

Allied Health Services Planning Framework for Chronic Diseases

Dr Leonie Segal

Deputy Director, Health Economics Unit, Monash University

Dr Iain Robertson

School of Human Life Sciences, University of Tasmania

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ABSTRACT

The funding of private health services is subject to differential arrangements, with limited allied health services available through the public system, but with private services funded entirely through private payments. This contrasts with private medical services (plus optometry), reimbursed through Medicare, making access to these services less costly to the consumer. This will encourage use of medical services (and drugs which are also heavily subsidised) instead of allied health services, where the two are potential substitutes, even where the latter are more effective and less costly from a societal perspective. Given the distorted incentives, the application of health services planning to determine the optimal level, mix and location of allied health services is indicated. After considering possible alternative planning models, a needs based approach is selected as the only rigorous approach to this question, logically applied within a regional planning framework. Model application involves; establishing the scope of the planning exercise (allied health skills, chronic diseases to be covered); documentation of best practice guidelines/management protocols; translation into an allied health skill requirement (hours/person/year); and an EFT skill requirement, reflecting population health status and information on the service system. The next stage is to trial the planning model.

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Allied Health Services Planning Framework for Chronic Diseases

Background and Objectives

The role of allied health services in chronic disease management is recognised in best practice guidelines and care protocols for chronic conditions such as heart disease, stroke, diabetes and arthritis. However, with responsibility for allied health services shared between the Commonwealth and State governments and individuals, and with services provided through a mix of private providers and publicly funded allied health staff (through public hospitals and community based facilities), it is not clear where responsibility for the planning and funding of allied health services lies.

Current funding arrangements also suggest a likely imbalance in provision. Private allied health services (apart from optometry) are not funded through Medicare, making access to these services more costly to the consumer than medical services or pharmaceuticals (especially for health care card holders). This will encourage the substitution of allied health services with medical services or drugs, even where the latter are less effective and more costly from a societal perspective. Given the distorted incentives, it is unlikely that the optimal level, mix or location of allied health services will emerge. Current health service structures and funding arrangements limit the ability of allied health services to play their part in improved chronic disease management. The limited information available from partial data sets, anecdotal evidence and the use of one-off programs to employ allied health staff - is strongly suggestive of a shortage of allied health staff, relative to the care needs of persons with chronic diseases.

This suggests a role for health services planning. This paper is concerned to describe such a model.

Information about the delivery and use of allied health services is such that we cannot readily gain an understanding of the balance between demand and supply. There is also confusion about how allied health services might be defined - the scope of skills to be included and which might be considered part of core health services.

The paper commences with a brief overview of the role of allied health professionals in chronic disease management and prevention and the structure of the allied health care market (the supply side). Alternative models for planning for allied health services and workforce are introduced and a preferred model described.

The Role of Allied Health Professionals in Chronic Disease Management

A number of occupational groups can be regarded as falling within the definition of allied health services (Table 1). This list distinguishes allied health professionals from other health-related professionals such as medical practitioners, dentists and pharmacists. Allied health professionals are employed in a variety of settings, including hospitals (inpatient and outpatient services), community health centres, private practice, special-purpose health facilities, and domiciliary care services. For this paper, allied health services are confined to the therapeutic clinical health professional role – such as physiotherapy, dietetics, occupational therapy. This excludes

diagnostic staff and nursing, other than clinical nurse educators (such as diabetes educators, respiratory educator).

Allied health professionals receive formal specialised education (commonly a four year degree) plus on-going training. Their role is largely concerned with symptom control in acute and chronic illnesses; rehabilitation following trauma or adverse events, disease prevention and reduction in risk of complications through the management of clinical risk factors and life style behaviours; and the management and prevention of vision and hearing loss.

Table 1 Key occupational Groups defined as Allied Health Professionals

Therapeutic Allied Health Professionals

Audiologist - provide hearing aids which are important for the physical, mental and social functioning of the elderly and for the maintenance of their independence.

Clinical psychologists - assist with the management of various psychiatric illnesses and psychologically-related health problems, such as depression, addictive substance use and chronic pain. They provide psychological assessments and therapies, such as behavioural therapies and psychoanalytic counseling.

Clinical nurse educators - provide a range of education and skill-based services to persons with chronic conditions, such as diabetes, asthma, heart disease, to assist in more effective self-care.

Dietitians - are involved in dietary assessment and support for adoption of a healthy diet, for a range of diet-related conditions and in the management of obesity – a health problem on its own and a risk factor for CHD, diabetes, osteoarthritis etc..

Indigenous health workers -provide a range of direct clinical services and public health interventions tailored to the health needs to reflect the cultural requirements of Aborigines and Torres Strait Islanders.

Occupational therapists - are involved in assessment of disability, training and physical aids to assist rehabilitation and optimise function of people with conditions such as stroke, dementia, rheumatoid arthritis and others with mobility problems.

Orthotists - provide an assessment and fit of orthopaedic prostheses (usually special footwear) to correct fixed limb anomalies and allow more even walking and other limb function.

Physiotherapists –work largely through joint mobilisation, muscle strengthening, specific exercise regimen and approaches to pain control to assist with recovery from trauma and stroke and the management of musculoskeletal conditions and respiratory disease etc.,

Podiatrists - assist in the maintenance of mobility by assessment of foot pressure areas, skin and nail viability, alignment and gait and provision of treatments to correct defects. This is especially important in diseases, such as diabetes, but also address common problems such as flat feet, bunions etc.

Speech pathologists- assist in correction of speech defects, which might arise for instance after a stroke or congenital conditions.

Other Allied health services/complementary health professionals - not the focus of this paper

Radiology and radiotherapy technical officer, Medical scientist & laboratory technical officer

Ambulance officer, Intensive care ambulance paramedic

Optometrist

Naturapath, chiropractor, acupuncturist, etc.

Other Health Professional - not the focus of this paper

Medical practitioner – specialists/general practitioners

Nursing/registered nurse, enrolled nurse

Dentists, dental nurse, Pharmacists etc.

The importance of multi-disciplinary care in the management of chronic diseases is widely recognised and reflected in clinical practice guidelines (as discussed below) and initiatives for the integration of care (DHA 2001). Protocols for the management of most chronic medical

conditions involve input from multiple providers - medical specialists, general practitioners, physiotherapy, nursing, podiatry, dietetics, together with access to appropriate drugs and other health care products.

As allied health staff often work in collaboration with other health professionals, their effectiveness and that of other professionals, may depend, on access by individuals to an optional care package. There is a substantial body of evidence demonstrating the value of allied health services as a core component of multi-disciplinary care for the prevention or delay of disease onset and to reduce the rate of complications and improve quality of life in persons with chronic diseases or at risk. This is far too vast a literature to summarise here. The role in relation to modifying harmful life style behaviours is covered in a recent report by Segal and colleagues for the Department of Health and Ageing (2003).

Introduction to the allied health-care market

Access to allied health services is influenced by both supply side such as; volume of services, costs to the patient/consumers (out-of-pocket, travel, time etc.), cultural appropriateness, quality of care and physical accessibility (location, hours of opening etc.); and demand side characteristics. Demand side attributes relate to the incentives on and capacity of patients and citizens to seek out allied health services. Demand will reflect individual knowledge of personal health needs, how that might translate into a skill requirement, knowledge of the available services, and personal resources (financial, physical, energy, time etc., to seek out and utilise available services). The aim is that those who need particular services will seek them, and that those who do not need services will not seek them.

The market for allied health services consists of a mix of private and public funders and private and public providers, with services delivered through both the community and institutional sectors. In general public funds are used to support publicly provided services within community health centres and public hospitals, and private providers are largely funded through specialist insurers such as transport accident, WorkCover or general medical insurers (extras cover) and individual payments. Important exceptions are public payments to private providers through Veterans Affairs and payments under the Medical Benefits Schedule to private optometrists and Commonwealth subsidy for 'Extras' component of private health insurance amounting to \$578 million in 2002 (PHIAC 2003), of which some \$50 million was for allied health services. (Other major categories were dental \$290 million, optical \$91 million and chiropractic \$41 million).

While there remains a gap in our understanding of health service needs in relation to allied health services - the nature of funding arrangements and patchy evidence of long waiting times (for speech therapy, diabetes education, dietetics etc.), the highly restrictive eligibility criteria for access to publicly funded allied health services and program-based funding which limits possible resource shifts – mean that the current service mix is almost certainly sub-optimal. A role for health services planning is indicated, and development of a suitable model is the task of this paper.

Health Services Planning Models for Allied Health

Health services planning is a means to solve resource allocation questions – particularly that of allocative efficiency, when the market cannot be relied upon. For the market solution to be acceptable requires an informed and empowered consumer able to enunciate demand and a responsive supply system. These conditions do not exist in health. (See Segal 1998 for a discussion of demand side failure).

A review of the literature failed to identify any clear exposition of a planning model specifically for allied health services. The most detailed examination of allied health services were those undertaken by Queensland Health (2000) – focused on factors that affect career satisfaction and by Boyce (2001) primarily concerned with allied health organisation structures. Examples of more complete health workforce planning models tend to be older and include the original needs-based study of the medical workforce by Lee and Jones (1933), the GMENAC planning process for medical workforce in the US (1981) and the U.S. Department of Commerce (1978) planning process for the nursing workforce.

The latter examples are all needs-based models. However none have been applied to the allied health workforce. A number of health services planning models that could, in principle, be used to address the allied health workforce are enumerated below.

Eager and colleagues health services planning framework - Eagar et al (2001) suggest the health services planning task be separated into; i) planning for health improvement and ii) planning for health services improvement. They define the former task to include the identification of health problems, assessment of their relative importance, identification of available treatment solutions, selection of the optimum mix of treatment solutions and evaluation of the revised service mix on the priority health problems. The latter task is concerned with identifying services available to address health problems indicating a need to adjust supply. The two tasks are complementary and ideally completed simultaneously. The authors express concern that whilst this is desirable, this will prove unachievable, suggesting instead a sequential approach may be more realistic, involving a general understanding of health problems and available services and the relationship between them. The most pressing issues are then identified and addressed in a sequential manner, with proposed solutions evaluated against their impact on the system as a whole. The authors however, fail to describe a process by which the model is to be implemented.

Historical allocation - adjusted for population growth might be considered a default option. For this approach to result in optimal decisions, past allocations must have been appropriate and there could be no major changes in management practices or health need that would modify the allied health services requirement. This is most unlikely, given the distortions in the health market and the fragmentation of funding mechanisms, and changes in the allied health service role, reflecting advances in knowledge and experience.

Budget-driven mechanism - a pragmatic approach, where the focus is on how best to meet demand, given a nominated budget. Planning to determine the optimal service levels might be considered a waste of time, if there is no prospect of obtaining the level of funding implied by such an exercise. It is likely to be a common approach taken by agencies, which have little influence over their budgets. However, even if budgets are fixed, spending within the budget upon different services should ideally be determined by an explicit modeling process. A budget-driven mechanism is not appropriate at the regional, state or national level, where budgets have to be established.

Waiting lists - A variant of the free market approach is to use waiting lists as an indicator of the imbalance between supply and demand, with the implication that services should be expanded until excess waiting lists are cleared and waiting times become acceptable. However, waiting lists can represent a flawed indicator for a number of reasons:

- the model assumes that observed demand, is a good measure of value, but a range of market failures, make the interpretation of revealed preference problematic. It is possible that people will not realise when a service is of potential value and fail to access it, or conversely they may overestimate the value of a service and use it inappropriately. In the latter case, rationing may be desirable, and queuing may be an acceptable mechanism for this.

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- where services are under-supplied, it is probable that their use will be restricted to selected groups - regardless of capacity to benefit, and this pattern may become enshrined as the norm with other possible users never appearing on waiting lists. (As an example, most diabetes education services are restricted to persons with established diabetes, even though persons at high risk, such as obese persons with impaired glucose tolerance, could gain substantial benefit).
 - waiting lists are not exogenous. Where funding is related to waiting lists, or penalties apply, there will be an incentive to manipulate waiting lists, making them unreliable as a planning tool.

Professional group planning models – where health professionals develop the roles, responsibilities and training opportunities for each professional group and determine the appropriate supply. The need for professional satisfaction and a career path is central. This framework in effect assumes that the value of services as defined by health professionals, corresponds to the value to clients and the client population. The work by Boyce (2001) is consistent with this model, and focuses on organisational structures and inter-professional relationships and organisational structures.

Needs assessment models- presumes that health services planning (and funding) should enable and support patients and citizens to access best practice care. Need is defined by best practice care protocols, which increasingly incorporate cost as well as effectiveness, in recognition of limited health care budgets. The needs assessment model commences from the premise that the health status of a population can be objectively determined and that health profile can be translated into a defined set of ‘needed’ services. Examples of these models in health workforce planning include the original needs-based study of the medical workforce by Lee and Jones in 1933¹, the 1981 GMENAC planning process for medical workforce in the US and the U.S. Department of Commerce planning process for the nursing workforce (1978). The GMENAC process represents the largest scale example of a needs model. It was designed to establish the future requirement for medical specialists. The process involved consideration of the medical conditions managed by each specialty group and the time commitment implied by agreed management protocols. The methodology was based upon a consensus approach, in which expert teams of clinicians agreed upon the typical/appropriate set of tasks and treatments to manage persons with conditions relevant to each specialty. This, combined with an assessed prevalence of particular conditions was used to estimate desirable levels of specialists per unit of population. The output of a needs-based health services planning model would typically be expressed, in terms of the EFT requirement by skill type, per unit of population (risk-adjusted), or translated into a service requirement given knowledge of the health profile of a study community.

The approach was found to be technically demanding. However, gathering and analysis of data and computations is a far simpler task today. It was also subject to two sets of criticisms. First, while demographic projections are relatively reliable, the assumptions concerning future technologies – the relationship between needs and service requirements – were more problematic. The ‘fixed future technology’ of the model did not allow for the possibility of factor substitution. Secondly, the approach was criticized, in the context of the US health system, as it was designed to project the need for health professionals, not the demand which would be revealed in the medical market place, considered of little relevance in a market-dominated system. On the other hand in the Australian system underpinned by dominant public funding and universal coverage, this type of model would be appropriate.

¹ Lee RI and Jones LW. The Fundamentals of Good Medical Care. University of Chicago Press, Chicago. 1933.

There are current Australian examples of needs-based health services planning. The South Australian Department of Human Services (1999) has embarked on a process of regional planning of diabetes services. Allied health services requirements have been determined, based on clinical best-practice guidelines, the health status of the regional population - with diabetes, local service delivery arrangements, with some recognition of budget constraints. The model output is full-time equivalent personnel by skill type. This model has been implemented successfully in the Hills Mallee Southern region of SA, with input from health professionals as well as health service planners. The model is being extended to other SA regions.

A needs-based model is unique in providing an objective and rigorous foundation for workforce projections. All other models are either vague in terms of process of implementation or subject to a variety of distortions.

A needs-based model is particularly appropriate for planning allied health services at the regional or national level and where the principle of universal coverage and access to health services on the basis of need applies. While the scope of health services that might be considered core, and subject to this principle has not been precisely specified in Australia. However, Government support for the development and operationalisation of best practice guidelines – based on published evidence - suggests that services that form part of best practice protocols should be considered 'core'.

Proposed Needs-based Allied Health Services Planning Framework

The proposed Planning Framework is a population-based approach most suitable for application at the regional level. The Framework described below is a broader version of the SA model, extending beyond diabetes, and to cover a wider range of allied health services. The Framework presumes a societal focus - that is the perspective of a disinterested health services planner seeking to reduce the burden of disease within a community. The Framework seeks in the first place to establish the optimal level and mix of clinical skills, which when combined with local information on the service system can be translated into a plan for allied health services.

The proposed health services planning framework is illustrated in Figure 1. The figure divides the tasks into two blocks: Block A describes the primary needs assessment task - determining the optimal skill requirement at the regional level, while Block B is concerned to translates this into a corresponding service and resource requirements at the regional level, that reflects regional circumstances. The latter also illustrates the desirable feedback mechanisms. Apart from selecting the health conditions and skills to include in the planning exercise, the rest are technical tasks that could be completed by epidemiologists/health service researchers. Some of these tasks, such as defining best practice care would draw on the national and international literature, whilst others are embedded in regional data-bases.

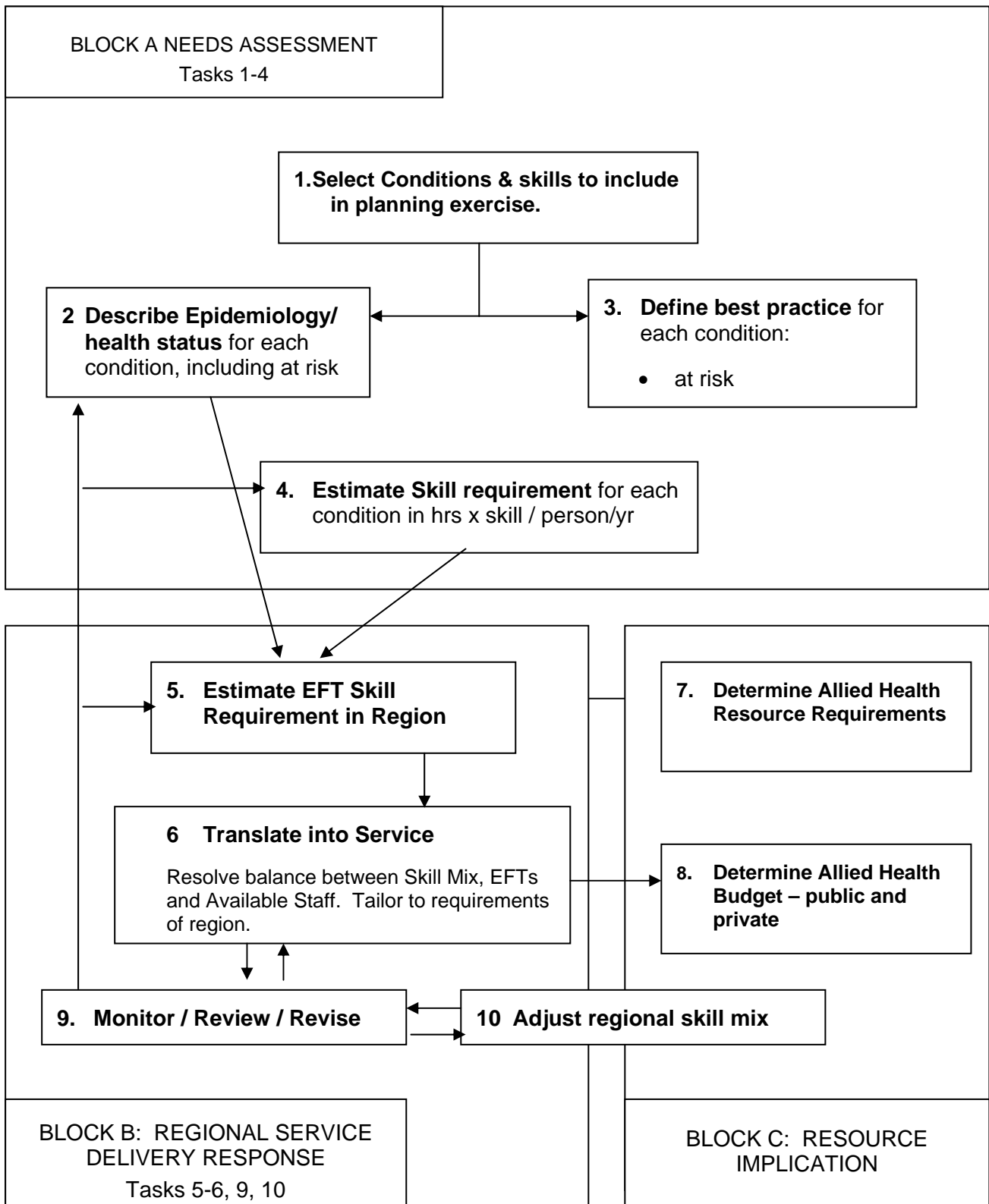
The Needs Assessment Tasks (Block A Tasks 1 to 4), and the Regional allied health service delivery response (Block B Tasks 5,6 and 9,10) are now outlined.

Task 1 *Scope* - A selection must be made of the health problems/conditions and allied health skills to be included in the analysis. The scope of the health services planning exercise could be determined at the national, state and/or regional level, to include conditions for which allied health skills are central.

Task 2 *Epidemiology* – describe the health profile of the community, specifically the numbers of people with each of the conditions/health problems, by severity/stage of disease, including those at risk.

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- Task 3* *Best practice care* – document the optimal method of managing the subject conditions, reflecting published best practice guidelines and their translation into optimal care protocols. This is a patient level description.
- Task 4* *Skill mix* – translate best practice care into a set of skills and professional time, expressed in mean hours per skill type per client/patient/citizen per year.
- Task 5* *Regional workforce* – Translate skill requirement from hours per person into contact time by skill type per region using data on health status of the regional population. Translate into a staffing requirement by skill type by understanding the relationship between contact hours and total hours.
- Task 6* *Health services delivery arrangements* – Translate EFT skill requirement into a set of services, taking into account the range of skills which can be provided by particular allied health personnel, the opportunities for overlap in the management of different conditions, the attributes of the region - its health workforce, its population, its geography, etc.
- Tasks 7, 8* *Resource implications* – Translate the health service requirement into a regional allied health budget by applying standard unit costs.
- Tasks 9,10* *Monitoring and Revision* - A monitoring process would be implemented to assess the apparent balance between the demand for and supply of allied health services, the quality of management of chronic conditions, and rates of disease incidence. This would be used, together with current information on best practice care to validate or revise skill requirements over time.

Figure 1 Allied Health Service Planning Framework and Tasks



The tasks are further explored by considering an application to diabetes by a regional health authority.

1. *Determine scope of exercise* – presumed for this illustration to be diabetes;
2. *Describe epidemiology of region* – Establish health status of regional population, reflecting an understanding of diabetes and options for prevention and management; numbers with diabetes (NIDDM², IDDM³, gestational diabetes) by disease stage - recently diagnosed, with co-morbidities (vision impairment, neuropathy, foot problems, renal failure, heart disease) and at risk (eg combinations of IGT⁴, obesity, previous gestational diabetes, high risk ethnic groups, aged over 50). Describe health status by interrogating available data sets. See Table 2.
3. *Document clinical best practice for management* of diabetes by type of diabetes and identifiable disease stages - highlighting the role of various skills. For persons with recently diagnosed NIDDM, describe optimal care over say 5 years – in terms of consultations with diabetes nurse educator, podiatrist, dietitian, physical activity specialist; conduct a similarly exercise for persons with specific complications and for persons at risk.
4. *Translate best practice protocols into skill requirement per person* - for the newly diagnosed diabetic, persons with specific co-morbidities and complications and persons at risk. Express as mean hours by allied health skill/person/year at each disease stage, ie hours/persons for S_{a1} to S_{ai} S_{n1} to S_{ni} W here: S_{ai} is skill type a (eg dietetics) for population subgroup i (eg person with newly diagnosed NIDDM)
5. *Translate into an EFT skill requirement, for each skill type* – (podiatrist, dietitian, diabetes nurse educator etc.), by combining mean hours for each skill type per person per year with estimated numbers in each diagnostic category
$$\text{Multiply } (S_{a1} \text{ to } \dots S_{n1}) \times H_1 \dots \dots \dots \text{ to } (S_{ai} \text{ to } S_{ni}) \times H_i$$

Where H_i is number of persons in disease category/stage

Adjust for typical contact hours per occupational group to arrive at EFT requirement.
Consider whether aim is to achieve best practice care or 'acceptable' care – and what this might mean.
6. *Translate skill requirement into a service requirement* – by taking results from step 5 together with local knowledge of allied health workforce, opportunity for multi-skilling or specialised care, geography of region, distribution of population, possible approaches to program delivery, nature of the client population. Compare with current skill mix and service structure.
- 7,8. *Establish resource implications* - Determine funding level required to support the projected service requirement. Compare with current resourcing levels? Consider how funding might be split between levels of government and program area. Consider balance between private and public funding.
- 9,10. *Monitor and review* – Establish the actual pattern of service delivery. Was the planning exercise translated into services on the ground? How are these services are used by the population? Does service provision and use reflect expectations and the assumptions

² Non-insulin dependent diabetes mellitus, or type 2 diabetes

³ insulin dependent diabetes mellitus, or type 1 diabetes

⁴ impaired glucose tolerance (elevated blood glucose not in diabetic range – substantially higher risk of progressing to NIDDM).

underpinning the planning exercise. Ultimately explore the effect of any change to the health service mix on morbidity, mortality and quality of life.

The challenge lies, not in the conceptual framework or the logic of the process, but in the implementation of the Framework. There are a number of standard data collections that can be interrogated to meet the information requirements of the model.

Key data sources relevant to determining population health status are listed in Table 2.

In recent years, approaches to management have been formalised through clinical best practice guidelines and treatment protocols. These are based on an understanding of the effectiveness of available treatments and optimal clinical decision pathways. The National Health and Medical Research Council (1990a, 1999b) has developed guidelines for the preparation of guidelines and has funded and publishing many clinical guidelines. Guidelines have been collected and displayed on internet websites maintained by the NHMRC in Australia (64 guidelines) and the Agency for Healthcare Research and Quality in the USA (913 guidelines). Despite this, the construction of clinical guidelines is a developing science and the available evidence incomplete. This will impinge on the capacity to implement the planning framework across all conditions.

Table 2 Key Data Sources to establish health status of regional population

Routine National Surveillance Data

Census data	Age, gender, socio-economic index, ethnicity etc.
Morbidity and Mortality	National Death Index Burden of Disease Studies
Regular surveys	National Health Survey, ABS Cause of Death statistics etc.

Routine Service Use Data

Hospital data bases	Inpatient minimum datasets Outpatient minimum datasets
HIC data	MBS, PBS
Other	Veterans Affairs, TAC, WorkCover etc.

Disease/condition specific, cohort data

Disease Registers	Diabetes, Cancer, joint replacement register, Hereditary Haemochromatosis
Special Surveys	Screening surveys MONICA data sets Region specific, eg Busselton, Dubbo Record-linkage studies
Patient Clinical Records	Hospital/GP record searches

Conceptual and Technical Issues

There are a number of conceptual and technical issues to be resolved in order to implement the framework. A few of these are briefly considered here.

Conditions to be managed - The model requires that the conditions and health problems to be covered by the allied health services planning exercise are defined, although the ultimate aim is to cover the entire role for allied health services across all relevant conditions. Because of the possible overlap between conditions and management by allied health staff, it is preferable that the entire allied health service requirement across all key conditions be established as part of a single planning exercise. This however might not be possible. Assuming only some health problems/conditions are to be considered initially the choice should ideally reflect the important health problems/conditions within the region (indicated by number of persons affected, loss of quality of life/loss of life, costs of management) and availability of effective treatments and/or opportunities for prevention that incorporate an allied health role.

An added complexity in defining conditions to include in the planning exercise is the extensive overlap in conditions with people having more than one condition, and a commonality in approaches to management and prevention.

For instance, many will have a combination of cardiovascular conditions and risk factors (typically CHD, diabetes, high blood pressure, high cholesterol and obesity) for which the adoption of a set of lifestyle behaviours (eg increased physical activity, more fruit and vegetables, weight control, smoking cessation), are pertinent to prevention and management. Thus a single intervention may be applied across a number of conditions, but also that intervening in relation to a particular condition may help in the management or prevention of other conditions. As the framework is developed and particular conditions considered, the means for recognising joint benefits from services will need to be established. Thus in summing across conditions and populations possibility for overlap will need to be taken into account.

The existence of comorbidities may also influence approaches to management. For example a high proportion of persons with Type 2 diabetes, also have CHD, or CHD risk factors, and many of those with chronic diseases such as respiratory, heart, renal etc. also have a serious mental health problems See for instance, Glassman & Shapiro (1998), Anderson et al (2001). Psychiatric comorbidities not only represent a health problem to be managed, but they may influence the ability of those with other medical conditions to comply with recommended care, suggesting the need for alternative, more intensive approaches to management, (Ciechanowski 2001).

In short, there is no correct set of conditions to be covered in an allied health services planning exercise, but more would be learnt about this with pilot implementation. The decision might be, not so much, which conditions to study, but how to stage an analysis of the entire allied health role.

Diagnostic criteria: 'The Clinical Iceberg' - There is considerable scope for imprecision in estimation of numbers of people with particular conditions. Most chronic diseases (including CHD, hypertension, type 2 diabetes) as well as risk factors occur in a wide range of severities. As the disease or risk factor becomes milder, the frequency becomes greater. In estimating the number of persons with specific conditions, distinctions will need to be drawn between various sub-populations - such as those with disease and those at risk, those with single conditions and those with comorbidities and by disease stage and severity. Ideally, subgroups should be defined, where-ever there are differences in the optimal approach to management and prevention. The problem is that the number of people identified with a condition depends not just on population characteristics but also on diagnostic criteria, which are necessarily somewhat arbitrary. Thus the

distinction between the general population, persons 'at risk' and those 'with established disease' can be indeterminate, changing with the understanding of the disease and with known interventions for prevention, for ameliorating symptoms or modifying disease progression.⁵

Thus decisions will need to be made concerning the diagnostic thresholds for the purpose of estimating the number of individuals in the population with the conditions covered by the health services planning exercise. It also means that published estimates of disease incidence (rate of new cases) and prevalence rates (total cases), reflect particular diagnostic thresholds.

Variability in client needs - In interpreting clinical practice guidelines and translating these into EFT personnel, the varying needs of client sub-groups, (such as those with comorbidities or from specific cultural or socio-economic groups), would need to be considered. Both at the planning and implementation stage, variable time inputs required for the effective management of clients with differential risk and different capacities to respond to care should be allowed for. There is the potential for this to be ignored if planning is unduly focused on the typical client.

Equity and access - To the extent that equity of access and greater equality in health outcomes is an objective of government, service provision may need to be modified to ensure that the most disadvantaged groups gain adequate access to services.

This may or require special attention to cultural appropriateness, as well as some adjustment to the optimal service level and skill mix. This would also translate into a differential time and skill mix allocated to particular population groups.

Discussion

Relationship between need and demand/Access criteria - The model estimates service need based on evidence of best practice care. Thus service levels derived from this are designed to ensure that all persons with the nominated conditions or health problems are able to access best practice, cost-effective care. However, whether need translates into demand, will depend on service characteristics - such as accessibility, perceived quality, cultural relevance and cost to the user; and patient characteristics such as understanding of one's condition, professional advice concerning management, importance of condition relative to other issues in a persons life, financial and other resources. A mismatch between demand and need can and does occur. Promoting use by those most in need, and discouraging use by others for whom it is less appropriate would need to be addressed in the context of implementation.

A related issue concerns access criteria. In translating the allied health requirement into a service model, a decision will need to be made about eligibility of access. Is care to be provided only for people with designated conditions? Or is a service to be structured around designated conditions, but with access unrestricted. Is access to be unconstrained or based on referral? Consultation with groups representing both 'general' users and those from particular cultural groups would be invaluable in translating estimated service needs to suitable service delivery models. This would complement input from professional associations/clinicians. Adjusting service models for different sub-populations and providing choice will be desirable.

Adoption of a generic or specialist model- How the skill requirement is translated to a service model and staffing requirement will depend, in part, on whether a specialist allied health delivery

⁵ For example, the level of blood cholesterol predicts the risk of ischaemic heart disease mortality, rising across the entire range of cholesterol levels in the population, and therapeutic reduction in those levels by diet and/or drugs reduces the risk. Thus defining a population with high cholesterol is somewhat arbitrary.

model or a mainstream/generic service delivery model is adopted. This decision will be informed by matters such as; the service philosophy, the size of the region, capacity to attract allied health and other staff, the mix of conditions included in the health services planning exercise, views about critical mass and professional development, adequacy of the training of health professionals and capacity to allocate time between competing pressures.

Monitoring and feedback - It will be desirable to monitor for inadequate service uptake by clients in highest need categories or excessive uptake by a broader client group. There may be a mismatch between what was expected from the service, what it delivers and who is accessing it. In short a quality assurance process is desirable to monitor the service as provided, the relationship between care provided and clinical guidelines and client outcomes and the nature of the client population. The quality assurance process should be linked to ongoing service development.

Pilot implementation

There are a number of practical and theoretical issues to be resolved in model implementation, as briefly discussed above. The further exploration of issues in implementation of the health services planning framework for allied health, would best proceed through pilot implementation in selected case study regions, with a small number (or full range of health conditions). Further development could however, occur in the first instance, through an illustrative, primarily desk-top exercise within a selected region.

An understanding of the health services planning approaches currently used in relation to allied health services, and how the proposed model might complement (or possibly conflict with) current approaches could also be explored. A primary objective of this research stage would be to support the development of a protocol for pilot implementation.

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Key Websites for best practice guidelines

1. National Health and Medical Research Council: <http://www.nhmrc.gov.au>
2. American Institute for Health Research and Quality (a US Federal body) maintains the National Guideline Clearinghouse: <http://www.guideline.gov>.

Annex: Illustrative set of studies reporting on the role of allied health services in chronic disease management and prevention

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