

# **Planning framework for the Public Health workforce**

**Discussion Paper**

June 2002

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## **GLOSSARY**

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Benchmark	Standard professional labour requirement likely to be required to meet identified public health objectives
Competency	The competence required to consistently perform <i>work</i> activities to agreed standards over a range of contexts and conditions <sup>1</sup> .
Cost effectiveness	The least costly method of securing an identified objective, such as a health goal
Economies of scale	Economies made as a result of the concentration of skills at a single point of research and administration and the ability to deliver expertise and advice thereby at an average cost lower than if such skills had been dispersed over several points of operation
Externalities	Economies that result from knowledge internally generated that pass on freely to outside beneficiaries
Merit good	Goods which would be under provided but for the intervention for social justice reasons, of Government
Personal health service	Health service delivered to, and used by an individual primarily for that individual's private benefit and for which it would be possible to charge directly (or to pay a benefit)
Public goods	Goods whose benefits become freely available within the community as a result of public sector initiatives but for which it is impossible or impractical to charge individuals directly—and which would consequently not be provided without government intervention
Public health labour market	Abstract process that could bring public health employers and professional employees in contact with one another and which may affect the terms and conditions at which the former may recruit and the latter may seek employment
Workforce development	Strategies that influence the environment affecting the training, work practice and careers of public health professionals
Workforce planning	Strategies that address the adequacy of the supply and distribution of the public workforce in relation to public policy objectives and the consequential demand for public health labour

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<sup>1</sup> There are many other ways to look at the concept of competence, one quite prominent way being to look at competencies as underlying characteristics of people. The definition chosen fits well though within the current Australian training context as developed and led by the Australian National Training Authority. For a broader understanding of competence a useful text is Fletcher, S. (1991) *Designing Competence-based Training*. Kogan Page, London

## *Executive Summary*

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This project, sponsored by the National Public Health Partnership (NPHP) Group, has two main aims:

1. To describe current workforce planning practices relevant to the public health workforce.
2. To propose a framework for workforce planning to categorise the public health workforce, to generate information about existing national workforce capacity, and to determine labour market requirements.

Workforce planning can be described as ensuring that there are sufficient people with the right skills to deliver high quality public health services to the community. A key question is: how many people are needed to provide a desired level of public health services to a given population?

Although in most workforce planning studies it is considerably easier to calculate workforce supply compared to workforce demand, it is particularly difficult to define and quantify the public health workforce. There are significant shortcomings in classification schemes for public health work, work settings and workers, who can range from dedicated public health specialists and professionals, through to general health and associated workers whose jobs include some public health tasks, such as general practitioners or town planners. Even within the health profession itself it is hard to define public health workers:

- There is a wide variety of occupational groups;
- There are no clear boundaries between public health professional categories;
- There is an absence of professional credentialing requirements; and
- Most health workers lack formal public health training.

Similar difficulties are experienced in estimating demand. The nature of the demand for public health professionals working to improve the health of populations differs significantly from the demand for other health professionals primarily concerned with the health of individuals. The demand for public health professionals is less directly sensitive to population size and demographic composition, and more dependent on the nature and organisation of public health services.

Regardless of the size of the population it services, there is always likely to be a critical minimum skill establishment necessary to maintain the integrity necessary to the successful operation of a public health service. In general terms, there is hence some presumption that public health services are likely to be sensitive to economies of scale.

Therefore, important drivers of demand for public health labour are organisations and the specific functions and programs that they undertake. A wide range of organisations contribute to providing public health services, including:

- Government (*e.g.* Commonwealth, State / Territory, local, regional health services, environmental protection agencies);
- Universities and other training institutions;

- Non-government organisations / community organisations;
- The private sector (eg private research companies, pharmaceutical companies).

In this context it is important to note that new policy directions (such as the creation of a bio-terrorism unit or the closure of a sexual health clinic) can lead directly to changes in demand.

The methodology proposed in this discussion paper suggests that organisations can use the following four steps to identify their workforce needs, expressed in terms of the competencies that are essential to achieving their organisational objectives:

- Identify/measure (future) goals and activities;
- Within an organisation, determine what information, priority or program changes generate demand for public health services;
- Describe the organisational competencies required to achieve the goals and implement action; and
- Describe the competency set required by the workforce of the future.

A feature of the proposed model is that it puts social needs, rather than *staff* as the *providers* of services, at the heart of workforce planning. This entails:

- defining the services the public need;
- determining the skills and competencies needed to deliver these services;
- deriving both the *numbers* and *types* of staff required to satisfy competencies to deliver services at the organisational / program level;
- matching actual positions with competencies and identifying gaps;
- link to training and education policies.

Another feature of the model is its emphasis on the core functions of public health, such that:

- organisations identify those core functions that are relevant to their objectives;
- competencies are further defined by the public health domain (e.g. communicable disease) or specific target populations (e.g. refugee population); and
- organisational competency needs and individual competency sets and their complementarities are brought into play

This approach enables all organisations to single out those functions that are specific to public health, and enables people carrying out those functions to be identified, regardless of their classification. The information collected can then be aggregated, program by program and sector by sector, into a broader public health workforce plan, which should be multidisciplinary and cross sectorial.

The development of comprehensive labour market modeling through systematic needs audit may throw light on critical gaps in competencies that may have the effect of thwarting the impact of whole programs. It could also be invaluable in determining the feasibility of new programs by way of workforce impact studies. In conjunction with a quasi-market approach to sector-wide policy planning, labour market modeling would

also greatly assist in the prioritisation of programs within budgetary constraints according to national and State / Territory health goals.

The paper concludes that the next step is to trial the workforce planning model, either at the organisational level (such as an Area Health Service) and / or with a particular occupational group (such as environmental health officers) in a specific locality or jurisdiction.

Trialling the model will provide a clear idea of the developmental work that needs to occur to put in place a national framework for assessing local labour market requirements, thereby generating information about national workforce capacity.

## ***Chapter 1: Introduction***

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The National Public Health Partnership (NPHP) program commenced in 1996, and aims to strengthen public health infrastructure and capacity in Australia, by developing and implementing an agreed national, strategic and cohesive approach to public health workforce development.

The Strategic Directions 1998-2000 for the NPHP Group gives priority to infrastructure and capacity development and enhancement. Among other things, the strategy pointed to the need for the development and implementation of a public health workforce program; educational initiatives; improved information technology and telecommunications; legislative review; effective research; and a consistent approach to public health interventions. The agenda also had implications for public health workers who require up-to-date knowledge and skills to respond to a number of priority public health strategies, including food safety and nutrition; environmental health; substance abuse prevention and control; infectious disease control; immunisation; mental health promotion and injury/violence prevention. The agenda also emphasised that an appropriate level of skills and knowledge is also required by the workforce to equip members to attend to public health concerns for children, Indigenous and rural communities. Workforce development strategies continue to be a focus for the NPHP priority Agenda 2002-2004.

### ***Methodology***

The aim of this consultancy project is to produce a discussion paper that conceptualises workforce planning and proposed a framework to categorise and assess the capacity of the public health workforce, drawing from experiences within and outside the health sector. To achieve this, a comprehensive review was undertaken of national and international workforce planning literature.

Literature relevant to this project was identified through: the utilisation of relevant literature databases; searching on the Internet for relevant websites and reports; and advice from members of the Project Steering Group. Relevant material included reports that examined the key themes and issues of workforce planning; contemporary approaches to workforce planning in Australia, the US and UK; and efforts to develop workforce planning approaches in public health in those countries. Information from over 60 articles or publications and 15 websites was employed in the analysis of findings.

During May 2002 interviews were undertaken with a number of key stakeholders, to discuss the main findings of the project and to seek their views on the strengths and weaknesses of the proposed model of workforce planning. Interviewees included:

- Commonwealth and State/Territory senior policy makers and workforce planners;
- Members of the Strategic Round Table on Workforce, convened within the Department of Health and Ageing;
- Other key informants with a special interest in public health workforce planning.

Feedback from these consultations has been incorporated into this paper, in particular into Chapter 5.

## **Diversity of public health**

While it is generally agreed that the aims of public health are to protect the health of the population, prevent disease and promote health and well being, it has been difficult to gain consensus about what and who is included in the field (ACHS, 1999). Even within one of the sub-sectors or ‘domains’ of public health, O’Connor *et al* (2000) found that it was difficult to define and quantify the health promotion workforce.

Defining the public health workforce is complicated by:

- The complexity and diverse range of initiatives covered by public health;
- The wide variety of occupational groups engaged in public health;
- The wide variety of organisations involved in the area (*eg* health service providers, personal care providers, government agencies responsible for industrial safety, sanitation, water supply, housing, road safety, consumer affairs, etc, as well a wide range of non-government agencies such as professional, community and consumer organisations, and research and education institutions). For many of these organisations public health is only one of their roles and often not their primary role;
- A small but potentially important public health private sector contribution—in private research companies (generally working under contract to governments), research departments of large private health corporations (*eg* pharmaceutical companies), health insurance companies, and private environmental or occupational health providers (delivering services in statutory environments);
- A relatively low community awareness of public health activities;
- A lack of integration among those working in the area;
- The lack of an overall nationally coordinated public health strategy;
- The division of responsibilities and subsequent fragmentation and lack of coordination between the various levels of Government, the departments and programs within each level of government;
- The differences that exist in roles and responsibilities across the States and Territories; and
- Limited research expertise and funding (ACHS, 1999).

## **Public Health Workforce**

The public health workforce ranges from those who self-identify as public health professionals to those who may undertake aspects of public health functions in the course of their health or other related work.

A recent study by Human Capital Alliance aimed at identifying and classifying the injury prevention workforce divided the workforce into three categories:

- Leaders or champions;
- The direct workforce, which comprised specialist injury prevention workers including researchers, practitioners and policy makers;

- The indirect workforce, who were persons not specialised in injury prevention and included general practitioners, engineers, school teachers and town planners (Cook, Gadiel, Ridoutt and Wise, 2001).

The report also identified categories for understanding the dimensions of workforce development, including the worker background competencies, the skills required of the work, the setting in which work is conducted, the characteristics of the intervention, the “tools” employed by the worker and the “target” of the intervention.

There is a lack of systematically collected data about the knowledge, skills and competence of the public health workforce and whether these meet current and future needs. The Australian Council of Health Standards notes that a review of PHERP by Nolan, Bryson and Lashof in 1999 found that, while evidence indicated that the supply of education for the public health workforce had increased, deficits in the workforce retarded the national development of public health. These deficits include a shortage of skilled biostatisticians and personnel with expertise in health policy, health services research and health economics (ACHS, 1999). Similarly, recent work with public health professionals in the US identified assessment, epidemiology, analytic thinking, effective communication, community development, policy development and politics, and organisational effectiveness as essential skills for public health practice that current employees often lack (Gebbie, 2001).

### ***A workforce planning approach***

There is currently no national program or model for public health workforce planning, despite a decade of interest and sporadic endeavour in the area. The general aim of national planning is the provision of an adequate number of (in this case) public health workers, with appropriate *competence* to meet the service needs of the population and to ensure that public resources are not wasted by the production of too many workers. In terms of policy intervention, workforce planning provides essential advice to government, relevant regulatory authorities and the health profession, particularly advice on supply and demand issues and potential policy implications (AMWAC, 2000).

The difficulties encountered in even conceptualising, let alone practically executing, planning of the public health workforce has led to increased questioning of the worth of its quest. Advocates though continue to suggest that the size and composition of the public health workforce should be identified and tracked over time in order to develop and evaluate appropriate plans for workforce development (BHPr, 2000). More complete knowledge about the educational preparation, career patterns, turnover rates, and mobility within States and Territories of public health workers would facilitate planning for education, recruitment and retention. It would also provide a basis for modernising the public health workforce through expansion and capability development in order to deliver government priorities to improve health and meet health inequality targets (Speller, 2001).

As well as agencies interested in their own staff, or in the individuals they may wish to employ in the future, academic institutions have an interest in quantifying the workforce. Schools of public health could more effectively plan their educational programs if they knew, for example, the average annual rate of retirement of members

of key disciplines. At least as important is the contribution workforce information would make to research and analysis of important public health issues (BHPr, 2000). Meeting the public health needs of individual communities requires an understanding of the types of public health professionals needed to provide required services, the actual positions available, and who currently provides these services and their skills (BHPr, 2000). Also of importance are the shifts in direct service delivery from the public to the private and community sectors, which are likely to continue in the future (PHAA, 2001).

The following chapters explore:

- Broad concepts of general workforce planning, including traditional ways of measuring current and projected supply and demand;
- Current and evolving systems for public health workforce planning, as well as difficulties in classifying the public health workforce;
- Ways of assessing the demand for public health services; and
- The development of a consumer-focussed, workforce planning model that uses competencies to assess both demand for, and available supply of, public health labour.

## ***Chapter 2: Broad concepts of workforce planning***

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### **Overview**

Workforce planning in public health differs significantly from planning in other types of health workforce. In this section, we provide an overview of some key health workforce literature. Citations are not meant to be exhaustive, but rather to illuminate a path sufficient to understanding the rudimentary benchmarks of conventional health workforce planning, to use as a comparison for the planning model we believe to be most appropriate in public health.

Workforce planning is largely a post-World War II tool developed to gain maximum benefit from the explosion in investment in higher education from the 1950s onwards. In its classic methodological form it relates closely to, but is not the same as, labour market analysis. Indeed, it may attempt to compensate for market failure by recognising the importance of the workforce that may be critical to services with high social utility (such as teachers, nurses, engineers, and doctors).

More recently, the term workforce planning appears to have been superseded, at least in the public health workforce lexicon, by the term ‘workforce development’ (see for instance the *Workforce Development/Needs Analysis Annotated Bibliography* prepared for NSW Department of Health). Many authors (NSW Department of Health, 1997; Department of Health, 2000) seem to subordinate workforce planning to workforce development. De Geyndt (2000) for instance, describes workforce development as including three interrelated actions:

- **planning** the workforce: a quantity concern
- **training** the workforce: a quality concern
- **managing** the workforce: a performance issue.

Similarly, a recent UK report (Department of Health, 2000) places workforce planning within a broader workforce development context. The report advocates a more holistic approach to workforce planning than hitherto. It argues the full range of human resource policies—including education, training, pay, skill mix, recruitment and retention, and career structure issues as well as technical supply and demand modeling—need to be brought together in a process of workforce *development*. Workforce planning as traditionally defined (that is the supply and demand modeling) is only a part, albeit an important part, of this process.

Even within this broader context, the UK report proposes that in order to ensure its relevance, it will require a fundamental cultural change to put the consumer of services, rather than staff as the providers of services, at the heart of workforce planning. This, as will be explored later, is a major theme of this discussion paper.

Such a cultural shift has a number of implications. In particular:

- Workforce development has to start from the definition of the *services and potential services* the public need.
- This in turn needs to drive debate on the skills and competencies required to deliver these services and thus the numbers and types of staff required.

The report describes a number of deficiencies with the current arrangements for workforce planning for health workforces, many of which are highly pertinent to past efforts in the public health arena. In particular, current arrangements are not:

- Built around service needs and the skills required for delivery.
- Well integrated with service and financial planning.
- Holistic in their approach.
- Responsive to service changes and developments.
- Supportive of multi-disciplinary training, education and working.

Another interesting recent trend seems to be the move of workforce planning away from the macro level (dealing with say national or other jurisdictional or geographically defined workforce populations) to focus on the workforces of organisations. A recent guide to health workforce planning in the United States for instance (National Institutes of Health, 1999), is essentially an instructional guide on undertaking an *organisational* workforce analysis. It states that a review of several models has shown that the general processes appear to be alike. All rely on:

- **Integration of other planning processes.** In particular, strategic planning, budget, and human resources are key players in workforce planning.
- **Workforce Supply** - Analysis of projected workforce supply based on projected retirements and attrition data on the current workforce
- **Forecast Workforce Need** - Identification of skills needed in the future;
- **Gap Analysis** - Comparison of the present workforce to future needs to identify skill gaps and surpluses;
- **Strategies** - Development of strategies and action items to address needed or surplus skills
- **Evaluation** - A dynamic evaluation process that ensures the workforce model remains valid and those objectives are being met in support of the organisation's performance goals.

The focus on organisations for workforce planning is another theme that will be explored further later in this discussion paper, although not in the same way as the literature described above.

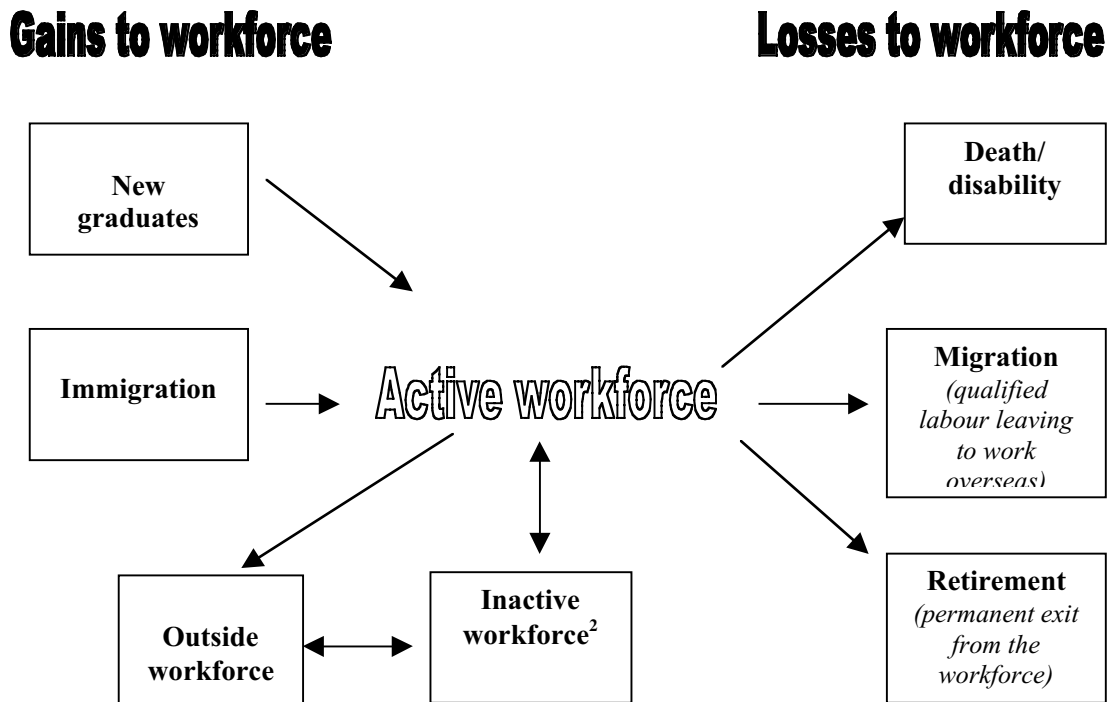
### ***Traditional methodology***

Methodologies for the study of supply and demand for a particular workforce are well developed and documented (e.g. Hall and Mejia. 1978, Australian National Audit Office, 1999; AMWAC, 2000). The standard approach is for current and future supply and demand to be estimated independently and later equated. In the real world, it is accepted that labour market clearance is more complex (see for example Blandy and Richardson, 1987, Whitfield, 1987).

### Measuring current & projected supply

Analysis of supply is generally the easier of the workforce planner's tasks, since data are more readily available and sources more reliable. The main supply variables in a traditional workforce planning model are shown in figure 1 below.

Figure 1: Schematic representation of the supply variables



Some of these variables need explanation in a public health context:

- new graduate supply—unlike most health profession workforces, there is no single qualification pathway into public health.
- movement between the active and inactive workforces—in most workforces this involves temporary movements to and from the active workforce largely for reasons of child rearing, study or extended holiday. In a public health setting, movement could be a more natural outcome of career progress or organisational limitations. For instance, a mental health practitioner might move between active public health and clinical workforces, depending on the availability of funding for appropriate public health programs.
- workforce losses—losses from the active workforce to migration overseas, retirement or death/permanent disability are likely to be less important sources of loss to the public health workforce. Loss to the 'outside workforce', either direct or via the 'inactive workforce' pool, is likely to be most problematic.

<sup>2</sup> The inactive workforce includes those who might be categorised as 'involuntary occupational separation', that is graduates of educational programs who still lack specific competencies to obtain employment in public health.

Such a case might be a worker with broad health promotion competence who moves to a marketing role, and the competencies are therefore lost to public health services delivery. Alternatively, a public health worker leaves the workforce for child rearing, but finds the use of basic qualifications in a clinical setting on return to the workforce allows more flexible work arrangements to be negotiated. The same result occurs, the public health competencies are lost to public health service delivery.

In order to estimate values for supply variables traditional workforce planning models rely heavily on secondary data sources, supplemented by primary data collection through surveys of the workforce population (eg PHAA, 1991). The secondary data sources include;

- Population Census and Labour Force statistics;
- State/territory registration boards.
- Enrollment and course completion statistics from education and training institutes;
- Immigration statistics (settler arrival);
- Membership statistics for relevant professional associations and industrial groups.

Secondary data sources have proven particularly inadequate for enumerating the public health workforce due to the particular, even unique characteristics of the population (Solloway, 1998). To begin with, many public health practitioners, possibly even the majority, would not self-identify as such but would be more likely to offer their 'base' qualification (such as medical practice, nursing, etc.) to describe their occupation. A recent study by Cook, Gadiel, Ridoutt and Wise (2001) of the injury prevention workforce indicated that even "direct" workers, those who work entirely in injury prevention, may still identify themselves as 'policy makers', 'researchers', or by their 'practice' qualification. Additionally, public health practitioners are not registered (nor would this be feasible), and professional association affiliation suffers from variable commitment and fragmentation. For instance, Cook *et al.* (2001) found at least four separate organisations with claims to the professional interests of injury prevention workers.

Hence, primary data collection sources have tended to be favoured in studies of public health workforce supply (eg Bureau of Health Professions, 2000). Besides surveys, other sources of primary data collection include:

*interviews* of key informants in various stakeholder organisations (eg employer groups, professional associations, industry associations)

focus group *discussions* with selected health professionals in both the active and inactive workforce.

### ***Measuring current and projected demand***

Assessing the demand for labour, as noted above, is the more difficult task. This is commonly the case in workforce planning studies<sup>3</sup>.

A principal method of assessing demand, particularly of medical practitioner labour, has been the practitioner to population ratio<sup>4</sup>. Such ratios, or other ratio forms (for example pharmacists per unit volume of prescriptions, nurses per bed, etc), provide broad rules of thumb, but are less likely to identify particular groups of consumers of services with specific health problems, most affected by labour inadequacies. This is a crucial point, since the demand for labour is a derived value, dependent upon what it is that the labour will do, that is, what consumers want from their *health services*. Moreover, as will be discussed later, the demand for public health labour is comparatively insensitive to population size.

For more sophisticated analysis, a number of techniques exist within one (or both) of the two major approaches to the estimation of labour requirements<sup>5</sup>—a "demand" or "needs" approach. Hall and Mejia (1978) describe these two approaches in a conventional workforce environment (but not necessarily applicable in public health) as follows:

*"Demand, ... refers to the sum of the amounts of the various types of health services that the population of a given area will seek and has the means to purchase at the prevailing prices within a given time period. From this demand the health manpower required to produce these services can be derived.*

*Need represents estimation based on professional judgment and (available) technology of the number of workers or amount of services necessary to provide an optimum standard of (service). Need exceeds demand when there are insufficient resources to purchase services in accordance with professionally determined needs."*

Three popular methods used to estimate demand are;

service utilisation method: Data on current service utilisation serves as a good measure of satisfied demand. Analysis of past trends in service utilisation allows estimation of the likely future changes in utilisation patterns. Ridoutt (1988, 1989) has used this method to estimate demand in NSW for public sector employed nurses, radiographers and therapists. Gadiel and Ridoutt (1993, 1995) have used similar methods to analyse service provision by allied health professionals and medical practitioners, and more recently pharmacists (Gadiel, Ridoutt, Cook and Harvey, 1999).

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<sup>3</sup>The paucity of research effort into the demand for health labour was made very clear in an AHMAC funded project which identified and analysed health labour force research since 1980, conducted by a team which included HCA consultants, see Selby Smith, *et al.* (1992).

<sup>4</sup>In the case of nurse labour the ratio adopted has often been to inpatient beds or patient numbers.

<sup>5</sup>Of course there are times when both approaches can be used to provide a complete picture. Indeed, it is generally agreed (DHEW, 1977), that where possible more than one method for estimating demand should be used to improve accuracy.

manpower/population ratio method: a theoretical relationship (ratio) is established between the population (segmented into different age categories) and the requirement for health service professionals. This method is popular in the estimation of medical manpower needs (eg DHEW, 1977) and has been used frequently to assess unmet needs for allied health professional services. "Expert" judges through workshops quantify the relationship. Future predictions are based on estimated service need per unit of population and forecast population scenarios.

economic demand method: an assessment is made of the current and future social, political and economic circumstances, and how consumers of services, service providers and employers of labour will behave as a result of those circumstances. Assessment is focused on such factors as the availability of government funding, the likely level of private sector investment, the type of technology available (for instance development of new pharmaceuticals), the way work is organised (eg centralised or decentralised) and the influence of price and income. Price is less often a useful explanatory variable in Australia, because of the importance of government funding in targeting social priorities—for example service accessibility in rural areas—and the recognition of personal health care as a 'merit' good.

It is a variation of this last methodology that will be discussed further later in this discussion paper.

Benchmarking is a more recent innovation in demand estimation. This calculates the number and type of worker needed according to a model region, or a benchmark, that has proven to have an appropriate, affordable and sustainable number of workers to meet the health needs of the population in that region (see for instance the AMWAC & AIHW report of 1996). Benchmarking is relevant to the demand for public health services and demand derived therefrom for public health labour.

The recently released draft National Aboriginal Health Workforce Strategic Framework (DHAC, 2001) endorses an indicative set of staff to population ratios, including for GPs, nurses and Aboriginal Health Workers (AHWs), for a basic model of health care. It is noted that the ratios are intended to be a nation-wide average with variations to the number and mix of health professionals at the local level, for example in remote areas. The report also notes that, to calculate workforce shortfalls, there is a need:

- To develop national standards for health workforce data collection to enable collation at the national level.
- For regular health workforce data reports to AHMAC from each jurisdiction (DHAC, 2001).

### ***Summary of the traditional model***

The traditional approach to national level workforce planning is encapsulated well in a recent AMWAC discussion paper on medical practitioner workforce planning (AMWAC, 2000). Essentially this is a two-stage process. First, current supply is estimated, and the adequacy of current supply (compared to current demand) of a workforce group is assessed. Second, a forecast of demand for the workforce group in future years is made, and the optimal workforce size to match demand is estimated (Borland, 2001a) AMWAC's approach to workforce planning (AMWAC, 2000) may thus be summarised as follows:

- Describe the current workforce (*viz.* size, characteristics, distribution and service provision) and training program.
- Estimate workforce inputs and outputs from retirements, death, migration, immigration and the training program.
- Assess the adequacy of the supply and distribution of the current workforce drawing on any international and national benchmarks, the views of the profession and other key stakeholders.
- Project workforce supply requirements for the next 10 years using a range of needs based and demand based indicators.
- Assess the likely impact of new technologies on productivity and future demand for services.
- Assess the likelihood of the community deciding to use other providers to provide some of the services currently provided by the respective workforce.
- Project levels of workforce supply required to meet projected workforce requirements (ie to achieve a balanced workforce)
- Recommend adjustments to training program inputs to achieve a balanced workforce within the 10 year planning timeframe and to draw attention to any other pertinent issues raised as a result of the review.
- At least every five years revisit each workforce and review again. This process may need to be brought forward should the monitoring process indicate unforeseen changes or problems in implementing the recommendations.

In the following chapter we shall see that public health workforce planning is more complex than the 'traditional' approach as represented by AMWAC's interpretation.

In this context it is important to note the work of the National Health Performance Committee, which is developing and maintaining a national performance measurement framework for the health system. Its goals include establishing and maintaining appropriate national performance indicators within the national framework, including for services such as public health (NHPC, 2001).

## ***Chapter 3: Current limitations on public health workforce planning***

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### ***Public health workforce studies***

A summary of some selected public health workforce studies conducted in Australia and the United States may be found in Attachment 1, presenting study objectives, methods, and information available for each project. Another brief summary of some current developments in the UK may be found in Attachment 2. Most of these studies attempt to assess the composition, size, function, and adequacy of the public health workforce—almost exclusively focusing on workforce *supply*, rather than demand. Solloway (1998) notes that most studies typically provide one of three types of analyses:

- (1) descriptions of the public health workforce as defined by certain occupational classifications;
- (2) more in-depth analyses of specific professions within public health, such as physicians, nurses, epidemiologists, or laboratory personnel; or
- (3) workforce data on selected geographic areas.

The main findings from the studies in Attachments 1 and 2, of relevance to the development of a planning framework for the public health workforce in Australia, are outlined below.

### ***Common limitations of public health workforce planning***

The U.S. Department of Health & Human Services (1997), in a review of public health workforce studies conducted over a 25-year period, summarised difficulties of supply estimation for the public health workforce as follows:

- The wide variety of occupational groups involved in public health functions, whose knowledge base, skills, and tasks overlap extensively;
- The absence of clear boundaries between public health professions (and other workforce populations);
- An absence of consistent public health professional credentialing requirements that could provide categories for data collection; and
- A professional workforce educated in specific disciplines such as medicine, nursing, dentistry, or administration but lacking formal public health training.

Added to these problems of supply estimation has been almost a disregard for estimation of demand, and when demand estimation has been attempted, models more appropriate to personal care services than public health have been generally employed. The public health workforce studies examined in Attachment 1 and 2 invariably encountered a number of these problems as they sought to assess the public health workforce.

These major limitations to planning the public health workforce are discussed in the remainder of this chapter. At the end of the chapter, comment is passed on the limitations of traditional workforce planning models, as advocated by AMWAC (2000), to the public health workforce.

### ***The problem of scope or ill-defined boundaries of the public health workforce***

While it is generally agreed that the aims of public health are to protect the health of the population, prevent disease and promote health and well being, it has been difficult to gain consensus about what and who is included in the field (ACHS, 1999). Rotem *et al* (1995) defined the public health workforce as:

*“... people who are involved in protecting, promoting and / or restoring the collective health of whole or specific populations (as distinct from activities directed to the care of [sick or frail] individuals)”*

The public health workforce ranges from those who self-identify as public health professionals through to those who may undertake aspects of public health functions in the course of their regular work. A number of studies (*eg* the PHAA, 1991; NSW Health, 1998) have suggested that the public health workforce comprises 3 main groups:

- *Highly-qualified specialists in public health*, who teach, advise and develop state-of-the-art approaches.
- *Public health practitioners* who have a public health qualification and who generally provide direct services to the public
- *General health and associated workers* whose jobs involve public health tasks on a regular or occasional basis.

The PHAA study was unable to arrive at a definitive estimate of the size of the workforce in each of the three groups in Australia, but suggested that the first could have comprised just 100 persons while the latter more than 300,000.

Similarly, a recent study by the UK Department of Health (2001a) identified three core public health workforce categories:

- Public health consultants and *specialists* who work at a strategic or senior management level, or at a senior level of scientific expertise.
- A relatively small number of *professionals* who spend a major part, or all of their time, in public health practice; and
- *Most people*, including managers, who have a role in health improvement and reducing inequalities.

And, as discussed earlier, a study by Cook, *et al* (2001), aimed at identifying and classifying a sub-sector of the public health workforce (those preventing injury), also divided the workforce into three broad categories:

- Leaders or champions;
- The direct workforce, which comprised specialist injury prevention workers including researchers, practitioners and policy makers;
- The indirect workforce, who were persons not specialised in injury prevention and included general practitioners, engineers, school teachers and town planners.

All three studies therefore described a public health workforce characterised by a small number of 'qualified' professionals at the apex of, and significantly outnumbered by, a

broad base of largely undifferentiated workers (see Figure 2 below). Indeed, one stakeholder consulted felt that the thrust of workforce planning for public health should necessarily focus on the 'many' in the public health workforce rather than the 'few' (that is the so called public health professionals).

**Figure 2: Schematic representation of the public health workforce boundaries**



What is important to consider here is that the lowest tier in the above schema (1) is significantly larger than the other two tiers together, (2) has very porous boundaries, and (3) is almost exclusively part-time in nature (at least in its contribution to public health).

The porous boundaries and part time (public health) work contribution of this segment of the workforce make scoping the size of the public health workforce overall exceedingly difficult. In a mail survey of 334 public health agencies and 1791 staff, Rotem *et al* (1995) found that one in five of the public health workforce perform a management role as a major function, one in six a clinical role, and one in eight an administrative role.

### ***Classification of the public health workforce***

Not only are the external boundaries for the public health workforce difficult to define, but also internal categorisations are ambiguous (Cook, *et al.*, 2001). In its comprehensive workforce enumeration in the mid-1980s, the American Public Health Association (APHA), found that there was neither clear differentiation between persons trained at a given level nor between persons trained at different levels within the same occupational category. The APHA concluded that using professional designations to define function was inadequate since different localities and jurisdictions could define the functions of specific personnel titles differently (APHA, 1983; See also Sollaway *et al*, 1997 and BHP, 2000). The APHA group proposed a functionally based classification system based on three criteria—type of work setting, type of work performed and type of position.

A study by the Public Health Workforce Consortium, 1989, suggested that many difficulties in gathering workforce data were the result of shortcomings in classification schemes for public health work, work settings, and workers. These inadequacies were

traced to a lack of standardised methods for categorizing public health professionals and their work. Existing occupational classifications rarely reflected duties and qualifications expected of incumbents, and there was a lack of clear lines between different public health occupations (DHHS, 1997).

Another reason job designation may not be helpful—many members of the 'public health discipline' are actually often employed in roles not immediately recognisable as a 'public health' realm, such as local government (DHHS, 1997, NSW Health, 1998). Rotem *et al* (1995) similarly found that most of the public health workforce (53.8% of respondents to a survey of 'public health' workers) remained outside health and health-related occupational classifications. The survey also identified a sizeable proportion of respondents (12.3%) working in voluntary organisations.

In this context it is noted that Australia has produced a national environmental health strategy to encourage a broad, inter-sectoral and sustainable approach to its changing environmental health concerns. The strategy redefines the workforce to include policy officers, urban planners, engineers, administrators, allied health professionals and managers as well as environmental health officers, indigenous environmental health workers, researchers and academics (Peach, 2001).

### ***National or state-based approach***

A number of studies in the US and Australia (including Solloway 1998; PHAA, 1991 and Rotem *et al*, 1995) suggest there are problems inherent in developing a national workforce data set that is consistent across different States and Territories. This is because of the varying legislative, administrative and political environments (NPHP, 2001b).

To help overcome some of these difficulties it has been suggested that proxy measures of the public health workforce could be used to further its enumeration. Possibilities include reported graduations from schools and programs in public health, reported certifications as public health specialists within professions such as medicine, nursing, or health education, and reported position vacancies or association membership trends over time. While each of these approaches has significant shortcomings, they could be used to supplement or clarify other data (BHPPr, 2000).

The PHAA (1991) suggested strategic planning as an alternative method for making workforce projections based upon the number and type of personnel needed to achieve stated outcomes (public health goals, targets and strategies) within set time periods. It states that the attraction of this method is its foundation in needs and the skills required to meet them rather than in staff positions. A further strength lies in its implications for the allocation of human and financial resources in the health field. While conducting this type of study nationally would incur similar difficulties to those reported above, the PHAA considers it would have much to offer at a State or Territory level.

### ***Public health services versus personal health services***

For reasons explored above, enumeration of the public health workforce (supply estimation) is more difficult than for comparative workforces supporting personal health service delivery. Similar difficulties are experienced in the estimation of demand.

The nature of the demand for public health professionals working to improve the health of populations differs significantly from the demand for other health professionals whose primary concern is with the health of individuals.

The latter tend to concentrate on the delivery of personal health services that usually directly target individual therapeutic and curative treatment needs. The demand for these types of personnel hence derives directly from the sum of the series of individual demands for their services. Their aggregate workload will be influenced by considerations that include especially the size, age / sex composition and general health status of their respective patient catchment populations. In nearly all cases, personal health care workforce demand is based on a *throughput* model.

The demand for public health professionals on the other hand is less directly sensitive to population size and composition. Regardless of the size of the population it services, there is always likely to be a critical minimum infrastructure required to maintain the integrity necessary for the successful operation of a public health service. In general terms, there is hence some presumption that public health services are likely to be sensitive to economies of scale.

### **Comment on the traditional model of workforce planning**

Reviewing the discussion in chapters 2 and 3, it is possible to assess the shortcomings of the traditional approach to national level workforce planning articulated in AMWAC's discussion paper on medical practitioner workforce planning (AMWAC, 2000) when applied to the public health workforce. The main limitations are identified in Table 1 below.

**Table 1: Limitations of the traditional workforce planning model for planning the public health workforce**

Elements of the AMWAC workforce planning model	Comment on application to the public health workforce
Describe the current workforce ( <i>viz.</i> size, characteristics, distribution and service provision) and training program.	<ul style="list-style-type: none"> <li>♦ Difficult to achieve in the public health setting. Most description of the current workforce relies on secondary data sources. In the case of public health there is no easily 'traceable' workforce characteristic (eg registration, professional qualification)</li> </ul>
Estimate workforce inputs and outputs from retirements, death, migration, immigration and the training program.	<ul style="list-style-type: none"> <li>♦ Such estimates work best when the workforce is related closely to a vocation. Most qualified medical practitioners for instance (&gt; 85%) remain in medicine for their employment life. By way of contrast, most public health workers see it not as a vocation but rather a (sometimes temporary) role. Hence, traditional sources of gain and loss to the workforce tend to be dwarfed by annual movements between the active and inactive pools of competent public health labour.</li> </ul>

<b>Elements of the AMWAC workforce planning model</b>	<b>Comment on application to the public health workforce</b>
<p>Assess the adequacy of the supply and distribution of the current workforce drawing on any international and national benchmarks, the views of the profession and other key stakeholders.</p>	<ul style="list-style-type: none"><li>♦ Traditional means of growth in demand for labour, the result of increasing levels of service throughput, are irrelevant to the public health workforce. Growth in demand for public health workforce will generally be a consequence of changed infrastructure requirements.</li></ul>
<p>Project workforce supply requirements for the next 10 years using a range of needs based and demand based indicators.</p>	<ul style="list-style-type: none"><li>♦ The 'community' has limited influence over the use of substitute labour in the delivery of public health services. In any case, the management of the public health workforce is already characterised by high levels of substitution between different forms of labour (at least in terms of base qualification).</li></ul>
<p>Assess the likely impact of new technologies on productivity and future demand for services.</p>	<p>Project levels of workforce supply required to meet projected workforce requirements (ie to achieve a balanced workforce)</p>
<p>Assess the likelihood of the community deciding to use other providers to provide some of the services currently provided by the respective workforce.</p>	<ul style="list-style-type: none"><li>♦ In traditional workforce planning, the training supply is invariably the first (and often only) means adopted for moderating supply and seeking labour market adjustment. This generally means controlling intakes into formal professional training. In the public health setting, moderating supply from formal training is the least efficient and slowest way of influencing supply—sensible recruitment and on-the-job training are likely to be better tools.</li></ul>
<p>Project levels of workforce supply required to meet projected workforce requirements (ie to achieve a balanced workforce)</p>	
<p>Recommend adjustments to training program inputs to achieve a balanced workforce</p>	

## ***Chapter 4: Demand for public health services and labour***

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### ***Nature of public health demand***

There is an intrinsic relationship between the nature and organisation of public health and public health services and the demand for public health professionals.

Public health is usually taken to be a pluralist activity consisting of an amalgam of skills. These are likely to include epidemiology, biostatistics, information technology, various clinical disciplines, environmental, physical and social sciences, forensic disciplines, health promotion, engineering, health administration, etc. Public health takes a holistic view of health that addresses both upstream preventive activity as well as the underlying environment affecting downstream curative and therapeutic intervention (McKinley and Marceau, 2000). A public health service thus represents a team of personnel with complementary skills, often co-located, that reinforces and enhances public health's inherent holistic philosophy.

For the most part, public health services may be regarded as an essential constituent of health infrastructure, necessary to the development of overall health policy and to formulation of rational decisions about health goals, health standards, environmental health and the allocation of resources to the delivery of personal health care. Even though most public health services are socially valuable and confer significant benefits upon individuals, they are not privately profitable to provide.

Once provided, public health services represent a 'sunk cost'. Although their externalities become freely available to individuals, their cost cannot be readily charged directly to their beneficiaries. For this reason public health services can never be privately profitable to provide. They belong to a class of services to which economists frequently refer as "public goods" and which are best funded through general taxation and provided through governments<sup>6</sup>. Any source of public funding will hence serve as an important tracer for the enumeration of all genuine public health programs.

### ***Public health and public policy***

Thus, unlike more conventional health labour markets, the main drivers of the demand for public health labour will be the targets of government policy that government chooses to fund. A new regional public health service or a new national prevention strategy could hence require a complete range of functional skills (or competencies) to enable it to effectively implement and create value for public policy.

Both for environmental and demographic reasons as well as for jurisdictional reasons, many public health initiatives tend to be geographically specific. Thus it is unlikely, for example, that a new local health promotion initiative could be effectively targeted without proper local epidemiological and other support. To some extent, it is possible to establish new initiatives by grafting them off existing programs. Thus, when the AIHW

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<sup>6</sup> In Australia, medical, hospital and PBS pharmaceuticals personal health services are also (either wholly or partly) funded by Government under Medicare—but they are regarded as "merit goods". The philosophy behind their funding is thus different from the case for government funding of public goods such as public health.

was established, it drew extensively from the establishment of the (then) Commonwealth Department of Health, and to a lesser extent from State and Territory Departments. Whilst new initiatives may be temporarily supported from existing infrastructure, their net longer-term demand impact must be met from additional supply of an appropriate range of public health skills.

Since they will exert powerful resource-pull effects on the demand for public health skills, the way in which public health policy and programs are formulated and funded will clearly have a profound effect on the character of demand for public health professionals. In an ideal world, government public health programs should represent elements of a rational health sector-wide policy and planning framework. If this happened, programs could be prioritised according to evidence as to:

- their desired outcomes being technically achievable (*eg* that risk factors are capable of being modifiable or that the incidence of disease or accidents can be reduced)—as a necessary first condition for prioritisation;
- their capacity to satisfy cost effectiveness (in terms of benefits forgone at the margin, from diverting resources from the next best alternative program); and
- their ability to meet allocative efficiency criteria (delivery of social justice objectives).

In this way, one might expect that the allocation of capital and labour to public health programs would meet criteria for a health sector-wide optimum (Segal and Richardson, 1994). In this context it is noted that the Draft National Strategic Framework for the Aboriginal and Torres Strait Islander health workforce states that a workforce strategy that simply focuses on numbers of staff, and not on the specific programs which they need to undertake<sup>7</sup>, will not have the best impact (DHAC, 2001). The Framework argues that this would be so, even with the same number of staff.

### ***Determinants of demand***

Public health labour market demand in reality tends to reflect historic cost decision rules. Where this happens, the demand for public health labour is driven largely by allocations of government funding based broadly on past allocations to program or service areas, with year to year adjustments reflecting changes in labour prices, gross domestic product or some politically determined criterion.

When considering public health services and programs attention is automatically directed towards those organisations publicly funded by government and that are based within the health sector. The largest concentrations of public health professionals are found in State and Commonwealth departments, regional public health services, hospitals, universities and statutory authorities like the AIHW (see for example Cook, *et al*, 2001). However, there are also many non-government organisations that have been established to address specific, major public health problems – ranging from cardiovascular disease, to mental illness. And many community organisations that have been established to meet the needs of specific population groups – for example Aboriginal and Torres Strait Islander peoples, young people, older people. Also there is a small but significant number of public health professionals to be found in the private sector—in private research companies, research departments of large private health

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<sup>7</sup> Including for example basic child and maternal health and chronic disease programs.

corporations (eg pharmaceutical companies) and private environmental or occupational health providers (delivering services in statutory environments).

Indeed, there is a growing understanding of the role of (non health) sectors in determining the health and wellbeing of populations. This has led to other organisations (government, non-government, and community) becoming axiomatic to the achievement and delivery of local, national (and global) public health goals.

Whatever the sector, jurisdiction or public health purpose—organisations so designated within the 'public health' realm will contribute to the demand for a 'public health' workforce. Within each organisation, depending on the 'public health functions' being pursued, a spectrum of competencies will be demanded of the workforce. A list of organisations in Australia that would contribute to the demand for public health labour, classified by broad functional intent, is provided in Table 2 below<sup>8</sup>.

**Table 2: Organisations demanding public health labour by primary public health function**

<p><b>Policy analysis/priority setting/purchasing</b></p> <ul style="list-style-type: none"> <li>▪ Commonwealth Department of Health and Ageing</li> <li>▪ State Health Departments</li> <li>▪ Area Health Services – Divisions of Population Health</li> <li>▪ Non-government organisations</li> </ul>
<p><b>Policy development (at national and state levels)</b></p> <ul style="list-style-type: none"> <li>▪ Commonwealth and State governments across many sectors</li> <li>▪ Local government</li> </ul>
<p><b>Practice/implementation</b></p> <ul style="list-style-type: none"> <li>▪ Commonwealth Department of Health and Ageing – program managers</li> <li>▪ State Departments of Health &amp; Human Services – program managers</li> <li>▪ Area Health Services – Divisions of Population Health, specific program areas (e.g. Drugs and Alcohol, Sexual Health), Departments of Planning, etc.</li> <li>▪ Aboriginal Community-Controlled Health Organisations</li> <li>▪ Non-government organisations</li> <li>▪ Local Government</li> <li>▪ Community Services</li> <li>▪ Environmental Protection Agencies</li> <li>▪ ATSI (program managers)</li> <li>▪ Health Promotion Foundations</li> <li>▪ Private sector organisations (e.g. pharmaceutical companies, pathology laboratories)</li> </ul>

<sup>8</sup> The list is intended to name organisations that have major roles in the 'public health' system in Australia. It is not comprehensive.

<p><b>Research</b></p> <ul style="list-style-type: none"><li>▪ National Health and Medical Research Council</li><li>▪ National Institutes of Health</li><li>▪ Research Institutions – e.g. VicHealth Research Centres, Cooperative Research Centres</li><li>▪ Universities</li><li>▪ Non-Government Organisations – e.g. National Heart Foundation, Cancer Councils</li><li>▪ Australian Institute of Health and Welfare</li><li>▪ Australian Bureau of Statistics</li><li>▪ Health Promotion Foundations</li><li>▪ Private sector – eg pharmaceutical companies</li></ul>
<p><b>Teaching/supervision</b></p> <ul style="list-style-type: none"><li>▪ Universities and other training institutions</li><li>▪ Public Health Officer Training Programs</li><li>▪ Specialist Colleges</li></ul>

While it is argued above that the primary determinants of demand are organisations and the public health functions they perform, and as such, demand will develop from stable historical foundations—new policy directions can introduce new dimensions to growth in demand. Policy determined needs may introduce considerable discontinuities into the pattern of demand (for both services and labour). A policy development may lead to creation of new public health structures (such as HIV services or perhaps bio-terrorism units) or the closure or relocation of existing services—which in turn may have the periodic effect of creating substantial shift effects in the demand for labour. This is different from the pattern of incrementalism, characteristic of the demand for health labour delivering personal health services, which tends to mirror growth in population, hospital admissions, beds, etc.

Periodic shift effects in the demand for public health labour may consequently exert short-term strains on supply and training capacity. These problems may be moderated if new initiatives are effectively planned and prioritised with reference to detailed workforce impact statements. New initiatives could accordingly be phased in advance and harmonised with short-term resource constraints as well as with regard to quasi market cost effectiveness criteria.

### ***Theoretical modeling of demand***

It is possible to conceptualise the overall demand for public health labour with reference to the distribution of competencies and their geographical location. A schematic model in matrix notation will serve to elucidate the nature of the demand and how it might be measured at a national level.

The sum of the series of all public health programs will generally seek to deliver a series of public health outcomes in accordance with various national or State / Territory health goals. For purposes of simplification, we assume that the aggregate of all public health programs rely on a fixed stock of capital (buildings, equipment, etc). It then becomes possible to focus on the annual demand for public health labour, its mix of competencies and their location that are likely to be associated with delivery of national

target outcomes. It is assumed (for purposes of simplification) that best practice pathways are adopted by each of the programs in the realisation of such outcomes.

Annual demand for public health labour expressed in terms full time equivalent (FTE) public health professionals may hence be considered as a complex of values ordered in matrix form, comprising say,  $m$  location-specific programs and  $n$  types of competency.

The quantity of FTE units of public health labour demanded,  $\mathbf{L}$ , distributed across  $m$  programs and requiring  $n$  types of competencies, may hence be thought of as a set of  $m \times n$  elements where:

$$\mathbf{L} = [l_{rc}] = \begin{bmatrix} l_{11} & l_{12} & \dots & l_{1n} \\ l_{21} & l_{22} & \dots & l_{2n} \\ \dots & \dots & \dots & \dots \\ l_{m1} & l_{m2} & \dots & l_{mn} \end{bmatrix}$$

and where  $r = 1, 2, \dots, m$  denotes the rows and  $c = 1, 2, \dots, n$  denotes the columns; and where  $m \neq n$ .

The complex of values representing the demand for public health labour,  $\mathbf{L}$ , will be given by the row vector for  $m$  programs and may be calculated by summing the types competencies required, expressed in FTE fractions and / or whole numbers, to support each program and then summing the FTE value for all programs.

### ***A practical means of calculating demand***

The methodology being proposed in this discussion paper would require 'organisations'<sup>9</sup> to assess demand for public health competencies. The framework, below, suggests the steps that organisations might use to identify their workforce needs, expressed in terms of competencies essential to the achievement of organisational objectives (for instance see p.9 of NPHP, 2000). These objectives would link back into strategic plans and provide a blueprint for the future vision and direction of each organisation.

#### ***Step1: Identify/measure (future) goals and activities***

The goals and activities can be generated by different 'obligations' on organisations. Some public health organisations have legislated responsibilities; some do not. Some must respond to local community concerns; some may not. In addition to 'core' goals, organisations can be subject to external influence. Within the health sector, the following bodies can influence how the demand for a public health workforce is expressed:

- National Public Health Partnership
- Commonwealth Department of Health and Ageing – range of specific program areas, including general practice, PBS, NHMRC, Mental Health, etc.

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<sup>9</sup> 'Organisations' might take several forms. The most obvious forms are specialist public health units and public health programs (eg a falls prevention campaign, a smoking cessation program, road safety program). However broader organisational structures might be considered as the basic unit for analysis (eg a division of general practice, a mental health team, an area health service).

- Aboriginal and Torres Strait Islander Health (OATSIH, etc.)
- National NGOs (NHF, Anti Cancer Councils, etc)
- State health authorities
- Environmental protection
- PHERP – through proposals for innovation in public health curriculum development and teaching

***Step 2: Within an organisation, what information, priority, or program changes generate demand?***

There are several broad considerations that most public health organisations need to take into account when sorting amongst priorities and assessing the demand for services (and the derived demand for labour). These are explored in Table 3 below.

**Table 3: Internal organisational factors influencing expression of demand**

<b>Differentials in the health of specific population groups</b>
Rural and remote communities Aboriginal and Torres Strait Islander communities (urban, rural and remote)
<b>New paradigms</b>
Evidence based policy and practice Social determinants of health (McKinley & Marceau, 2000) Community capacity (National Health Performance C'tee, 2001) Organisational capacity (within and beyond the health sector)
<b>Existing and New legislation</b>
Public Health Acts but also, issue-specific legislation (passive smoking, immunisation, etc.)
<b>Views of current workforce</b>
Reflected in, for example, the consultation on workforce development priorities conducted by the NPHP in 1998. <ul style="list-style-type: none"> <li>▪ Environmental health</li> <li>▪ Health promotion</li> <li>▪ Leadership skills</li> </ul>

***Step 3: Describe the organisational competencies required to achieve the goals/implement action***

There are several lists of core competencies for individuals working in public health that have been identified both in Australia and in the United States. There is a remarkable similarity between the content of these lists (see discussion in Chapter 5). With one recent exception, they describe only ‘core competencies’ and have not differentiated between different levels of experience, or between different roles.

It is our view, from a workforce planning perspective, that it is most constructive to define the range of competencies and the levels of performance needed from an *organisational*, rather than from an individual, perspective. This is similar to the approach adopted in the US, where a Competency-Based Curriculum Work Group has developed a list of “organisational competencies” and divided them into the 10 essential services of public health framework<sup>10</sup>. Organisational competencies are those required

<sup>10</sup> See Appendix E, Competencies for providing Essential Public Health Services, in DHHS (1997) The Public Health Workforce, An Agenda for the 21<sup>st</sup> Century.

collectively by the workforce deployed within a given public health setting. This recognises that no single worker or profession will possess all required competencies, but an organisation's entire workforce should encompass the full range of public health competencies (DHHS, 1997).

Using 'core functions' or competencies to delineate demand can overcome the need to define a 'public health organisation', and allow organisations that are responsible for carrying out many different 'functions' to single out those that are specific to a relevant public health domain.

***Step 4: Describe the competency set required by the workforce of the future***

The need to articulate the specialised knowledge and skills required by the public health workforce is well recognised (Madden and Salmon, 1999). The individual competencies that are necessary to a contemporary public health workforce have been defined, and more recently, there has also been some effort to identify differing levels of competence needed at different levels or in different positions within a public health system, depending upon the responsibilities of the positions.

Describing the competency set required by a workforce is only a first step in the process of workforce planning. Nonetheless, it is our contention that using this as the basis for planning is more accurate and helpful than using, for example, occupational classifications.

## ***Chapter 5: Supply and demand—a common unit of analysis***

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### ***A theoretical construct***

The previous chapters have developed an argument for:

- (a) focusing on demand for current and anticipated services as the chief ‘driver’ for workforce planning;
- (b) using public health ‘organisations’ and programs (by jurisdiction or location) as the starting point for analysis;
- (c) articulating clearly the public health service goals of the 'organisation', and from that the particular functions or tasks of the organisation (to deliver service);
- (d) translating demand for services into demand for labour through the agency of competence required to deliver services; and
- (e) developing a means of linking demand and supply at appropriate and pragmatic levels (organisation, area / region, jurisdiction).

In this chapter the argument is taken to the next step—the use of competence as a common unit of analysis to assess both the demand for, and available supply of public health labour.

### ***Public health services***

The starting point of the workforce planning model being proposed in this discussion paper is for an organisation (however structured) to define what public health services it provides (or should provide). For some organisational forms (for instance an area/regional public health unit) this will be a significant task because of the wide range of areas of action. For other organisations (say a local council), the task of defining the services it provides may in itself be challenging because of the often small contributions made across so many areas of action.

Consultations on this issue reveal some concern that many public health organisations may find this initial task of describing what they do too difficult. Really though, rendering precisely what organisations do should be straight forward—what is challenging is (1) stating why particular actions are adopted (that is what determinants of health are being addressed) and (2) placing action in the context of achievement of measurable objectives.

The National Public Health Partnership (NPHP) has constructed a planning framework for public health practice that helps organisations determine the direction, parameters and rationale for action. The framework outlines nine broad areas of action which are labeled public health 'domains'. These are as follows (NPHP, 2000):

Environmental health  
Communicable disease  
Health growth and development  
Lifestyles and health  
Oral health  
Injury prevention  
Substance abuse  
Sexual and reproductive health  
Mental health and well-being  
Chronic diseases

Each of these major domains of public health activity is further detailed into a number of specific action areas. Hence, within the domain of lifestyles and health is a specific action area related to alcohol use. Alcohol use as an action area is associated again with another major domain, substance abuse, although in this instance the specific action is meant more to address acutely hazardous consumption.

However an organisation's public health goals and action intentions are defined, the next step in the proposed workforce planning model is to understand the functions that need to be performed (or interventions that need to be enacted) to achieve the action intentions.

The core functions of public health developed in Australia (see NPHP, 2000a) represent a significant step in defining the set of functions organisations with responsibility for promoting, protecting and maintaining the health of defined populations can adopt<sup>11</sup>. The functions are reproduced below at the broad functional level of detail, however a more extensive description of the 'competencies' (practices) underpinning these functions can be obtained from the source document.

### Core functions of public health

1. Assess, analyse and communicate population health needs and community expectations
2. Prevent and control communicable and non-communicable diseases and injuries through risk factor reduction, education, screening, immunisation and other interventions
3. Promote and support healthy lifestyles and behaviours through action with individuals, families, communities and wider society
4. Promote, develop and support healthy public policy, including legislation, regulation and fiscal measures

<sup>11</sup> The US has taken a similar approach, defining the public health workforce as including all those responsible for providing the "Ten Essential Public Health Services" as identified in the *Public Health in America* statement, regardless of the organisation in which they work (DHHS, 1997).

5. Plan, fund, manage and evaluate health gain and capacity-building programs designed to achieve measurable improvements in health status, and to strengthen skills, competencies, systems and infrastructure
6. Strengthen communities and build social capital through consultation, participation and empowerment
7. Promote, develop, support and initiate actions which ensure safe and healthy environments
8. Promote, develop and support healthy growth and development throughout all life stages
9. Promote, develop and support actions to improve the health status of Aboriginal and Torres Strait Islander people and other vulnerable groups

Source: *National Public Health Partnership*

Few organisations, even those exclusively concerned with delivery of public health services, are likely to perform all of the above functions.

The core functions of public health help us answer the question: What is any given organisation expected to contribute to promoting, protecting, or maintaining the health of the population? It is possible for each organisation involved in public health (however peripherally) to identify which set of functions is within their business objectives. Furthermore, the emerging issues defined in the 'core functions' document will assist in defining projected future need.

### **Public health competencies**

The domain/s in which an organisation has created its public health goals sets the **content** knowledge for its workers. The functions an organisation adopts to achieve its goals sets the demand for **process** knowledge and skills. Together, these form the framework for defining the competence required of the public health workforce. Fletcher (1992) states a competent workforce "... is composed of individuals who can consistently perform work activities to the standards required in employment over a range of contexts or conditions."

In the United States, the Council on Linkages Between Academia and Public Health Practice has developed a list of 'Core Competencies for Public Health Professionals', which were adopted in 2001. These represent a set of skills, knowledge and attitudes necessary for the broad practice of public health. They go beyond the boundaries of the specific disciplines within public health, and help unify the profession (PHF, 2002).

Here in Australia, the NSW Department of Health has also attempted to identify the competencies required for multi-disciplinary specialist public health work. The eleven (11) units of competency they have developed are outlined below, and are described in more detail in a publication important for progress in this area (see NSW Department of Health, 2000).

### Public health competencies

1. Promotes and monitors own professional practice
2. Applies managerial skills to meet public health objectives
3. Applies epidemiological skills to meet public health practice
4. Manages health information
5. Applies communication skills to meet public health objectives
6. Analyses and develops health policy
7. Promotes the health of populations
8. Evaluates public health interventions
9. Manages the prevention, surveillance and control of infectious diseases
10. Assesses and manages public health risks
11. Understands the contribution of economic evaluations to public health interventions

The above eleven units of competency for public health practitioners were developed for the reaccreditation of the NSW Public Health Officer Training Program in 1999. The Program was first accredited by the NSW Vocational Education and Training Accreditation Board in 1994<sup>12</sup> to award a Graduate Diploma of Applied Epidemiology. Recent widespread consultations in NSW on workforce matters reported on by Madden and Salmon (1999) reinforce the position of these competencies as 'core' to public health practice. The eleven units of competency, which include performance criteria<sup>13</sup>, have recently been adopted by the Health Department of Western Australia for their newly established public health training program and by the Australasian Faculty of Public Health Medicine (with two additional units) as the basis for the setting of standards for public health medicine training.

The concept of public health competencies has not received universal acceptance. Part of this may be due to a tension between different conceptual frameworks—one of which regards competence as an expectation of employment and linked to work roles, and the other which posits competence as an underlying characteristic or attribute of a worker. The latter view, especially when combined with the notion of 'core' competencies (that

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<sup>12</sup> The NSW Public Health Officer Training Program is not the only, program to be implemented in Australia. Programs have existed in other Australian jurisdictions for some years, for instance a program has also been in place in Victoria since 1990. These other training efforts though have not been competency based. A comprehensive stocktake of Australian vocational education and training effort in the area of public health should be available in the future as an outcome of work being initiated by the Community Services Health Training Australia (CSHTA) (see page 36).

<sup>13</sup> This in effect sets the standards for practice.

is a complete set of competencies workers require to perform public health functions), tends to support much formal training and can act to exclude certain types of public health worker. An additional problem identified through consultations is that the current attempts to define competencies are either not sufficiently comprehensive or have not generated a sufficient consensus.

In future, the competencies required of public health practitioners might be more explicitly articulated in the form of competency standards. Community Services and Health Training Australia, the recognised industry training body for the health industry, has foreshadowed the development of public health competencies as part of future revisions to both the Community Services and Health Training Packages (see CSHTA, 2001)<sup>14</sup>.

### **Competencies and workforce planning**

It is possible to conceptualise the demand for public health labour with reference to the core functions of public health, and the competencies required to undertake those functions. The task is simplest when considered at the level of the organisations that carry out those functions and their geographical location.

Using competencies to describe demand overcomes the need to define a ‘public health organisation’ and allows organisations that are responsible for carrying out many different ‘functions’ to single out only those that are specific to public health. For instance, a local government organisation might review its goals and identify the following domains of public health action in which it is active:

<b>Public health domains</b>	<b>Public health action areas</b>
environmental health	<ul style="list-style-type: none"> <li>♦ food safety and quality</li> <li>♦ contaminated land</li> <li>♦ waste management</li> <li>♦ hazards in the built environment</li> </ul>
communicable disease	<ul style="list-style-type: none"> <li>♦ food-borne disease</li> <li>♦ vaccine-preventable disease</li> </ul>
Lifestyles and health	<ul style="list-style-type: none"> <li>♦ Physical activity</li> <li>♦ sun protection</li> </ul>
Injury prevention	<ul style="list-style-type: none"> <li>♦ transport related injury</li> <li>♦ fall injury</li> <li>♦ water safety</li> </ul>
Mental health and well being	<ul style="list-style-type: none"> <li>♦ social support &amp; social networks</li> <li>♦ building community capacity</li> </ul>

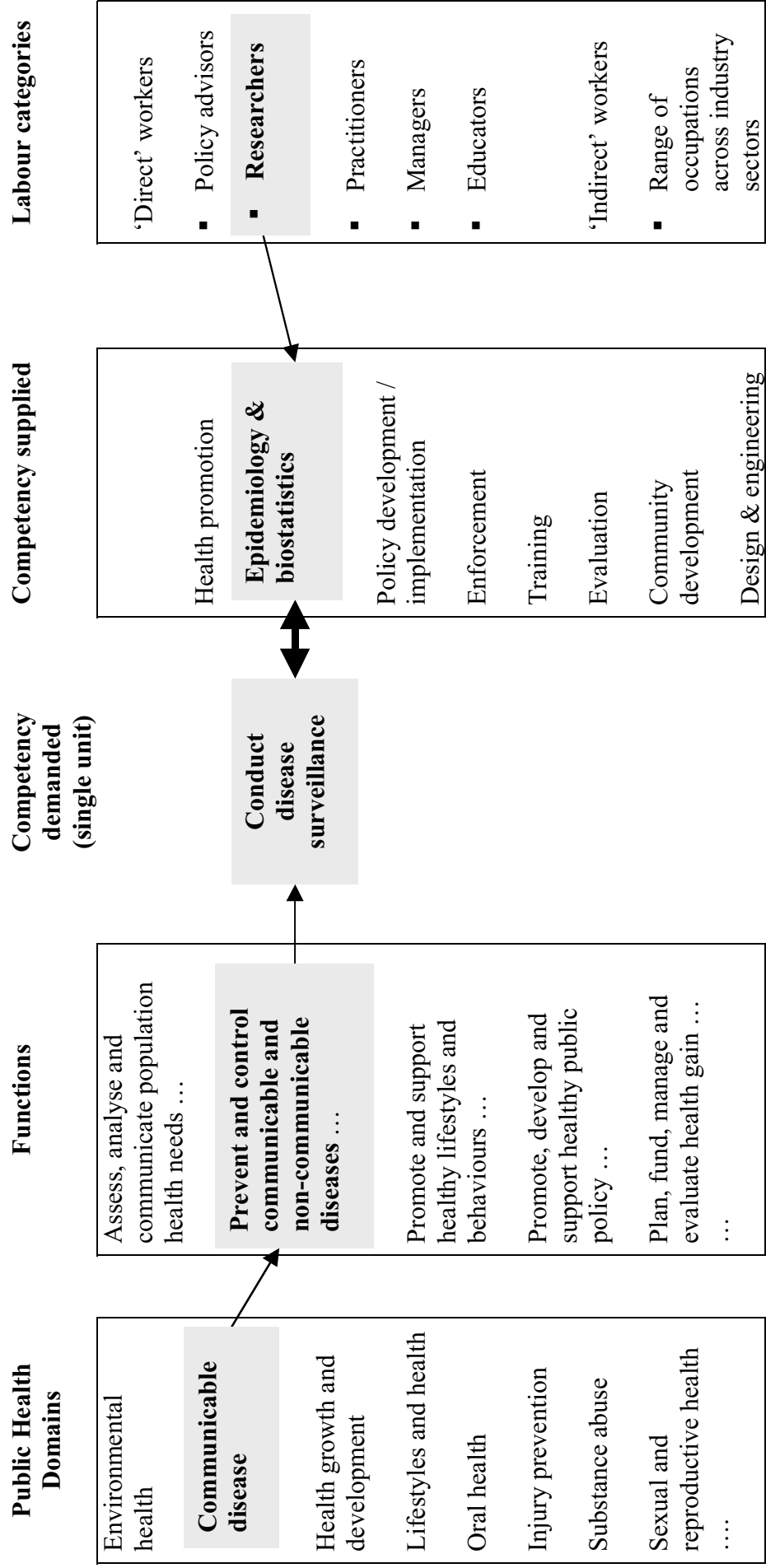
In the same way, it allows suppliers of labour to be identified, whatever their level of contribution to the public health labour market. For instance, using the above example, a local government engineer may bring some of her competencies to bear in the public health actions aimed at reducing fall injuries. Similarly, an emergency specialist medical practitioner who has injury surveillance competence and uses this competence for part of their working hours (in addition to the normal clinical role of treating trauma

<sup>14</sup> Note that existing Training Packages already have a number of units of competency, such as those around advocacy and community development, that nominally fall within a public health framework.

cases) can be assessed for their contribution to the injury prevention (public health) labour market.

The relationship between demand and supply is schematically illustrated below on page 37.

**Illustrated example of public health labour demand and supply analysis at the level of a single unit of competence**



Employing competencies as the unit of analysis provides the basis for a system that will enable individual organisations (or groups of organisations) to establish both the organisational competency sets and individual workforce competency sets that they need. These might then be aggregated to provide the information necessary to prepare a national public health workforce plan.

### **Conclusion: next steps**

The National Public Health Partnership has established an agenda to develop Australia's capacity to design and deliver effective action to protect, promote, and maintain the health of the population. A key component of the capacity is a skilled, well-organised workforce.

This project has begun the process of identifying a process to enable effective national public health workforce planning. The purposes of planning at the national level are to:

- establish priority outcomes<sup>15</sup> which then enables organisations, including the National Public Health Partnership, to predict demand for public health knowledge, skills and practice;
- ensure that current demand is being met;
- set standards to ensure the quality of the supply across the nation.

However, the paper confirms that the 'public health workforce' is not comprised of a single 'profession' or occupational group. The work of the public health workforce is carried out by a wide variety of organisations with widely varying roles and levels of responsibility. There is no single list of the organisations that create demand for public health labour. Indeed, given the growing understanding of the role of almost all sectors in society in improving the health of the population, it is unlikely that there will ever be a 'definitive' list.

One of the strengths of the approach proposed in this paper is that it is not necessary to develop such a list in order to make progress. The method allows maximum flexibility—in practice, any organisation could use the method to calculate demand for public health labour. The model offers a method to calculate, theoretically, each organisation's demand for public health labour with reference to the actual public health functions they perform and their geographical location.

This is an important consideration, since the thought of implementing the workforce planning model proposed in this discussion paper on a 'national' level might raise (indeed has raised) some practical objections. This raises the question—to what extent is it necessary to calculate demand at the national level? What purposes is it intended to serve by the preparation of a national public health workforce plan? These questions are pertinent because supply is rarely 'created' at a national level.

That is, the most obvious of the 'suppliers' of ('qualified') public health labour are universities and professional organisations. It is worth noting, as well, that the range of departments or disciplines within universities and the range of professional organisations that may contribute to the supply of the public health workforce are also

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<sup>15</sup> This is already in place. However, the relationship between national/state priorities and demand for public health labour is not, yet, well developed.

broadening. But, these are by no means the only 'suppliers'. Organisations employing public health labour may, themselves, use information on demand to develop their organisational structures and, through internal human resource management efforts, attempt to meet demand for public health labour. This is effectively what the NSW Department of Health have attempted with their injury prevention workforce training (see Cook, *et al*, 2001) and the VETAB-accredited Graduate Diploma of Applied Epidemiology.

From a preliminary round of stakeholder consultation, the proposed workforce model is considered conceptually interesting and well worth progressing further.

Some issues raised during consultations in relation to the model include:

- Public health is a major issue for aboriginal health. Specific issues for indigenous communities need to be noted, and as the proposed trial(s) progresses (see next section) the model will need to include aboriginal health services, taking into account principles such as community control, *etc*;
- There is a range of data collection issues that need to be resolved. These include the broad scope of the data, standardisation between organisations, ownership/sharing between Commonwealth and States, the need to avoid duplication and to use existing data collection mechanisms where possible, and the difficulties inherent in extending data collection to NGOs, community sector, local councils *etc*.
- There is a need to explore the extent of data available concerning competency development, skills *etc*. It was suggested that, while the competency framework for the health sector is reasonably advanced in NSW, this may not be the case with all states.
- Prioritisation could be considered in applying the model, *e g.* according to complexity and / or urgency of skills, recognised skills gaps *etc*. Given the diversity of public health practitioners, flexibility in terms of skills assessment is also important.
- A natural extension of the model may be measuring the return on investment in public health resources.

### ***The way forward—pilot testing***

Consultations with stakeholders confirm that a sensible way forward is to pilot study the proposed methodology at suitably controlled organisations and localities. This could involve several trials, at the organisational level (such as an Area Health Service), with a particular occupational group (such as environmental health officers), at specific localities (such as rural and remote areas). Feedback suggests that there is no shortage of 'volunteers' for trial sites / organisations.

Given the importance of public health programs in improving health outcomes for indigenous Australians, consideration should also be given to piloting the model, in conjunction with an Aboriginal community-controlled health service, targeting the

specific needs of an Aboriginal community. The model will need to take into account differences in indigenous services and how they are delivered.

Trialling the model will provide a clear idea of the developmental work that needs to be undertaken, and the resources that need to be developed, to put in place a national framework for assessing local labour market requirements, thereby generating information about national workforce capacity.

Some of the specific issues the pilot testing process would need to address (and resolve) are:

- how to obtain agreement on competencies, as they link to the functions of organisations and recognised public health skill sets?
- how to quantify competence requirements in the form of full time equivalent units of labour?
- what methods might be used to build up from the organisation level a picture of state and national level demand?
- what structural barriers will also need to be overcome to enable organisations to meet the demands for specific 'competency sets' *e.g.* industrial awards and pay scales tied to occupational classifications and levels?

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## ***Attachment 1: Summary of some selected Public Health Workforce studies – Australia and the US<sup>16</sup>***

<b>Investigator</b>	<b>Study Objectives</b>	<b>Methods</b>	<b>Type of Information</b>
<i>Australia</i>			
Public Health Association of Australia, 1991	<p>Estimate the size and characteristics of the current public health workforce</p> <p>Assess current and future staff needs of public sector employers within the current climate of departmental restructuring</p> <p>Bring together educators, employers and employees to discuss these issues, including deficits, future requirements training programs and strategies</p>	<p>Literature review</p> <p>Survey of all students in postgraduate public health courses in Australia</p> <p>Employer interviews, comprising interviews with 70 personnel in senior management positions in Commonwealth, State and Territory health departments</p> <p>Workforce workshop</p>	<p>Age, gender, previous training, employment history and career aspirations of public health students.</p> <p>Current requirements for staff with public health expertise; extent that staff have this expertise; potential for using public health skills in other staff positions; gaps in the current public health workforce; effect of recent repeated restructuring of Commonwealth and state and territory health departments.</p> <p>Major public health workforce issues</p>
Rotem et al, 1995 University of NSW Centre for Public Health	<p>Determine extent and relevance of postgraduate public health education and training undertaken by the public health workforce, and unmet training needs.</p> <p>Obtain baseline data on the employment of graduates of Public Health Education and Research Program (PHERP), and career patterns and usefulness of training to Masters of Public Health graduates</p>	<p>Mail survey of 334 public health agencies in geographic areas covering 15% of Australia</p> <p>Mail survey of 1791 staff in designated public health agencies</p> <p>Mail survey of 899 students and graduates of public health courses</p>	<p>Information on agencies' programs, staffing profile, service linkages and staff training activities and needs</p> <p>Demographic characteristics, occupational categories, employment histories, competence, education and training activities and needs of staff and students / graduates</p>
Health Advancement Standing Committee of NHMRC, 1995  (Reported by O'Connor-Fleming et al, 2000)	<p>Investigate:</p> <p>(a) The nature and scope of the health promotion workforce</p> <p>(b) Training, education and workforce development activities</p>	<p>National and international review of current practice</p> <p>Collection of available state / territory workforce information and data on current workforce development activities</p> <p>National workshop of key</p>	<p>Current health promotion workforce development activities</p> <p>Models of "best practice"</p> <p>Strategies for education, training and workforce development</p>

<sup>16</sup> Various sources, including DHHS (1997) Appendix D

Investigator	Study Objectives	Methods	Type of Information
	(c) Systems and organisational capacity  (d) Quality of workforce practice	informants to validate contemporary practice	
<b>United States</b>			
Public Health Foundation Reporting System 1979-1989	Provide information on workforce engaged in public health activities within State health agencies.	FTE data collected by occupational categories in 50 states by survey mailed to State Health Agency, including vacancy rates and staffing patterns	Number and types of vacancies by occupational categories  Perceived workforce recruitment problems
Public Health Foundation, 1992	Analyse trends in staffing patterns		
Bureau of Health Professions, Report to Congress, 1992 and 1994	Provide detailed report on the status of health personnel in the US	Available data, expert panels and focus groups	Shortages of public health personnel in specific categories
National Association of City and County Health Officials (NACCHO), 1990, 1995, 1997 and 2000, with the Center for Disease Control and Prevention (CDC)	Gain a comprehensive, accurate description of activities, capacities and needs of local health departments	Regular national survey of local health departments	Estimate of the number of professionals in health departments including staffing patterns, activities and service capacity.  Numbers of full time employees of local health departments were obtained for 1996-97 employing a direct survey methodology. 86% response rate which yielded the most complete aggregate numerical count to date of workers in 2,880 local health departments, although no information on occupational categories or titles. Data collected during 1999-2000 from a sample of local health departments included occupational information.
Kennedy et al, 1996 University of Texas, Houston School of Public Health, Centre of Health Policy Studies	Estimate the size of the public health workforce in Texas  Describe workforce composition  Identify personnel shortages by occupation as well as perceived education and training needs	Two-stage mailed survey; first stage survey of employers and potential employers of professional public health workers; second stage focused on individual employees  Used methodology developed by the American Public Health Association (APHA) Workgroup in 1983 that classifies workforce by 3	Estimate of supply of public health professionals in Texas  Identified shortage areas  Assessment and identification of employee perceived education and training needs  Classification of public health workforce by work activity

Investigator	Study Objectives	Methods	Type of Information
		<p>criteria: type of work setting, type of work performed, and type of position</p> <p>Included community partners. Study took 2 years and gathered data from 400 different sources</p>	<p>Assessment of capacity and geographic distribution of workforce</p>
<p>Solloway, Haack and Evans, 1997 The George Washington Medical Centre, Centre for Health Policy Research, for the Health Resources and Services Administration (HRSA)</p>	<p>Develop methodology to assess size and composition of state workers in departments of public health in 5 states, including individuals working in the public health component of environmental health and protection, mental health and substance abuse</p> <p>Examine changing patterns of public health practice and link workforce to the 10 <i>Essential Public Health Services</i>. Identify educational and training needs of public health personnel as well as barriers to meeting needs.</p> <p>Recommend approaches to address educational training needs of State public health workers</p>	<p>Literature review</p> <p>Using personnel data from State health agencies, organisational charts were used to identify workers by job title, organisational unit and department. Employees were classified using a taxonomy of public health titles developed by the Bureau of Health Professions at HRSA.</p> <p>Study also conducted site visits, key informant interviews, and focus groups in 5 study states, and examined 3 training and education models to identify education and training needs and barriers</p>	<p>Clarification of public health workforce in these 5 states (Illinois, Maryland, Missouri, Oregon and Rhode Island)</p> <p>Level of formal education or training in the field of public health</p> <p>Training and educational needs of workforce in the 5 states</p> <p>Methods of delivering educational and training programs to public health personnel</p>
<p>Richardson et al, 1999 Center for Health Workforce Studies at the University of Washington</p>	<p>Study of the public health workforce in local health districts of Wyoming and Idaho</p> <p>Similar analyses of Alaska, Montana and Washington are underway.</p>	<p>Questionnaire based on selected occupational titles to collect data from administrators of local health department units in each state</p>	<p>Ratios of workers to population</p>
<p>Bureau of Health Professions, 2000 National Center for Health Workforce Information and Analysis</p>	<p>Estimate of the size and composition of the public health workforce at the local, state and national level.</p> <p>Described the public health workforce as including all those responsible for providing</p>	<p>Qualitative and descriptive analysis</p> <p>Literature review on workforce composition and training needs.</p> <p>Contacted the chief health official of each of the 57 states / territories with a request for any existing</p>	<p>“Best current estimate” that the public health workforce was composed of 448,254 persons in salaried positions, supplemented by at least 2,864,825 volunteers.</p> <p>Classification scheme using public agency occupational categories</p>

<b>Investigator</b>	<b>Study Objectives</b>	<b>Methods</b>	<b>Type of Information</b>
	the services identified in the <i>Public Health in America</i> statement regardless of the organisation in which they work	<p>report, survey or summary on the public health workforce, as well as historical publications. Required 5 months of intensive phone and email contact</p> <p>Review of preliminary spreadsheets by submitting jurisdictions.</p>	<p>and titles.</p> <p>Extensive analysis of data collection and methodological issues arising from study</p>

## ***Attachment 2: United Kingdom***

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A Public Health Workforce Development Plan is currently being prepared by the Health Development Agency, in consultation with the Department of Health (DH, 2001b). The purpose of the Plan is to identify future staffing requirements within the public health function and to determine how these needs will be met. This has entailed:

- Review of all previous national, regional and local work on workforce planning, skills assessment and education and training needs assessment.
- International comparison of similar approaches, notably in Australia and US.
- Incorporation of findings from the national Public Health Skills Audit, which will assess gaps and underutilisation in current levels of competence in key staff groups. The Development Plan will consider how any skills gaps identified during the audit can be addressed (DH, 2001c).
- Specially commissioned pieces of work to illuminate particular areas of indicated need including; review of nursing curricula and their fit with public health functions; review of workforce development opportunities in local government; audit of content of Masters courses in public health and health promotion; review of qualifications and employment routes of health promotion specialists; review of new roles in public health – Teenage Pregnancy Co-ordinators, Smoking Cessation Co-ordinators, Public Health Nurse Consultants and Public Health Specialists on executive committees of Primary care Trusts.
- Close collaboration with other national initiatives – Tripartite Group, Department of Health (DH) nursing development programmes, Faculty of Community Medicine, Changing the Workforce Programme, Primary Care Workforce Development Plan.
- Advice from workforce planners.
- Formal and informal consultation with national, regional, local and academic public health colleagues. This has included consultation workshops on the public health workforce implications of implementing the National Service Framework for Coronary Heart Disease, and on the overall structures and functions of different levels of the public health system (Speller, 2001).

The Development Plan describes the overall functions of public health, based upon the Faculty core elements/standards, and defines the workforce in terms of the three Chief Medical Officers' categories of public health, namely specialists, practitioners and the wider workforce. Public health functions are described for these groups of workers for various population levels:

- National
- 5 – 9m (Regional)
- .5 – 2.5m (Strategic Health Authority)
- approx. 200,000 (Primary Care Trust level / Local Strategic Partnership depending upon local government configuration)
- 10 – 15,000 (community / neighbourhood).

At each level the workforce is identified, and a description is given of what will make the function robust and the public health network operate successfully, and which of the public health core elements the workforce will be carrying out (Speller, 2001).

Current capacity has been assessed for specialists, practitioners, academics and the wider workforce. For workforce planning and projection purposes, application of demand assumptions has been restricted to the specialist and practitioner functional levels. Three demand forecasts are provided:

- accelerated development where projected growth is achieved in five years;
- gradual development where targets are achieved in ten years; and
- slow development where only partial growth is achieved over ten years.

A timetable has been prepared for consultation and costing of these models.