSH)
13. Disease Management (MeSH)

Chronic Illness

COPD

1. Pulmonary Disease, Chronic Obstructive/
2. chronic obstructive pulmonary disease.mp
3. COPD.mp

4. chronic obstructive lung disease.mp
5. chronic obstructive airways disease .mp
6. Chronic obstructive airway disease .mp
7. COAD
8. chronic bronchitis searched as mapped term and as keyword
9. chronic airflow obstruction .mp
10. Emphysema (MeSH)
11. emphysema .mp
12. chronic obstructive$ .mp

Diabetes

1. Diabetes Mellitus (MeSH)
2. Diabet$ .mp
3. dm and (type 1 OR type I OR type 2 OR type II) .mp
4. iddm OR insulin dependent diabetes mellitus OR iidm OR insulin-independent .mp
5. insulin resist$ .mp
6. dm1 or dm2 .mp
7. non insulin depend* ($) OR non-insulin depend$ .mp
8. impaired glucose tolerance OR glucose intoleran$ OR insulin depend$ .mp

Snowballing

Reference lists from seminal studies were hand searched to identify any further works not already retrieved during the formal searching process. Additionally, the ‘find citing articles’ function available on the OVID databases, and the ‘similar articles’ function in PubMed were used to locate further studies.

Peak bodies contacted for studies, information or reports

Australia

PHCRIS, NHMRC, AIHW, ADGP, ARCHI, NICS, Kinetica (theses and conferences), National and State Health Departments, Monash Uni. General Practice Research, Menzies Research Institute (Tas.), Adelaide Uni. School of Public Health, Charles Sturt University School of Public Health, Australian Institute for Primary Care (La Trobe Uni. Vic.), Centre for General Practice Integration Studies (UNSW), Centre for Primary Health Care (UQ), Australian Association of Gerontology, RACGP, Council On The Ageing

New Zealand

NZ Ministry of Health, Health Research Council of New Zealand, New Zealand Health Technology Foundation

Canada

Health Canada, Canadian Institutes of Health Research, Canadian Health Services Research Foundation, Institute of Health Services and Research Policy (Canada), Ottawa Health Research Institute, Canadian Coordinating Office for Health Technology Assessments (now Canadian Agency for Drugs and Technologies in Health)

United Kingdom

Health Research Board, Ireland, The Wellcome Trust, The King’s Fund, National institute for Medical Research, Economic and Social Research Council, Nuffield Council on Bioethics, Medical Research Council, NHS Health Technology Assessment Reports, Scottish Health, British Geriatrics Society

United States of America

Department of Health, National Institutes of Health, Institute for Healthcare Improvement, Bureau of Primary Health Care, CDC, AHRC, The Public Health Research Institute, American Geriatrics Society

Grey Literature

SIGLE (difficult); New York Academy, UNM - Health Sciences Library and Informatics Center – links; ANU ePrints

International

WHO; United Nations Program on Ageing.

INCLUDED STUDIES BY REVIEW

Scoping Study

Included (Until saturation)

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GLOSSARY

ACUTE CARE
Episodic; cure expected; outcomes highly dependent on short term services with health professionals making the majority of the decisions. Often involves hospitalisation.

AGED
Medline definitions: 65 and over; frail aged 80 plus
EPC programme: 75+
SDAC "a person aged 60 years or over" [8]

AGED CARE "means care of one or more of the following types: a) residential care; b) community care; c) flexible care." [9]

CASE CONFERENCE
An EPC case conference is a meeting of health and care providers to plan for the health and care needs of an individual patient with at least one chronic medical condition and complex multidisciplinary care needs requiring care from a GP and at least two other health or care providers. Case conferences may be undertaken for patients in the community (community case conferences), patients being discharged into the community from hospital or day hospital facilities (discharge case conferences), or people living in Residential Aged Care Facilities (Residential Aged Care Facility case conferences). [10]

CASE MANAGEMENT
The case manager is responsible for doing a thorough evaluation of the client's needs, planning the required services, arranging to admit the client to these services, organising and co-ordinating support, directing the multidisciplinary team of practitioners involved in the case, and monitoring and re-evaluating the client.

CHRONIC DISEASE
A chronic condition, for the purposes of the Medicare EPC discharge items, is defined as a medical condition that has been, or is likely to be, present for at least six months. [11]

COORDINATION
Coordination addresses the issue of aligning services and resources to provide comprehensive care for the patient.

"Thorough and comprehensive planning of patient care will alleviate duplication, gaps and deficiencies in treatment. It offers both the practitioner and patient with the opportunity to consider a range of options that compliment each other and in the long term reduces the number of preventable hospital admissions thus reducing cost to the individual and the health system. All care requires coordination, whether that be by the

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[8] Australian Bureau of Statistics Survey of Disability, Ageing and Carers (2003).
[9] Aged Care Act 1997 – Schedule 1
[10] Australian Dept. of Health & Ageing (2005) Multidisciplinary case conferencing http://www.health.gov.au/internet/wcms/publishing.nsf/Content/health-epc-caseconf.htm
[11] Australian Dept. of Health & Ageing. (2005) Chronic disease management (CDM) Medicare Items http://www.health.gov.au/internet/wcms/publishing.nsf/Content/pcd-programs-epc-chronicdisease

health consumer themselves or via a third party such as a carer or nominated health professional."[12]

COPD (Chronic Obstructive Pulmonary Disease}

COPD is characterised by airflow obstruction that is not fully reversible. The airflow limitation is in most cases both progressive and associated with an abnormal inflammatory response of the lungs to noxious particles or gases, most commonly cigarette smoke. COPD is usually some combination of emphysema, where the lung parenchyma is structurally damaged, with destruction of alveolar septa and formation of abnormally enlarged airspaces airway damage with airway wall thickening and narrowing of the airway. Airway obstruction can be due to loss of supporting elastic recoil from the lung tissue and/or airway narrowing. Although patients with COPD may have a degree of bronchial hyperresponsiveness, patients with features predominantly of asthma are excluded from COPD categories. In contrast, even in the absence of a classic asthma history or pathology, some bronchodilator responsiveness may be present in COPD, but how this should influence therapy is poorly understood.

Categorisation of COPD is somewhat arbitrary and there is overlap with a number of related conditions. Chronic bronchitis is defined clinically as a cough productive of sputum, occurring on a daily basis for 3 months in each of 2 consecutive years; it may be associated with chronic airway obstruction.

Typically, COPD affects middle-aged and older people, and cigarette smoking is the major causative factor. Inherited conditions such as alpha1-antitrypsin deficiency render patients more susceptible to the damaging effects of cigarette smoke, leading to early development of emphysema and COPD.

The dyspnoea of COPD is frequently associated with cough, sputum production, recurrent respiratory infection and wheezing, which may only be evident during infective exacerbations. Typically, the dyspnoea has developed insidiously over several years and it may be the patient's only symptom. [13]

DIABETES

Type 2 diabetes:

While susceptibility to type 2 diabetes is likely to be genetically determined, lifestyle factors (diet, physical activity) and medications (including complementary medicines) that increase blood glucose are critical in unmasking this susceptibility. Impaired glucose tolerance is a well-described component of a metabolic syndrome that also includes hypertension, hyperlipidaemia and truncal adiposity. …

Three major defects underlie the impaired glucose tolerance in type 2 diabetes: abnormality of pancreatic insulin secretion, failure to suppress hepatic glucose production, and resistance to the action of insulin in target tissues, eg muscle. The defect in type 2 diabetes may range from predominantly insulin resistance with relative insulin deficiency to a predominantly secretory defect with or without insulin resistance.

Diabetes is a major risk factor for morbidity and mortality due to coronary heart disease, cerebrovascular disease and peripheral vascular disease. Multiple risk factors for macrovascular disease, in addition to diabetes itself, are frequently found in individuals with diabetes. Thus, the risk factors of smoking, hyperlipidaemia and hypertension should be aggressively addressed and reduced as much as possible. [14]

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[12] Health Reform Implementation Taskforce http://www.health.wa.gov.au/HRIT/pcps/index.cfm

[13] Therapeutic Guidelines: Respiratory (2005) Melbourne, Therapeutic Guidelines Ltd. Accessed online via eTG complete.

[14] Therapeutic Guidelines: Endocrinology (2004) Melbourne, Therapeutic Guidelines Ltd. Accessed online via eTG complete.

Type 2 DM is a heterogeneous group of disorders characterized by variable degrees of insulin resistance, impaired insulin secretion, and increased glucose production. Distinct genetic and metabolic defects in insulin action and/or secretion give rise to the common phenotype of hyperglycemia in type 2 DM (see below). Distinct pathogenic processes in type 2 DM have important potential therapeutic implications, as pharmacologic agents that target specific metabolic derangements have become available. Type 2 DM is preceded by a period of abnormal glucose homeostasis classified as impaired fasting glucose (IFG) or impaired glucose tolerance (IGT).

Two features of the current classification of DM diverge from previous classifications. First, the terms insulin-dependent diabetes mellitus (IDDM) and noninsulin-dependent diabetes mellitus (NIDDM) are obsolete. Since many individuals with type 2 DM eventually require insulin treatment for control of glycaemia, the use of the term NIDDM generated considerable confusion. A second difference is that age is not a criterion in the classification system. [15]

FRAIL AGED

The *Canadian Study of Health and Aging Clinical Frailty Scale* [173] categorises the elderly

- Very fit – robust, active, energetic, well motivated and fit; these people commonly exercise regularly and are in the most fir group for their age
- Well – without active disease, but less fit than people in category 1
- Well, with related comorbid disease – disease symptoms are well controlled compared with those in category 4
- Apparently vulnerable – although not frankly dependent, these people commonly complain of being ‘slowed up’ or have disease symptoms
- Mildly frail – with limited dependence on others for instrumental activities of daily living
- Moderately frail – help is needed with both instrumental and non-instrumental activities of daily living
- Severely frail – completely dependent on others for the activities of daily living, or terminally ill

“The reconceptualization of multiple system interrelationships as an appropriate explanatory scheme for life process unifies structure and function and thereby provides a sturdy framework for the definition of frailty. As symmorphosis defines the anabolic process of building structural capacity to meet demand, it follows that lessened load, as with physical inactivity, leads to linked and parallel losses in form and function. Decreased physical activity leads to muscle weakness and bone fragility; decreased oxygen throughput, decreased arterial size, increased clottability, and altered blood lipid levels; metabolic inefficiency, decreased glut transporters, obesity, Type II diabetes; and immunologic decay.
… the lessened physical activity seen with most older persons initiates body-wide sets of negative outcomes that further conspire to accelerate the deteriorative processes. Frailty is herein defined as a state of muscular weakness and other secondary widely distributed losses in function and structure that are usually initiated by decreased levels of physical activity. Such depiction describes many of the feedback features that are inherent in frailty, yet muscle weakness remains the central obligate feature of the term. “ [174]

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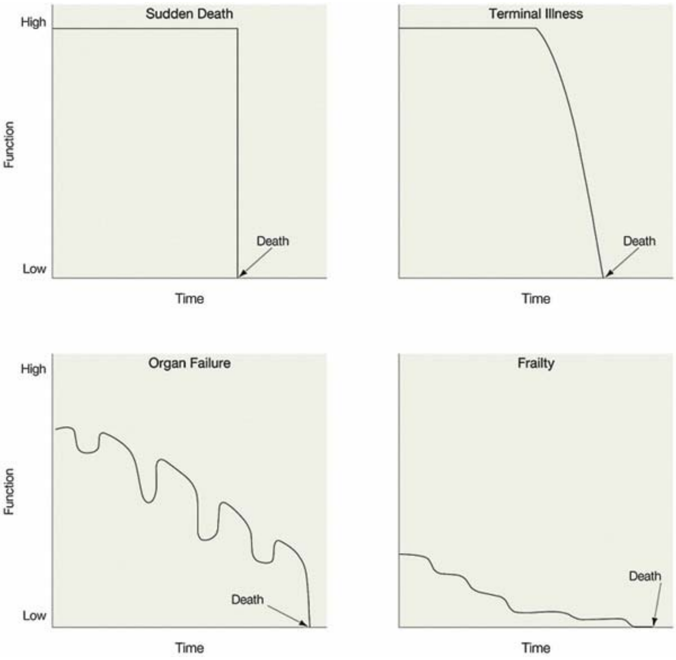
[15] Harrisons Principles of Internal Medicine 16th ed. (2006) New York, McGraw-Hill. [e-text]

ILLNESS TRAJECTORY

Lunney & Lynn's illness trajectory formed the basis of the decision to identify sentinel conditions in the chronic disease reviews. [175]



INTEGRATION

"Integration … connects the health care system (acute, primary medical, and skilled) with other human service systems … in order to improve outcomes (clinical, satisfaction, and efficiency). Populations that may benefit from integration have physical, developmental, or cognitive disabilities – often with related chronic illnesses or conditions. Integration can occur at the policy, finance, management, and clinical levels. The means of integration include joint planning, training, decision making, instrumentation, information systems, purchasing, screening and referral, care planning, benefit coverage, service delivery, monitoring, and feedback. [15]

LINKAGE

Organisations may develop protocols to facilitate referral or collaboration to deal with patients' needs. However, the organisations continue to function within their respective jurisdictions, responsibility and operational rules [176]

Linkages projects … provide individually tailored packages of care to people with complex needs so that they can continue to live independently in the community. Some of the principal activities performed by Linkages services are the provision of care management and brokerage services to eligible clients. [16]

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[16] Aged Care in Victoria http://www.health.vic.gov.au/agedcare/terminology.htm

MULTIDISCIPLINARY
This term can be applied to care or a team.

A team is a small, relatively permanent group of people who meet regularly face to face. They are distinguished from other groups in that they are interdependent - their members need to communicate and work with one another to achieve a common purpose. A multidisciplinary team comprises members from a range of disciplines working in parallel, coordinating, cooperating and conferring.[17]

‘**MULTIDISCIPLINARY CARE** is a team approach to the provision of healthcare by all relevant medical and allied health disciplines.
In Australia, the diversity of healthcare delivery settings and types of care means that a single model of multidisciplinary care may not be appropriate. The “Principles of multidisciplinary care” were developed to provide a flexible framework for the provision of multidisciplinary care in Australia. The Principles emphasise five key elements: the team, communication, access to the full range of therapies, standards of care and involvement of the woman (patient)’. [18]

PALLIATIVE CARE / PALLIATIVE POPULATION
Palliative care aims to comfort, not to cure; to relieve pain and distress for people who are dying, and to support parents, families and friends in approaching death and healing grief. [19]

PRIMARY HEALTH vs PRIMARY **HEALTH CARE** vs **PRIMARY CARE**

Australian Primary Health Care Research Institute [20]

Encompassing the *WHO's Declaration of Alma Ata* (WHO 1978) and recent *Primary Health Care: A Framework for Future Strategic Directions* (WHO 2003), … define primary health care as:

“Socially appropriate, universally accessible, scientifically sound first level care provided by a suitably trained workforce supported by integrated referral systems and in a way that gives priority to those most need, maximises community and individual self-reliance and participation and involves collaboration with other sectors. It includes the following:
- health promotion
- illness prevention
- care of the sick
- advocacy
- community development.”

Centre for Health Equity Training, Research and Evaluation, University of NSW Medicine [21]

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[17] Reform Agenda Fact Sheet 7
http://www.dhhs.tas.gov.au/agency/pro/mentalhealth/documents/RCT_F7_The_multidisciplinary_team.pdf#search=per cent22whatper cent20isper cent20multidisciplinaryper cent20teamper cent22

[18] Helen Zorbas, Bruce Barraclough, Kathy Rainbird, Karen Luxford and Sally Redman
MJA 2003; 179: 528–531

[19] Palliative Care Council of South Australia, Inc. http://www.pallcare.asn.au

[20] Australian Primary Health Care Research Institute website http://www.anu.edu.au/aphcri/ [accessed 10th May 2006]

“Primary care is often used interchangeably with primary medical care as its focus is on clinical services provided predominantly by GPs, as well as by practice nurses, primary / community health care nurses, early childhood nurses and community pharmacists.

Primary health care incorporates primary care, but has a broader focus through providing a comprehensive range of generalist services by multidisciplinary teams that include not only GPs and nurses but also allied health professionals and other health workers such as multicultural health workers and indigenous health workers, health education/promotion and community development workers. In addition to operating at the level of individuals and families, PHC services also operated at the level of communities. “

STROKE

“Cerebrovascular diseases include some of the most common and devastating disorders: ischemic stroke, hemorrhagic stroke, and cerebrovascular anomalies such as intracranial aneurysms and arteriovenous malformations (AVMs). They cause ~200,000 deaths each year in the United States and are a major cause of disability. The incidence of cerebrovascular diseases increases with age, and the number of strokes is projected to increase as the elderly population grows, with a doubling in stroke deaths in the United States by 2030. Most cerebrovascular diseases are manifest by the abrupt onset of a focal neurologic deficit, as if the patient was “struck by the hand of God”. A stroke, or cerebrovascular accident, is defined by this abrupt onset of a neurologic deficit that is attributable to a focal vascular cause. Thus, the definition of stroke is clinical, and laboratory studies including brain imaging are used to support the diagnosis. The clinical manifestations of stroke are highly variable because of the complex anatomy of the brain and its vasculature. Cerebral ischemia is caused by a reduction in blood flow that lasts longer than several seconds. Neurologic symptoms are manifest within seconds because neurons lack glycogen, so energy failure is rapid. When blood flow is quickly restored, brain tissue can recover fully and the patient's symptoms are only transient: this is called a transient ischemic attack (TIA). Typically the neurologic signs and symptoms of a TIA last for 5 to 15 min but, by definition, must last <24 h. If the cessation of flow lasts for more than a few minutes, infarction or death of brain tissue results. Stroke has occurred if the neurologic signs and symptoms last for >24 h.” [22]

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[21] Centre for Health Equity Training, Research and Evaluation, University of NSW Medicine. http://chetre.med.unsw.edu.au/phc/defining_primary_health_care.htm [accessed 10th May 2006]

[22] Harrisons Principles of Internal Medicine 16th ed. (2006) New York, McGraw-Hill. [e-text]