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# Integration, Coordination and Multidisciplinary Care: What can These Approaches Offer to Australian Primary Health Care?

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*Australia's population is ageing and the consequential burden of chronic disease increasingly challenges the health system. This has raised interest in, and awareness of, approaches built on multidisciplinary teams and integrated and coordinated care in managing the complex care needs of patient groups such as the chronically ill or frail aged. A systematic investigation of the literature relating to these approaches provided the opportunity to explore the meaning of these terms and their potential application and relevance to the Australian primary health care setting. Five systematic reviews of a sentinel condition and an exemplar approach to coordinated and multidisciplinary care were completed. Common learnings from the individual reviews were identified. The literature suggests that approaches encouraging a coordinated and multidisciplinary plan of care for individual patients and/or particular populations may improve a variety of outcomes. There are many methodological considerations in conducting reviews of complex interventions and in assessing their applicability to the Australian health system.*

**Key words:** Primary care, Health care delivery, Care planning, Multidisciplinary, Health services research, Care coordination

Primary care occupies a pivotal position in Australia's health system, acting both as the first point of contact for health issues for most of the population and as a broker to other health services and providers. General practice continues to fulfil roles in population health management and in the ongoing care for those with chronic and long-term care needs (Powell Davies & Fry, 2004). Australia's general practice landscape is based on a complex set of clinical and business arrangements ranging from solo practitioners to various forms of corporatised practice across rural, remote and urban settings (Australian Medical Association, 2006). General practice infrastructure generally is also shaped by government departments, peak bodies, regulatory authorities and consumer groups, among others, contributing to changes in practice and direction in primary health care (Rudd & Watts, 2004).

Over the past decade there has been increasing interest in the changing patterns of Australia's demography; specifically, the ageing of our population and its impact on the health system. In 1960, 5% (or 894,243) of Australia's population was over 65 years (Australian Bureau of Statistics [ABS], 1999). In 2003, the proportion of people aged 65 years or more was estimated to be 13%,

or over 2.5 million people (Australian Institute of Health and Welfare [AIHW], 2004). This trend is continuing. Further, the proportion of the very old is also increasing. It is anticipated that by 2051, those over 85 years of age will form 5% of Australia's population (ABS, 1999). Some research indicates that the number of older persons living at home and needing assistance because of severe or profound disability is set to rise by 160% between 2001 and 2031 (National Centre for Social and Economic Modelling [NATSEM], 2004).

The proportion of people reporting only poor or fair health increases with age, from 7% of those aged 15–24 years to 35% of those aged 75 years and over (ABS, 2006). Chronic diseases presently make up more than 70% of Australia's overall disease burden due to death, disability and diminished quality of life, and this is expected to increase to 80% by 2020 (AIHW, 2002). An ageing population suffering from poorer health with an increasing chronic disease burden will significantly affect the health system generally and primary care specifically. For primary care, the effects will relate to increasing responsibilities with regard to population health measures in prevention, early detection and intervention and to participating in or managing care pathways for

patients with complex, ongoing health care needs within the community.

The capacity of Australia's health system to cope with this changing pattern of demand is the subject of much debate. The need to manage diverse patient conditions over a longer timeframe with input from health professionals in different segments of the health system will require different skills, processes and approaches from those typically associated with acute and episodic care. The business models that arose from a predominantly fee-for-service financial structure focused care on what the doctors themselves could provide, and until recently limited the possibility of team-based care. The introduction of the Enhanced Primary Care program in November 1999, and subsequent refinements, changed this substantially by providing a mechanism for team-based engagement. In the last two years the wider profession has embraced the possibilities that multidisciplinary management of chronic and complex medical conditions present. Medicare-supported health assessments increased 85% from 2004 to 2006, while the number of care plans (giving access to Medicare subsidised allied health services from November 2005) jumped 381% in the same time (Medicare, 2007).

Within this context, integration, coordination and multidisciplinary care (ICM) approaches may be seen as very attractive strategies that could sustain or improve quality for increasingly complex care needs while containing costs and resource utilisation. They are terms used frequently, variously and often interchangeably within the literature. They can be used to focus on an individual's experience of care or they can apply to provider actions and interactions within or between sectors or to mechanisms that bring about system or service alignment.

For the purposes of this project, coordination was seen as the processes and activities that enhanced the relationships, linkages, transitions and responsibility for care within the existing structural arrangements such as shared health records, case conferences, or shared assessment tools, leading to improved care arrangements for the patient. Integration was seen to be the development of more comprehensive approaches to care provision that depended on formal relationships or structural arrangements to organise and deliver that care. This working definition

drew upon the key differences identified by Leutz (1999). Multidisciplinary care was seen as a care approach that addressed complex care needs by utilising a broader set of skills in assessment and ongoing care held by providers from different disciplines, specialities and /or professions who could contribute independently. This approach recognised issues around multidisciplinary teams and multidisciplinary contributions to care described in the literature (Umbrella Alberta Primary Health Care Project, 2001; Enhancing Interdisciplinary Collaboration in Primary Health Care Initiative [EICP]).

This distinction contributed to focused search activities, facilitated identification of appropriate studies, assisted in classifying studies for use by the review, and created a better framework for understanding the implications of specific approaches and interventions for the Australian context.

This study was undertaken as part of the Australian Primary Health Care Research Institute's Stream Four grant cycle. The aim of this stream was "...to systematically identify, review and synthesise knowledge about primary health care organisations, funding delivery and performance and then consider how this knowledge might be applied in the Australian context" (Australian National University, [ANU] 2005).

### **Project Approach and Scoping Methodology**

The approach to the investigation of the review questions was derived from the work of Mays, Pope and Popay (2005) in describing frameworks for examining complex evidence bases in addressing policy and health services issues.

A preliminary scoping study of the original review questions was undertaken:

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

The scoping study consisted of an initial sweep of the literature primarily directed at reviews, a limited search within a single bibliographic database (PubMed/MEDLINE) and a delimited internet search. The purpose was to identify themes and issues in the literature and to highlight potential issues associated with the evidence base.

Themes and issues were identified by thematic analysis of extracted data from retrieved material. Relevance was the primary criterion for inclusion in the scoping study. There were no restrictions with regard to study type. Items needed to be in English, relating to a health system comparable to Australia and have as a focus integration, coordination or multidisciplinary approaches in the primary health care setting. Data extraction continued until there was an apparent saturation of major themes and core issues. The findings of the scoping study are reported later in this article.

Based upon the themes and core issues identified in data extraction during the scoping study, the initial review questions were refined to focus on five specific questions, each dealing with a sentinel population and/or condition and an exemplar intervention. By restricting the question to an aspect of integration, coordination or multidisciplinary care and to a particular target population, it was possible to develop review questions that could be completed within the constraints of the project funding and reporting schedule.

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 defined that reflected the three populations and within the chronic population highlighted 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 capture:

- 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).
- c) Steady decline from a low functioning base, with death being the result of a prolonged period of significant impairment (Level 3).

The individual systematic reviews used a narrative analysis of data extracted from studies identified and assessed against both generic project inclusion criteria and criteria specific to the individual review question.

Each specific individual review question is stated below:

1. Does case conferencing improve care planning in palliative care patients?

2. Does a multidisciplinary team approach to care improve outcomes for the frail elderly in the primary health environment?
3. Does multidisciplinary care planning improve outcomes in Level 1 diabetes?
4. Does multidisciplinary care improve patient outcomes in Level 2 COPD?
5. Does multidisciplinary care planning improve outcomes in Level 3 stroke?

The project approach also included a narrative summary of observations regarding common themes and issues from the individual reviews. The project methodology is outlined in Figure 1.

### **Methodology for individual review questions**

Generic inclusion criteria were as outlined below to guide searching and initial screening of retrieved items:

- Countries with comparable health systems (i.e., Australia, New Zealand, Canada, United Kingdom, United States [limited])
- Study types – Defined by the individual review
- 1990 – 2006
- English language
- Within the primary health care sector
- Related to integrated, coordinated and/or multidisciplinary care.

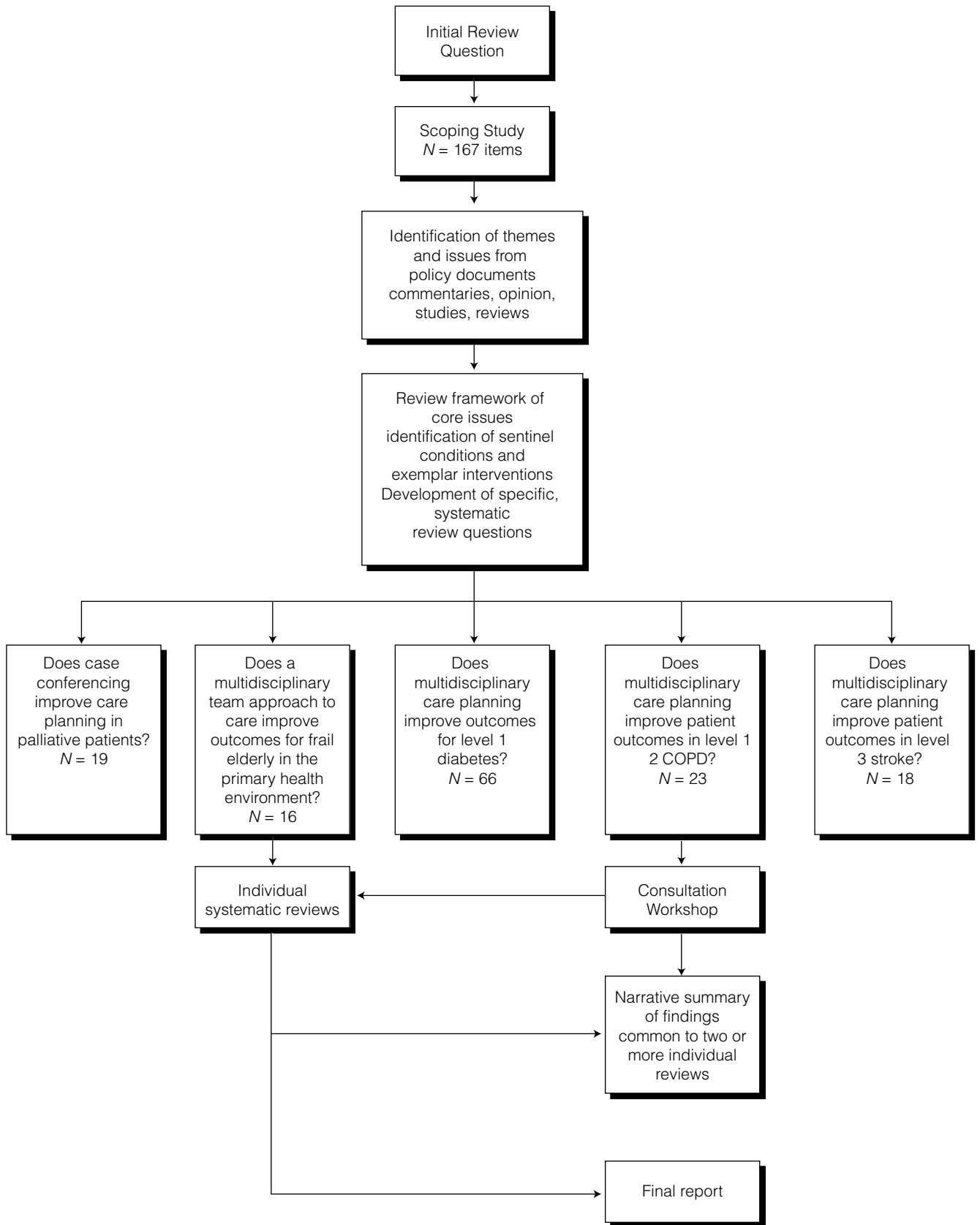
Specific exclusions were as follows:

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

Searches based on the themes detailed in Table 1 were developed using relevant MeSH terms and text words and run between February and April 2006. Databases searched were Ovid Medline, Embase, CINAHL, PsycINFO, Informit, Australian Digital Theses and Dissertation Abstracts. Australian and international peak bodies and organisations involved with primary care were approached for relevant studies and reports.

Each individual review team determined the particular study designs to be included in the review. An initial assessment of the identified

**Figure 1: Schematic Representation of the Project Approach**



citations for relevance was completed. Where a citation appeared to be relevant according to the inclusion criteria a copy of the full paper was retrieved.

Retrieved papers were screened by two independent reviewers for relevance and methodological quality. One of two tools was used by the individual reviews to assess the quality of the included studies. The

**Table 1: Summary of Themes Used in Development of Search Strategies**

Themes	Concepts searched
Multidisciplinary	Patient care team; multidisciplinary; interdisciplinary
Case conferencing	Case management; patient care planning; case conference; family meeting; critical pathways; managed care programs; care plan; care pathway
Palliative	Palliative care; terminal care; terminally ill; attitude to death; bereavement; right to die; euthanasia; hospices; respite care; living will; advance directive; life support care; advance care; end-of-life care
Primary health	Delivery of health care; family practice; primary health care; primary health; physicians (family)
Outcomes	Outcome assessment; outcome and process assessment; treatment; outcome measure; effectiveness
Frail aged	Frail elderly; health services for the aged; late life; elder; aged; old age; geriatric
Managed care	Patient care management; patient care planning; case management; managed care; health care delivery; case conference; patient care team; multidisciplinary team
COPD	Pulmonary disease, chronic obstructive; chronic obstructive pulmonary disease; emphysema
Diabetes	Type 2 diabetes; diabetes mellitus; impaired glucose tolerance; non-insulin dependent; niddm;
Stroke	Stroke; cerebrovascular accident; intracranial embolism and thrombosis; transient ischaemic accident; carotid artery diseases; carotid artery thrombosis; hemiplegia

tools were the QARI/NOTARI system created by Joanna Briggs Institute for use in systematic reviews (JBI-Qualitative Assessment and Review Instrument [JBI-QARI] 2003), and the APRAC rating system described by Aoun and Kristjanson (2005).

Given the heterogeneity of retrieved studies statistical pooling was not possible and a narrative analysis and summary for each individual review was undertaken. Details of the specific search strategies and included and excluded studies can be found in the full report (Tieman et al., 2006).

The narrative summary of common findings was based on a thematic analysis of the five reviews for issues and themes reported in at least two of the individual reviews. This narrative summary was prepared by the investigators and followed a consultation workshop where the findings of the scoping study and the individual reviews were presented to a group of academics, policy-makers and representatives of primary care organisations.

### **Findings of the scoping study**

Over 5000 items were retrieved and 167 were summarised and had data extracted for theme and issue analysis.

The core themes and issues identified can be summarised as follows:

- Potentially useful literature came from many different sources. The material included opinion pieces, policy documents, organisational reviews, conference proceedings, government briefings as well as more traditional qualitative and intervention studies investigating the effects of various ICM approaches on health outcomes.
- Similar issues appeared to be driving the interest in these approaches in many different countries.

These drivers included the ageing population, emerging significance of chronic disease, cost of health care, quality of care, and providing care at the end of life.

- The terms integration, coordination and multidisciplinary are used variously within the literature. They can be applied to experiences of care, processes, outcomes and organisational arrangements. For example, 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 (Brown et al., 2004). There were also several concept models of integration and coordination that articulate interventions within a framework (Kodner & Spreeuwenberg, 2002; Boon, Verhoef, O'Hara, & Findlay, 2004; Ahgren & Axelsson, 2005).
- Many papers discussed models of care provision. However, the models varied depending on the perspective. For example, the structural arrangements associated with a national model of care (Dowrick, 2006; Ferlie, Heindold, & Shortell, 2002) had a very different focus to a model of care delivery to patients within a specific service or specific region (Dickman, 2006; Cleasby et al., 2005). This has implications for interpreting and comparing studies and assessing the generalisability of findings.
- While the use of ICM approaches appeared quite widespread, these approaches seemed to be used more extensively in particular populations; specifically, aged and frail aged (including dementia), mental health, chronic illnesses, those with intellectual and physical disabilities and palliative populations.

- The body of research in terms of outcomes measures is still developing. There are many measures suggested as appropriate outcomes—cost savings, improved care experience, reduced hospital bed days, patient measures such as Activities of Daily Living (ADLs). The implications for system-wide changes have yet to be fully assessed and the economic implications of ICM approaches are still being determined (Glendinning, Hudson, & Means, 2005; Mogyorosy & Smith, 2005).
- The importance of primary care was described in many ICM approaches. It was seen not only as the gatekeeper to services but also as the core integrating or coordinating mechanism for the patient. However, differences in the organisation of health care systems between countries mean that the implications for the Australian health system of specific ICM approaches are not always transparent, particularly if there are different funding structures and organisational arrangements (Blendon, Schoen, DesRoches, Osborn, & Zapert, 2003; National Primary and Care Trust Development Program, 2005).

### ***Findings from the individual systematic reviews***

The findings of the individual systematic reviews are reported separately. Brief summaries of the findings of each individual review can be found in the final report (Tieman et al., 2006), which is publicly available on the ANU APHCRI website (APHCRI, 2007).

### ***Narrative summary of common findings from individual reviews***

Although each of the individual reviews was conducted as an independent systematic review and will be published separately, a narrative summary of common findings within the five systematic reviews was seen to provide the opportunity to describe issues that may not be specific to an individual population or intervention but could perhaps have a more general application within the primary health settings, and to identify issues around the conduct and focus of research in this area.

The themes from the narrative summary of common findings from the reviews can be summarised as follows:

1. Coordination does appear to improve outcomes.  
Although there were variations in the ICM component (e.g., team or case conference or care plans), there was a trend of demonstrated improvement in patient outcomes where a coordinating process represented an element of the care in the primary health care setting. For example, case conferencing was seen to improve medication appropriateness in residential aged care facilities (Crotty et al., 2004) and the Level 1 diabetes review found that 20 of the 29 interventions that measured glycaemic control reported favourable outcomes in the community setting (Tieman et al., 2006).
2. It appears that the more disciplines and/or services involved in the ICM approach the greater the improvement in outcomes for the patient. This trend was noted across several reviews. For example, the Level 1 diabetes review reported 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 (Tieman et al., 2006). The MDT and frail aged review looked at the composition of different team structures and their relationship to outcomes (Kerski, Drinka, Carnes, Colob, & Craig, 1987). It may be that introducing a greater number of disciplines and service providers brings different methods of inquiry expertise and responsibility and helps identify more potential needs and hence deliver a more comprehensive response to those needs.
3. Multidisciplinary care appears to comprise 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. For example, the Frail Aged MDT review noted the role of geriatric assessment developed by a multidisciplinary team (Beland, Bergman, Lebel, & Clarfield, 2006) where the COPD review discussed the role of the multidisciplinary palliative care team including the GP in managing patient needs in dyspnoea (Rabow, Dibble, Pantilat, & McPhee, 2003).
4. Many ICM approaches included evidence-based materials such as guidelines, care pathways or algorithms. The effect of the ICM approach may therefore have been influenced or strengthened by the use of the best available evidence relating care needs to care provision. For example, the COPD review noted the use of protocols in some studies (Rabow et al., 2003) or the MDT reviews noted that, most often, multidisciplinary teams

- were a component of the program or strategy (Brand et al., 2004).
5. Many studies suggested that ICM approaches may not necessarily reduce costs. This may be an unavoidable and even desirable outcome as several studies indicated that the use of more services reflected additional needs being identified and best practice care instituted. Reference to the long-term cost implications of these approaches for the health system as a whole was generally lacking.
  6. Few studies in any of the individual reviews looked at the role of the patient as an active participant in ICM. While patient satisfaction was often measured, few studies considered the consumer's goals for care. For populations where the aim may not be curative but supportive care this seemed to be an area for further study, particularly given an increasing consumer health focus. The role of the patient within ICM approaches may also be especially relevant in chronic disease management where self-management forms a key element of many interventions.
  7. While ICM approaches shared commonalities across populations and diseases, interventions may need to be tailored to the particular characteristics of the population and/or disease. For example, diabetes patients in the early disease stage may benefit from elements such as reminders/recall and self-management through education and group support, whereas these strategies may add little value in terms of quality of care for stroke patients in the community.
  8. The research suggests that the value of ICM approaches may have been moderated by local factors relating to how interventions were introduced and managed (Dickman, 2006; Cleasby et al., 2005). To determine the true value of ICM approaches it may be as important to identify the processes that best support the incorporation of ICM approaches within practices, organisations and systems as it is to identify the most important ICM approach or elements of an ICM approach. Hence understanding rates of uptake of Enhanced Primary Care (EPC) items such as case conferences and the barriers and facilitators around the use of these items by general practitioners may have a significant bearing on the effectiveness of case conferences in the community (Blakeman, Harris, Comino, & Zwar, 2001).

9. Studies were considerably heterogeneous with regard to design, population focus, interventions, measures and outcomes, making direct comparisons and study appraisal difficult. This heterogeneity also created problems in assessing the applicability to the Australian context. For example, the MDT frail aged review highlights that frailty may not necessarily be solely the function of chronological age (Beland et al., 2006; Rockwood et al., 2005). Study designs that drew upon care interventions within a health maintenance organisation (HMO) need to be considered in terms of their generalisability to Australia with a universal health coverage system (Beland et al.).
10. Even though the individual review topics dealt with single interventions illustrating an ICM approach, most interventions were multi-component (Crotty et al., 2004; Beland et al., 2006; Rabow et al., 2003; Brand et al., 2004). For example, care planning approaches often used standardised tools, case conferencing, case management and a multidisciplinary team. As a result, while the intervention was seen to be effective, the relative contribution or value of individual components could not be assessed.

These findings suggest a series of possible research opportunities to further explore and assess the effect of ICM approaches on primary care provision

**Table 2: Summary of Areas for Future Research**

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Professional issues:
Identify components and practices that support active and respectful engagement between primary care practitioners and other health providers
Determine optimal discipline and /or service representation on MDTs in primary care
Investigate the components of successful teams and the contribution of team functioning to health outcomes
System issues:
Establish economic effects of ICM approaches in immediate and longer-term time frames
Identify national and local implementation issues for ICM approaches within the Australian health system
Patient/consumer issues:
Assess the role of patient care goals and patient participation in ICM approaches
Determine relative importance of individual ICM approaches and/or components for specific populations and/or disease phases
Identify the characteristics of the patient-physician relationship in primary care that influence the effectiveness of ICM approaches
Methodological issues:
Develop an instrument to characterise the applicability and generalisability of findings between health systems
Assess the relative importance of individual components within complex ICM interventions

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in the Australian health system. These research directions are summarised in Table 2.

### **Conclusion**

This research highlighted the complexity confronting managed change and development in the primary health sector as well as the challenges in conducting research in this area. While there is a substantial volume of literature relating to the concepts of integration and coordination as it relates to primary care, the evidence is not without limitations. Many investigations are descriptions of practice changes rather than evidence of effectiveness and improvement in outcomes. Often the material does not provide a full picture of the consequences, both planned and unintended, of the ICM changes. There are confounding issues relating to the applicability of specific ICM approaches within the Australian context, given differences in health system structures and processes.

However, the literature does suggest that approaches which encourage a coordinated and multidisciplinary plan of care for individual patients and particular populations improve a variety of outcomes. From the review those populations who could potentially benefit include those requiring palliative care, those with significant frailty or those with chronic disease. The interventions seen to

offer potential benefit included case conferences, care planning and team approaches.

For primary care approaches and interventions that can streamline the management of those with complex care needs, facilitate interactions between care providers within primary care, acute care, subacute and other community settings and improve outcomes will be of particular benefit given primary care's role as the initial point of contact and ongoing health companion for members of the Australian community. Interventions such as MDTs could provide guidance in developing care strategies for particular populations and/or individuals and mechanisms such as case conferences could facilitate the establishment of a multidisciplinary group for an individual patient. Understanding and assessing the contribution of integration and coordination as approaches within the health system as well as identifying the specific value of particular interventions could therefore provide primary health in Australia with strategies for coping with the increasing demand and care complexity associated with an ageing population and the burden of chronic disease. Such strategies would reflect primary care's role as brokering to specialist services and facilities in the health system, participating in the planning and managing of patient care with providers in primary and tertiary levels of care, and maintaining continuity for the patient requiring care.

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