Australian Health Workforce Advisory Committee

NURSING WORKFORCE PLANNING IN AUSTRALIA

A Guide To The Process And Methods Used By The Australian Health Workforce Advisory Committee

AHWAC Report 2004.1

March 2004

ISBN 0 7347 36797

Enquiries concerning this report and its reproduction should be directed to:

National Health Workforce Secretariat
Level 6
73 Miller Street
NSW Health Department
NORTH SYDNEY NSW 2060

Telephone: (02) 9391 9933
E-mail: healthworkforce@doh.health.nsw.gov.au
Internet: www.healthworkforce.health.nsw.gov.au

Suggested citation:

Australian Health Workforce Advisory Committee (2004), Nursing Workforce Planning In Australia – A Guide To The Process And Methods Used By The Australian Health Workforce Committee, AHWAC Report 2004.1, Sydney

Publication and design by National Health Workforce Secretariat.

Printing by Artegra Imaging

ACKNOWLEDGEMENTS

The preparation of this paper was overseen by the Australian Health Workforce Advisory Committee (AHWAC) with the assistance of a reference group comprising:

- Professor Christine Duffield, Director University of Technology Sydney, Centre for Health Services, Management;
- Professor Olga Kanitsaki, Head Department of Nursing and Midwifery, Royal Melbourne Institute of Technology
- Dr Tom Karmel, Executive Director, National Centre for Vocational Education Research;
- Ms Elizabeth O'Brien, Workforce Planning Analyst, National Health Workforce Secretariat;
- Ms Karen O'Connor, O'Connor Consulting Services; and
- Ms Barbara Preston, Barbara Preston Research.

The assistance and contribution of the reference group is appreciated.

In addition, comment on the paper was provided by AHWOC members, State/Territory chief nurses/principal nurse advisors, the Australian Nursing Council, the Australian Nursing Federation and the Royal College of Nursing of Australia.

Information presented in this paper has been drawn from various sources, including internal National Health Workforce Secretariat working documents, national and international literature review and a range of stakeholders in Australian health workforce planning.

The assistance of the Australian Institute of Health and Welfare in drafting the section on data collections is acknowledged.

This paper was prepared within the National Health Workforce Secretariat by Elizabeth O'Brien, Paul Gavel, Justine Curnow and Mary Harris.

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

ABBREVIATIONS

ABS	Australian Bureau of Statistics
ACT	Australian Capital Territory
ACDNM	Australian Council of Deans of Nursing and Midwifery
AHMAC	Australian Health Ministers' Advisory Council
AHWAC	Australian Health Workforce Advisory Committee
AHWOC	Australian Health Workforce Officials' Committee
AIHW	Australian Institute of Health and Welfare
AMWAC	Australian Medical Workforce Advisory Committee
ANF	Australian Nursing Federation
ASCO	Australian Standard Classification of Occupations
Aust	Australia
AVCC	Australian Vice Chancellors Committee
CEOs	Chief Executive Officers
CSHISC	Community Services and Health Industry Skills Council
CSHTA	Community Services and Health Training Australia (prior to CSHISC)
DEST	Department of Education, Science and Training
DEWR	Department of Employment and Workplace Relations
DIMIA	Department of Immigration and Multicultural and Indigenous Affairs
DoHA	Department of Health and Ageing
EN	Enrolled Nurse
FTE	Full Time Equivalent
GCCA	Graduate Careers Council of Australia
ITAB	Industry Training Advisory Body
NCVER	National Centre for Vocational Education and Research
NSW	New South Wales
NT	Northern Territory
Qld	Queensland
RN	Registered Nurse
SA	South Australia
SIWPG	Scottish Integrated Workforce Planning Group
Tas	Tasmania
Terr	Territory
VET	Vocational Education and Training
Vic	Victoria
WA	Western Australia
WHO	World Health Organisation

AUSTRALIAN HEALTH WORKFORCE ADVISORY COMMITTEE

The Australian Health Workforce Advisory Committee (AHWAC) was formed in December 2000 to oversee national level, government initiated, health workforce planning in Australia, covering the nursing, midwifery and allied health workforces. AHWAC is funded by each jurisdictional health department through the Australian Health Ministers' Advisory Council (AHMAC).

AHWAC provides advice to AHMAC on a range of nursing and allied health workforce matters, including:

- workforce supply and demand in Australia;
- the composition, balance and distribution of the health workforce in Australia; and
- the establishment and development of data collections concerned with the health workforce.

AHWAC's initial priority has been the specialised nursing and midwifery workforces, and in particular the areas of critical care nursing, midwifery, and mental health nursing. Work has also been undertaken on improvements to national level nursing and allied health data collections. The current work program is focused on providing advice on future specialist nursing requirements, allied health workforce planning and improvements to national data collections.

AHWAC works to an annual work program approved by AHMAC and developed through the Australia Health Workforce Officials' Committee (AHWOC). Further information on national structures, projects and general health workforce information is available on the Health Workforce Australia website: http://www.healthworkforce.health.nsw.gov.au

The organisational structure for national health workforce planning is detailed in Appendix A.

AUSTRALIAN HEALTH WORKFORCE ADVISORY COMMITTEE - MEMBERSHIP

Chair

Mr John Ramsay	Secretary, Department of Health and Human Services, Tasmania

Nominee of the Australian Department of Health and Ageing

Ms Mary Murnane	Deputy Secretary

Nominees of the Australian Health Ministers' Advisory Council

Ms Brenda McLeod	Principal Allied Health Advisor, NSW Health
Ms Sue Norrie	Principal Nursing Adviser, Queensland Health

Nominee of Australian Institute of Health and Welfare

Dr Ken Tallis	Head, Resources Division

Nominee of the Australian Medical Workforce Advisory Committee

Dr Jeanette Young	Chair

Nominees of the Australian Vice Chancellors' Committee

A.Prof. Pauline Nugent	School of Nursing Faculty of Health and Behavioural Sciences, Deakin University, Melbourne
Prof. Ken Bowman	Dean, Faculty of Health, Queensland University of Technology

Nominee of Community Services and Health Training Australia

Mr Rod Bishop	Chair

Nominee of the Australian Department of Education, Science and Training

Ms Margaret Pearce	Acting Manager, Quality, Information and Equity Branch, Higher Education Group

Member with consumer expertise

Ms Dell Horey	Health Issues Centre

Observers

Ms Frances Hughes	Chief Advisor (Nursing), Ministry of Health, New Zealand
Mr Paul Gavel	Executive Officer, National Health Workforce Secretariat
Ms Helen Townley	Executive Officer, Australian Health Workforce Officials' Committee

PART 1: INTRODUCTION, DEFINITIONS, CONCEPTS AND THE GENERAL APPROACH TO HEALTH WORKFORCE PLANNING

1.1 INTRODUCTION

The aim of this paper is to provide a general resource document on nursing workforce planning in Australia for use by the Australian Health Workforce Advisory Committee (AHWAC), the National Health Workforce Secretariat and members of nursing workforce working parties established by AHWAC.

While this paper outlines the processes and methods used by AHWAC in its national level nursing workforce planning, it is acknowledged that much nursing workforce planning in Australia is undertaken at the jurisdictional level using approaches other than that outlined in this paper. The paper may be of use to other individuals and organisations involved in health and nursing workforce planning.

Nursing workforce planning overseen by AHWAC aims to cover the entire nursing workforce, and therefore incorporates both public and private sector supply and requirements. The nursing workforce in this paper refers to enrolled nurses (ENs) and registered nurses (RNs) and may include those workers who support nurses in care of patients such as assistants in nursing and patient carers.

This paper is divided into three parts. Part one deals with definitions and general concepts related to health workforce planning. It also details the general approach to health workforce planning used by the National Health Workforce Secretariat.

Part two relates specifically to nursing workforce planning in Australia. It provides the current context in which national nursing workforce planning occurs and then discusses in detail the process for nursing workforce planning used by AHWAC and the National Health Workforce Secretariat. Chapters on “planning for change” and data sources and emerging issues for nursing workforce planning are included at the end of this section.

Part three provides supportive information such as a glossary of terms and Australian nursing workforce information. It also includes the references used in preparing this paper.

This paper should be seen as an evolving document, which will require updating as workforce policy changes, approaches to workforce planning evolve, new methodologies and calculation tools are developed, improved data collections become available, and new challenges and opportunities arise. On occasions the paper notes where further refinements to the existing workforce planning processes may be necessary, noting the need for additional conceptual thinking and further improvements to methods and data collections.

Nursing workforce planning in Australia has historically taken place at the state and territory or regional level. However, over the recent years, the need for national planning has become

apparent as a number of factors have come into play. The foremost of these is a national shortage of nurses. To address this shortage and work towards ensuring an adequate supply of nurses to meet future health service requirements the Australian Health Ministers Council (AHMC) and the Australian Health Ministers' Advisory Council (AHMAC) have expanded the health workforce planning agenda to focus on national level nursing issues. This is to ensure advice is provided on addressing both the immediate challenges and the more long-term issues that are likely to affect and shape the Australian health workforce in the future. Appendix A provides an overview of national health workforce planning structures.

National Health Workforce Strategic Framework

The National Health Workforce Strategic Framework (Australian Health Ministers' Conference 2004) provides a vision and set of principles to guide health workforce planners throughout Australia. The vision is the direction in which national health workforce effort should be focussed, the principles are the underlying fundamentals that will guide workforce strategic action in achieving that vision, and the strategies are the planned actions that will deliver the vision.

The vision has been designed as a direction setting statement based on a set of health workforce goals. The principles have been designed to form a set of fundamental approaches that can guide health workforce policy action. The principles relate to the vision of the Australian health workforce, whilst the strategies or policy action are designed to deal with the challenges, both current and emerging, that have been identified in the previous discussion.

A set of goals which underlie the vision for the Australian health workforce of the first part of the 21st century might appropriately be to ensure Australia has available a health workforce that is:

- population and health consumer focussed, ie. able to deliver safe, appropriate, quality care that maximises health outcomes, improves the health and well being of the Australian community and accommodates community expectations, all within a population health framework;
- sustainable: in terms of service and financial sustainability, and ensuring there is adequate workforce supply, both now and into the future;
- distributed to achieve equitable health outcomes: to ensure equitable access to health care regardless of location;
- suitably trained and competent: ie. appropriately educated with continuing maintenance and improvement of professional competence;
- flexible and integrated: able to undertake multiple tasks, work in community and/or institution based settings and in multidisciplinary teams, but also that work-life balance is respected;
- employable, ie. optimal use can be made of available skills and new skills taught; and
- valued: ie. career satisfaction is maximised and work is undertaken within a supportive environment and culture.

And the vision that encapsulates this is:

> "Australia will have a sustainable health workforce that is knowledgeable, skilled and adaptable. The workforce will be distributed to achieve equitable health outcomes, suitably trained and competent. The workforce will be valued and able to work within a supportive environment and culture. It will provide safe, quality, preventative, curative and supportive care, that is population and health consumer focussed and capable of meeting the health needs of the Australian community."

The guiding principles are the core of the framework and provide a simple set of rules, guidelines and aims which allow all stakeholders to apply them to their own circumstances with a minimum of prescription.

The principles have been constructed so as to ensure that they can be applied at either the national or jurisdictional or regional level. The use of the seven principles and related strategies should ensure sufficient scope is available to jurisdictions and regions to accommodate variations in emphasis in health workforce policy that will inevitably be necessary due to differences in priorities and circumstances in each jurisdiction.

The principles interlink and have been developed to focus on the key action areas that will be essential to the delivery of the vision. These can be summarised as:

- ensuring and sustaining supply (see Principle 1);
- workforce distribution that optimises access to health care and meets the health needs of all Australians (see Principle 2);
- health environments being places in which people want to work (see Principle 3);
- ensuring the health workforce is always skilled and competent (see Principle 4);
- optimal use of skills and workforce adaptability (see Principle 5);
- recognising that health workforce policy and planning must be informed by the best available evidence and linked to the broader health system (see Principle 6); and
- recognising that health workforce policy involves all stakeholders working collaboratively with a commitment to the vision, principles and strategies outlined in this framework (see Principle 7).

Therefore the key to delivery of the vision for the Australian health workforce is for all stakeholders to develop health workforce policy based on the following seven principles:

1. Australia should focus on achieving, at a minimum, national self sufficiency in health workforce supply, whilst acknowledging it is part of a global market.

2. Distribution of the health workforce should optimise equitable access to health care for all Australians, and recognise the specific requirements of people and communities with greatest need.

3. All health care environments regardless of role, function, size or location should be places in which people want to work and develop; where the workforce is valued and supported and operates in an environment of mutual collaboration.

4. Cohesive action is required among the health, education, vocational training and regulatory sectors to promote an Australian health workforce that is knowledgeable, skilled, competent, engaged in life long learning and distributed to optimise equitable health outcomes.

5. To make optimal use of workforce skills and ensure best health outcomes, it is recognised that a complementary realignment of existing workforce roles or the creation of new roles may be necessary. Any workplace redesign will address health needs, the provision of sustainable quality care and the required competencies to meet service needs.

6. Health workforce policy and planning should be population and consumer focused, linked to broader health care and health systems planning and informed by the best available evidence.

7. Australian health workforce policy development and planning will be most effective when undertaken collaboratively involving all stakeholders. It is recognised that this will require:

   - cohesion among stakeholders including governments, consumers, carers, public and private service providers, professional organisations, and the education, training, regulatory, industrial and research sectors;
   - stakeholder commitment to the vision, principles and strategies outlined in this framework;
   - a nationally consistent approach;
   - best use of resources to respond to the strategies proposed in this framework; and
   - a monitoring, evaluation and reporting process.

1.2 HEALTH WORKFORCE PLANNING – DEFINITIONS AND CONCEPTS

Health care refers to the goods and services used as inputs to produce health (Follard, Goodman and Stano, 1993). In this paper health care services are considered in their broadest context and as such include prevention, promotion, diagnosis, testing, treatment, rehabilitation, palliation, continuing and supportive care. The term health workforce refers to the paid workforce that provides the broad range of health care services to the Australian people; ranging from workers with no formal qualifications providing support services to highly qualified specialists. It is acknowledged that the health workforce is supported by volunteers and carers.

What Is Workforce Planning?

Workforce planning for health is the process of estimating the required health workforce to meet future health service requirements and the development of strategies to meet those requirements. Essentially health workforce planning aims to balance workforce supply with requirements. Simplistically, it may be defined as ensuring that the right practitioners are in the right place at the right time with the right skills. It should include an understanding of the issues and policy levers that have an effect on workforces.

Health workforce planning is one aspect of workforce development and management, which aims to provide a health workforce that can deliver health care services in the most effective and efficient way. Workforce planning should be able to align health service requirements with education and training sector policies, ensuring that both sectors inform each other. Health workforce planning should therefore, be integrated with education planning, service planning and financing, and human resources management functions.

This approach to workforce planning can be summarised as being:

- built around health service needs, which are in turn based on population health needs;
- integrated with health workforce production, management and financial planning;
- holistic in approach, looking across occupational groups and care settings; and
- responsive to change (NHS 2000, Hall 1998)

Workforce planning in the health sector is not an exact science, but rather an attempt to predict and determine the future on the basis of information available in the present (AMWAC Review Team 2002). Nor, in the health context, is it an easy task to determine the balance between the supply of labour and the need for labour, or the policies and strategies that need to be employed to correct for any imbalances, both current and expected. Factors such as the long lead time required to produce a fully qualified health practitioner, the range of different occupations for which health professionals can be trained, changes in national health policy, the various institutional frameworks within which practitioners operate, the complexities associated with the determination of need, the unknown effects of more and better health care technology, and a lack of relevant, reliable information can all work to frustrate the health workforce planning process (Horvath 2000, Goldacre 2000, Duckett 2000, Borland 2002).

Why Workforce Plan In The Health Sector?

Workforce planning is undertaken to guide and inform workforce policy. Planning is needed because neither the health nor health education sectors are "free markets". As Mooney and Scotton (2000), Hall and Van Gool (2000) and Borland (2002) note, health care is subject to market failure, due to imperfect information and unpredictable and irregular demand; information asymmetries; and the separation of the consumer, practitioner and payer in many situations. In addition, as Bloor and Maynard (2003) observe, the market for health care human resources is not free because entry to the labour market is constrained by licensing and professional regulation, restrictions on education places, and wages are often negotiated on a state-wide or national basis for groups of health professionals, making 'price' inflexible to changes in demand and/or supply.

Health workforce planning is also considered to be essential in the context of a health care system which is challenged with seemingly unlimited demands, whilst at the same time needing to be cognisant of financial constraints and supply issues. Workforce planning can also assist in the developing of new approaches to health service delivery that result in changes in health workforce supply, distribution and functioning.

What Can Workforce Planning Provide?

For policy makers, workforce planning offers a practical guide to workforce policy development by providing information about current and future situations, including:

- identifying shortages and surpluses;
- defining (or redefining) workplace organisation, tasks and roles;
- identifying drivers of both demand and supply;
- establishing workforce education and training needs;
- providing knowledge and understanding of the workforce and its activities; and
- ensuring there is a process for systematically addressing the factors that are influencing workforce and workplace change.

As Hall (1998) notes, planning can:

- prepare the ground for decision making;
- provide options for decision makers;
- improve the quality of decisions;
- provide for the orderly implementation of activities or resources; and
- provide a framework for monitoring and evaluating progress towards defined goals.

Hall (1998) also highlights that workforce planning in the health sector is especially important when the following criteria apply to any given occupation:

- the workforce requires substantial training in terms of length of time;
- the occupational category is costly, either in terms of high salaries or high numbers;
- reducing workforce numbers will be difficult;
- workforce shortages exist or are expected, and will, in turn, effect service delivery;
- minimum standards of performance are required;
- the workforce is undergoing change; and
- there is a favourable planning environment, including the availability of good data.

Workforce Planning – A Dynamic Process

Health systems and health workforces are dynamic and constantly evolving. This has two key impacts on the workforce planning process. First, the impact of any broad health policy, service delivery and/or technology change on the workforce needs to be considered as part of the planning process. These impacts can be considered in terms of anticipated changes or simulated adjustments. The second consequence of the dynamics of health systems and the health workforce is that there will be a need in any planning exercise to constantly monitor, update and refine the workforce analysis and planning advice.

The National Health Workforce Strategic Framework identified three key themes which recent national and international reports on the future direction of health care consistently identified as major influencing factors:

- demographic change (both the ageing of the population and the 'tightening' labour market);
- new technologies; and
- empowered consumers.

Armstrong and Armstrong (2003) identify four broad shifts that have occurred in health service provision over recent years which are all linked to each other and affect the way in which the health care workforces should be planned. These shifts are:

- hospital care focuses principally on acute, short-term, technology dependent interventions;
- people in long term care now have complicated medical needs, often combined with mental health problems;
- more complicated care is provided at home due to advances in technology and drugs, as well as new ideas about management and responsibilities; and
- increasing roles for primary health and telehealth service provision are emerging.

Similarly, Buchan (2000) has identified the factors driving both changes in demand and supply for health care services as:

- rapid growth in demand due to: population ageing (complex, chronic conditions), new technologies and pharmaceuticals, new diseases (eg AIDS), and increasing consumer expectations;
- ongoing shortages in health workforces (particularly nurses) in terms of overall supply and distribution; and
- budgetary constraints limiting the ability of the health care system to meet changing needs within current arrangements.

In terms of dynamics, several basic trends seem likely, and all imply an innovative and constantly evolving workplace and workforce. These trends can be summarised as:

- more and better technology;
- new and varied approaches to service delivery and the provision of care;
- new roles for old disciplines and new disciplines;
- a focus on quality cost efficient service provision;
- increased consumer participation in health care decisions;
- continuing demographic shifts; and

- the continued development of the global community impacting on labour markets, education and mobility.

Overall, from the workforce planning perspective any health policy, service delivery or technology change must be quantifiable in terms of an impact on demand, productivity or practice, or a combination of all three.

Requirements For a Successful Workforce Planning Process

Health workforce planning is subject to complex and multidimensional factors such as the broad array of stakeholders, the range of health policy and planning initiatives, and the broad determinants of health and health needs. These should be addressed as part of the planning process. However, there are still a number of basic, but essential, requirements for successful workforce planning. These can be summarised as:

- an appropriately resourced organisational structure to oversee and conduct the planning;
- stakeholder participation and commitment;
- clear principles, objectives, methodologies, models and processes, including having in place accepted and transparent methodologies and calculation tools for describing, evaluating and predicting workforce supply and requirements; and
- access to accurate, reliable, relevant and timely data (quantitative and qualitative, supply and requirements).

Fundamental to any workforce planning exercise is a commitment from stakeholders to the planning process, their participation in that process and their understanding of why workforce planning is undertaken and what the planning exercise can add to workforce policy development. Participation is also seen as important because of the key role stakeholders have to play in implementation of the planning recommendations and strategies and with the monitoring of this implementation and the outcomes of the planning exercise. Stakeholders in health workforce planning are government, consumers, service providers, the professions, the education and training sectors, and a range of inter-sectoral organisations. Stakeholder participation is discussed further in Part 2.2.

The availability of adequate data is also of paramount importance for workforce planning. This is discussed further in Part 2.5.

Finally, it should be noted that health workforce planning is a challenging task. The recently completed National Health Workforce Strategic Framework noted that in Australia health workforce action has tended to focus on immediate priorities, and that while this will continue to be necessary, action also needs to be focused on better linking health workforce needs to emerging issues and broader health system priorities. Actions need to be based on common principles and be better coordinated across jurisdictions, service settings, professional groups, and the health and education and training sectors so as to maximise the nation's investment in its health workforce and Australia's ability to improve the health and well being of the Australian community.

In Canada, the barriers to effective workforce planning identified in the recent overview of the Canadian health system (Romonow 2002 and Canadian Policy Research Networks 2002) include:

- planning being intermittent, not adequately addressing population demographics, population needs and skills and knowledge of health care providers and focussing on one-time estimates of single disciplines;
- planning emphasising the "quick fix" rather than long term strategies;
- limiting planning to individual jurisdictions in isolation to others, resulting in destructive competition and duplication of efforts;
- workforce planning is complicated because of the complexity of the health system in terms of education, regulation, scopes of practice, the differences in each jurisdiction, the lack of linkage in terms of what the various "players" in the health system are doing such as the education sector, regulatory bodies, unions and employers; such that complexity defeats a comprehensive approach;
- treating health workforce planning as a separate policy area and not linked to other reform initiatives; and
- the mix of market forces and public control mechanisms may make implementation difficult.

SUMMARY

Health workforce planning is the process for estimating the required health workforce to meet future health service requirements and the development of strategies to meet those requirements (for a balanced workforce).

Health workforce planning is one aspect of workforce development and management and should therefore be linked with education planning, service planning and financing, and human resources management functions.

Health systems and health workforces are dynamic, therefore the impact of changes to health policy, funding, service delivery, technology should be considered. Planning requires monitoring, updating and refining.

Successful workforce planning requires: appropriately resourced organisational structure to conduct planning; stakeholder participation; clear principles, objectives, methodologies and processes; and accurate, timely, reliable data.

1.3 HEALTH WORKFORCE PLANNING: GENERAL PROCESS

This chapter provides an overview of the general approach to health workforce planning. Essentially, there are six important steps involved in the process:

1) Setting objectives, scope and approach;
2) Describing the current workforce and current requirements, including provision of services to the population;
3) Evaluating the adequacy of current workforce supply;
4) Predicting future workforce supply and future workforce requirements;
5) Modelling a range of projection scenarios; and
6) Developing strategies to balance workforce supply with workforce requirements.

Step One: Setting Objectives and Deciding on an Approach

Prior to beginning any workforce planning, the objectives and scope of the project must be clearly defined. The answers to the following questions will assist planners in this stage.

What is the objective of the workforce planning exercise?

This is the first consideration of planning. Objectives can be expected to vary with the goals of the commissioning organisation(s) and over time. Objectives might include the provision of very specific advice ranging from advice on education and training intakes for existing health professions; to a strategic overview of a particular workforce, service delivery model, or disease management approach; through to the development of recommendations for a systematic realignment of practitioner tasks and functions across a health service and determination of the skills necessary to perform the realigned tasks. The precise objectives will generally be set by the organisation(s) commissioning the planning. These objectives must be clear prior to beginning the process.

Will the planning be based on existing health care services provision or based on consideration of alternative service provision approaches?

This is a fundamental issue to be addressed prior to beginning a workforce planning exercise. In many cases, the way services are provided, and by whom, require no change. However, if prior to beginning a project it is recognised that current methods of service provision are unsustainable (either economically or due to ongoing demand and supply issues), then the project would need to begin by examining alternative approaches to service provision. The focus of such a planning project would likely be on matching occupational skill mix, and/or type and location of services to defined new approaches to service provision.

In order to determine the conceptual basis of the planning, O'Brien-Pallas et al (2001) suggest asking three particular questions:

- Do we want to know how many nurses are required to serve the population in the same way?
- Or how many nurses are required to meet the expected needs of the population (which may not be currently met)?
- Or how many nurses are required to satisfy the expected health service plans and/or changing provision of health services?

Will the planning be integrated across all relevant professions or profession specific?
Depending upon planning objectives and organisational structures, workforce planning can be integrated across the whole health workforce, focused on specific care groups or be more profession specific. The current preference amongst most health organisations worldwide is for some form of integrated planning where this is appropriate. The World Health Organisation (WHO) notes that health human resource planning should be broad in nature, ideally covering the entire health workforce. Differing national requirements and priorities are however recognised and this relates to the variation among nations in political, social and health goals, health service delivery systems, health financing arrangements and socio-economic well being (WHO 2000).

How will the workforce planning exercise relate to the broader health care system?
It is also necessary to consider how any workforce planning will relate to the broader health care system, including, the organisation and financing of service delivery systems, as well as the achievement of health system goals based around performance management, improving health outcomes and the maintenance of quality. These linkages may vary with the needs and goals of the organisation(s) commissioning the planning.

Is the planning focused at the national, regional or local level, or a combination of each?
A further consideration is whether planning is to focus on the national level or at the more regional or local level; or a combination of all three. This also needs to involve consideration of how disaggregated any analysis should be and whether the planning is top down (ie. national $\Rightarrow$ regional $\Rightarrow$ local) or bottom up (ie. local $\Rightarrow$ regional $\Rightarrow$ national). In the Australian context regional refers to State/Territory jurisdictions and local to either community or local government area. The approach to planning will be governed to some extent by the scale of the planning exercise.

Is the planning exercise concerned with providing advice on workforce numbers only?
It is important for any commissioning organisation(s) to determine whether the workforce planning exercise should focus specifically on providing advice on future workforce numbers only, or whether this advice should also cover relevant related issues such as for example, workplace organisation, training arrangements, service provision, finance and cost, infrastructure development, competition, work practices, safety and quality, education and training, and governance.

What is the timeframe for the planning exercise?
It is also necessary to determine the planning timeframe, ie 3 years, 10 years, 20 years. The purpose of the planning exercise (what decisions will be made as a result) will determine the time frame. Balancing the greater potential for certainty of short range planning against the need to plan for longer term assessments and direction setting is also a factor in deciding on the timeframe. Longer timeframes provide more flexibility in planning and allow time for workforce adjustments to be implemented, but are less certain and usually require regular monitoring, updating and validation. Too short a timeframe may not provide adequate time for workforce transition processes and changes to be implemented, and future changes may not be adequately anticipated.

What data are available?
The availability of adequate data for workforce planning is critical. As far as is practicable, AHWAC employs an evidence-based approach to workforce planning. However, the extent of the application of this principle is determined by the availability of robust and reliable data.

Relevant complete data sets may only be available at the national level, which in turn would preclude planning from the local level and aggregating up to provide a national picture. However, the reverse may equally be true in that a more accurate assessment of workforce dynamics may be best achieved at the more local level.

The constraining influence of the current lack of nationally consistent, robust data and information for health workforces should not be underestimated when it comes to workforce planning.

What are the risks of the project?
An important consideration prior to beginning a workforce project is to identify the possible risks involved with the project and the possible implications in terms of both the process and the results. Strategies should be developed to manage any identified risks.

What workforce planning approach will be used?
As indicated earlier, health workforce planning generally refers to the process of estimating the required supply of health care practitioners to meet an expected future level of service requirement, as defined by population need and/or demand, and the development of strategies to meet that requirement. Three important methods of analysis are usually employed (viz., descriptive, evaluative and predictive), and these are described below.

Step Two: Descriptive Analysis
Defining the workforce under review
It is useful to begin this descriptive stage of the planning process by first, describing the role and unique services provided to the community by the selected workforce(s) and to then establish some principles that will be used to guide those involved in the planning process.

Description of the current workforce
To enable planners to predict with some accuracy the future workforce, it is first necessary to establish an accurate "baseline". This process usually involves three sets of activities.

First, the size and characteristics of the present workforce are described. Among relevant characteristics are age, sex, qualifications, type of work and/or work setting, participation (eg hours worked or full-time/part-time participation), and geographic location. Any important trends in workforce participation need to be described. These trends are frequently linked to changes in the age and sex profile of a given workforce. For example, trends in average hours worked per week, by sex and age group are useful indicators of workforce participation. Experience has shown that this seemingly straight forward planning activity can be very difficult due to:

- a lack of timely, relevant data;
- incomplete data; and

- inconsistency in definitions and data collections across State/Territory workforce planning jurisdictions and across health care facilities and professions.

This stage may also include a description of current service-provision models and relevant health care management and financing practices.

This cross sectional data may be used to describe the number and distribution of practitioners per head of population presently providing services to the community (eg by State/Territory/urban and rural). At this stage of the planning process, it may also be useful to describe present consumer utilisation patterns.

Secondly, sources of new entrants to the workforce need to be identified (eg educational programs, migration and re-entry). The likely number and characteristics of entrants from these sources needs to be described (eg age, sex and expected participation rates). Relevant educational courses will usually require description with respect to content, time-requirements (eg number of years of study required), average number of years that people progress through the relevant programs, and attrition rates. Factors known to be influencing the recruitment of new workforce entrants should also be identified and described (eg incentives and barriers).

Thirdly, recent trends in workforce attrition (ie losses due to retirements, drop-out, migration and death) need to be described in terms of numbers and characteristics (eg age, sex, type of work, participation). Factors known to be influencing workforce retention and attrition, including, satisfaction with working conditions, industrial requirements, relative pay and any other economic considerations (eg cost of accommodation in some locations) should be identified and described.

These three descriptive subsets can be summarised as the "stocks" i.e. current characteristics, "flows" i.e. entrants and losses, and dynamics i.e. the pattens of participation of a workforce.

Description of current requirements

A baseline description of current requirements is also undertaken in this phase of the planning process. This is needed to determine the adequacy of the present workforce, as well as informing the projection of future requirements. The method for determining current requirements may be used as a basis for estimating future requirements. This will be discussed in detail in the "predict" or step four phase of planning.

Step Three: Evaluative Analysis

Evaluate the adequacy of the present workforce

For planning purposes, it is important to determine whether the present workforce is adequately meeting population requirements (as defined by health needs and areas of unmet need) or whether a shortage or excess or maldistribution situation applies. This evaluation is then incorporated into the workforce modelling process. For example, if it is determined that the workforce is presently in short supply, then the present or "baseline" supply situation needs to reflect the level of shortage.

An indicator approach is employed to assess the adequacy of the current workforce to meet population requirements. With this approach a set of indicator criteria are chosen, measures for each indicator are developed, and an evaluation of each measure consistent with a specified standard for adequate supply is made. A number of standard indicators are available to assist planners in making this assessment. However, the application of various indicators may vary with the workforce under examination and the availability of information. Indicators can include:

- vacant funded positions;
- service waiting times;
- excessive hours of work;
- extent of total supply provided by other staff;
- observed reductions in levels of service provision;
- poor patient outcomes linked to reduced or changed staffing levels and mix;
- practitioner to population benchmarks; and
- views of stakeholders including practitioners, managers, carers and consumers.

Because of the complexities involved in evaluating the adequacy of the current situation and the limitations applying to most individual sets of data, planners are advised to draw on a number of indicators and measures.

Step 4: Predictive Analysis

Predict future workforce supply

Predicting the future workforce supply situation is the next phase of workforce planning. Here, the information that was gathered about the present practising workforce in the "describe" phase of the planning process is used to establish the "supply" baseline (sometimes referred to as present "stock"). To estimate the workforce supply situation in the future, the workforce profile at baseline is moved forward by entering expected new entrants and expected losses (flows) and incorporating expected changes in age, sex and workforce participation (based on observed trends). As indicated previously, data frequently used to establish the workforce "stock and flows" for projection modelling purposes includes:

- number and age and sex profile of the present workforce;
- hours worked, on average, by each age and sex cohort (usually 5 year age cohorts are used). This may then be used to estimate what constitutes a full-time equivalent worker. Other measures of productivity, if available, may also be used;
- new workforce entrants from course completions, by sex and age and expected year of entry;
- re-entrants to the workforce by sex and age and year of entry;
- entrants from migration by sex and age and year of entry; and
- workforce losses from retirements, migration and work-place attrition.

Determining new entrants from course completions should include an analysis of patterns of transition from education programs into the workforce, as in some cases, there may be a significant proportion of potential new entrants who do not actually enter the workforce.

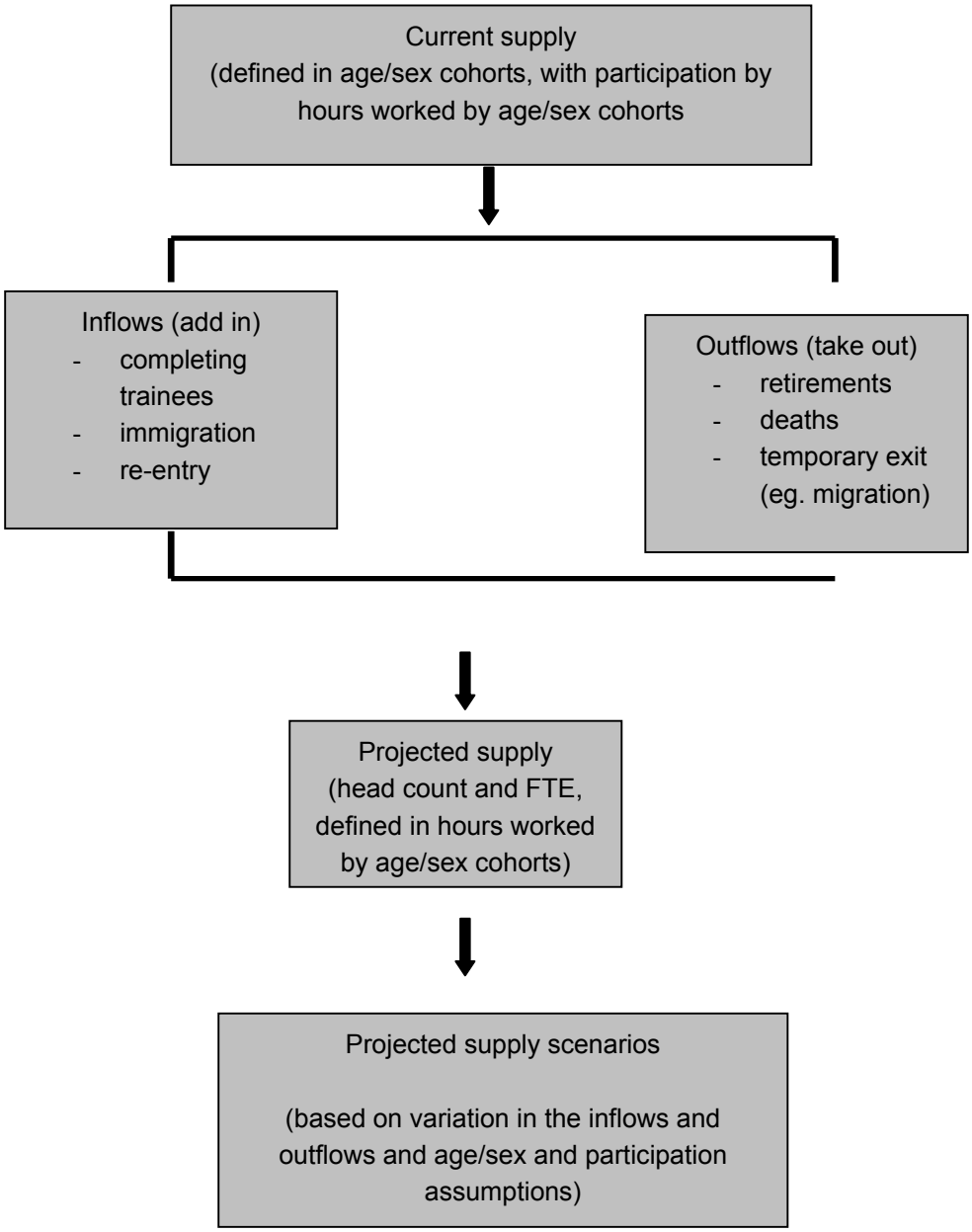
Understanding the "drivers" of supply is important and some of these may need to be taken into consideration when predicting future supply. They are equally important to consider

when developing strategies to ensure future supply is adequate. Some of the drivers of supply are:

- incentives and barriers to entry;
- number of relevant education and training places available;
- working conditions;
- industrial requirements;
- relative pay; and
- other economic considerations such as cost of accommodation for example.

A calculation tool that can produce the predictions by age group and sex will be useful, especially as workforce participation rates vary across age and sex cohorts. The ability of a calculation tool to provide a range of scenarios by altering supply-side inputs (such as levels of recruitment and attrition, and levels of participation associated with changes in the age and sex profile of the workforce) is preferable. Figure 1 illustrates the Stocks and Flows model used by the National Health Workforce Secretariat.

Figure 1: The "Stocks and Flows" model for projecting workforce supply



Predict future workforce requirements

Predicting future requirements for a health workforce should be the basis of workforce planning, however it is far more complex than predicting supply. The challenges involved in such predictions may be increased due to a lack of relevant robust data, a lack of consensus among stakeholders as to the appropriateness of available measures and the fact that health workforces are a part of the broader socio-economic, technological and political environment. The latter may be subject to unanticipated changes as a result of changes in the global economy, the development of new technologies, or a change in health priorities or funding

arrangements. Hence, there is a high level of uncertainty associated with predictions about future requirements for any given health care workforce. The important thing to note here is that although predictions may prove not to be "right", the questions being asked and the processes involved in considering future possibilities (process) can be just as important as the results (outcomes) of the workforce planning process. The process itself can help guide policy.

That said, with more robust data becoming available and greater technical capabilities (both human and information technology), the science of predicting requirements for health services is constantly evolving and improving. This includes the development of calculation tools, which enable a range of potential prediction-scenarios to be developed, based on various inputs and population-based requirement indicators.

Methodologies for determining population health needs and workforce requirements
Determining future requirements uses an estimation of base-line requirements and the prediction of how these will change or grow/reduce or both. Generally five broad methodologies can be considered for use in assessing workforce requirements – needs based, utilisation based, effective demand based, effective infrastructure based, and models of care based. These approaches are broad and may include more specific approaches. To some extent the availability of reliable data can influence which option is used, and this can mean that if workforce planning is being undertaken at the discipline level, approaches to requirement analysis can sometimes vary across disciplines. A mix of these options can also be considered.

1. Need based
   Estimates of population health need are used to predict future health workforce requirements. However, defining population 'need' for any type of health planning exercise is complex because definitions and perceptions of need can vary between individuals, professional groups and communities. Recognised indicators of need include population growth estimates by age and sex cohorts, disease incidence and prevalence estimates according to these cohorts, and measures of socio-economic status. These estimates are applied to base-line requirements. This approach does not incorporate the potential effects of constraints on meeting needs such as economic, funding considerations or infrastructure.

2. Utilisation based
   This methodology refers to the use of health services as a measure of requirement for services. It assumes the way in which health services are provided are adequate. Utilisation of health services is a function of both the supply of services (and workforces) and the demand by consumers for those services. For projection purposes, health workforce planners use historical utilisation trends as an indicator of future requirements. To predict future requirements, estimated growth in both population and utilisation (based on past trends) are applied to baseline requirements.

3. Effective demand

   This methodology places fiscal constraints on the needs based methodology; thereby limiting the quantum of assessed requirements by the financial ability of the economy and health system to meet those requirements. To predict future requirements a number of factors are used as inputs, such as population growth, expected economic and funding changes or impacts and estimations of population health need based on epidemiological data.

4. Effective infrastructure

   This methodology is only applicable in specific instances where the available infrastructure acts as a constraint on current and future workforce supply. For example, in situations where service provision occurs within a defined environment, such as an emergency department, or an intensive care unit, or the workforce requires the use of specific equipment (eg the radiation oncology workforce requires mega-voltage machines to provide services). The reasoning is that there is little point in having a workforce greater than the physical capacity of the health system to gainfully employ or use that workforce. Estimating future requirements uses information regarding expected changes to infrastructure and applies this to baseline requirements.

5. Models of care (or multidisciplinary approach)

   Ideally a 'models of care' approach to assessing workforce requirements is based on the most effective and efficient way of delivering health services based on a model of care determined to provide the best outcomes for patients in the most efficient manner (outcomes based). First, the appropriate model(s) of care needs to be defined. Importantly, this includes defining the appropriate workforce mix and level of supply. Agreement is necessary on the preferred model(s) of care. This approach to planning should facilitate consideration of future workforce supply in a more integrated manner across all health occupations involved in the delivery of a particular model or stream of care.

Each of the above approaches to analysing workforce requirements has at its core the key questions of what services are presently being provided, to whom, at what time, and in which manner; and, in some cases, with what outcomes.

The approach used to predict future population requirements for a selected health workforce should be appropriate to the particular objectives of the planning project. O'Connor (2003) suggests selecting a 'requirements methodology' will also depend on other factors such as:

- the size of the workforce;
- the level of services planning which has already been undertaken;
- the level of variation in skills mix which is needed; and
- the level at which the workforce has been described, quantified, documented previously.

Predicting changing requirements

As previously indicated, workforce planning is not an easy or exact task because of the impossibility of predicting change and its effects with certainty. From a workforce planning

perspective any health policy, service delivery, or technology change will have some impact on consumer demand, or workforce productivity or practice, or a combination of all three. Current drivers of change in the health care sector include:

- population growth and distribution;
- ageing of the population with increased utilisation of health services as people grow older;
- increased morbidity associated with chronic disease;
- changes in consumer expectations and demand for services.
- government funding reforms and restrictions;
- policies to improve consumer access to health services;
- changes in service standards (eg quality and safety standard, benchmarks re levels and mix of staff);
- population health policies to increase the use of illness prevention and health promotion strategies;
- changes in measures of accountability (eg an increased focus on health outcomes);
- changes in government health priorities and planning frameworks;
- broad socio-economic change;
- changes in the global community; and
- technology induced changes.

As intimated above, for some of these change-drivers, it may be possible to quantify the likely effects of change. For example, the Australian Bureau of Statistics (ABS) has developed several estimates of population growth, broken down by age and sex cohorts and by State and Territory. These estimations take into account birth rates, migration rates, and death rates. Similarly, epidemiologists may be able to calculate the likely incidence and prevalence of some diseases into the future. In addition, estimates of future utilisation of health services may be developed based on historical trends as indicated above. However, with most of the above drivers of change it is difficult to anticipate the effects of change, let alone try and quantify these effects. Hence, with any workforce planning project it is necessary to articulate the assumptions underpinning the projection modelling and test their robustness.

For example, estimating the impact of technological change remains a difficult assessment to make. This involves considering new techniques, new equipment, new treatments, and their impact on the health system and the health workforce. In a conceptual sense it is recognised that technological change is inevitable and it will affect the workforce. Sometimes the emerging impacts are identifiable. What is difficult in the planning context is assessing when the affects will be felt and quantifying the impact on the workforce and in the workplace. Two general approaches can be used. The first approach attempts to outline technological change and assess the likely impact of the change. This may involve consultations with experts working at the forefront of their profession. The other approach acknowledges potential technology impacts, but does not project an impact of this change. Instead this approach waits for ‘hard’ evidence on which to make assessments of the impact of change before incorporating the change into any workforce modelling. Hence, it is essential for planners to remain flexible by being prepared to remodel their predictions in situations where

changes in technology and any other domain is anticipated, but their effects on the workforce are difficult to define and estimate.

The following is a list of some potential measures that may be used to inform predictions about growth in future requirements:

- estimates of population growth, distribution and ageing;
- estimates of future incidence and prevalence of relevant health problems;
- estimates of growth in the utilisation of health services;
- estimates of the effects of changes in technology;
- estimates of growth or change in health service funding; and
- estimates of growth or change in the broader economy that may effect the funding of health care.

Step Five: Model a Range of Projection Scenarios

The next stage in the planning process is to simulate a range of future workforce supply scenarios and workforce requirement scenarios. Here the aim is to explore the feasibility of various situations to achieve a workforce that is in balance with population requirements for the selected planning period.

It is generally considered important to provide a range of scenarios based on various simulations because:

1. Health systems and health workforces are dynamic and constantly evolving. Changes in health policy, service delivery and/or technology change need to be considered, as do changes on workforce participation, workforce entry etc. Providing a range of scenarios will show what effect various changes have on overall workforce supply or requirements, and can also provide an indication of how to balance a workforce by altering various supply or requirements factors.
2. There is no perfect data to describe or predict either workforces or health system requirements. In predicting future workforce supply or requirements, assumptions are often made due to the lack of data for evidence. In order to provide a range of alternatives, assumption can be altered to see the impact they have on overall supply and requirements.

A calculation tool or model will usually be necessary for this analysis. As Preston notes (2003) assessing the appropriateness or quality of workforce models and calculation tools may be guided by asking the following questions:

- Does the model provide conclusions (or outputs) that are useful for the particular policy purposes it is intended to inform, in terms of the units (for example graduates, recruits, specialists); geographic specificity; time specificity?
- Does the model incorporate all relevant matters (for example cumulative shortages or surpluses, inflows, outflows and participation data, as well as data to determine requirements?
- Are inputs appropriately modelled, or appropriate assumptions made or the best data used?
- Can the model be easily updated and alternative scenarios tested?

Variation in population requirements under a "business as usual" workforce supply prediction scenario

The first set of scenarios usually draws on a number of high and low workforce requirement growth estimates to examine what the future workforce situation will look like if no new supply initiatives were to be made; in other words, a supply "business as usual" scenario. Lower level growth in requirements estimates could be based on the assumption that governments will enact policies to manage/curtail consumer demand, while a high growth situation might be based on ABS population growth estimates, estimates of increases in morbidity, plus increases in consumer demand for particular high-growth age groups. A no-change requirements scenario would be based on maintaining requirements at current assessed levels. Obviously, this simulation modelling includes building in all the known information (see descriptive workforce supply analysis above) about workforce characteristics, entries and losses and participation rates.

Model change in supply

Just as a number of requirements side scenarios should be generated, so should supply-side scenarios, to see the effect of changes in supply over the prediction period. Hence, the next step in the modelling exercise is to examine the effect on supply if certain initiatives were to be made (such as increasing or decreasing the number in a workforce from educational programs, migration, re-entry programs and attrition due to drop-out).

Importance of risk management and sensitivity analysis

It is important to develop projection ranges due to:

- statistical variability in requirements and supply data;
- lack of accurate, available data required;
- uncertainty regarding key projection assumptions;
- uncertainty generated by any lengthy projection period; and
- lack of consensus regarding a definitive method for estimating requirements.

Finding the "best fit" scenario

These various prediction scenarios (both requirement and supply side) are then used to explore the "best fit" scenario, which will enable achievement of a balance between workforce supply and requirements across a defined time period. At this stage of the planning process, the expertise of relevant experts and key stakeholders is required to inform the development of appropriate recommendations designed to address predicted shortages or excesses, and/or maldistribution.

Step Six: Develop Strategies for Correcting Projected Workforce Imbalances

As part of developing the agreed workforce plan for the future the main options available to ensure supply and requirements are reasonably in "balance" are:

- adjust education and training intake;
- adjust workforce losses (by promoting retention, delaying retirement etc);
- encourage workforce re-entry (for shortages) or early exit (for surpluses);
- adjust net migration;
- improve workforce productivity;

- improve workforce distribution (which could be in either the geographic or the structural sense);
- redesign workforce tasks to vary the combination of skill mix and professions; and/or
- influence consumer demand.

Governments and other policy makers have historically viewed making adjustments to workforce supply more feasible than adjusting demand. However, adjustments to both sides (supply and demand) should be considered in developing a strategy to balance a workforce. Adjustments in workforce supply may be achieved in a number of ways such as: altering intakes into training courses; altering the length of training programs; and workplace recruitment and retention strategies. Demand-side initiatives could include: changes to funding arrangements, changes in workforce skill mix; altering the way in which care is provided with implementation of new technologies or health service settings; and in the longer term altering demand with prevention strategies and consumer education.

The involvement of all key stakeholders throughout the whole planning process is advisable, and particularly important during this phase, where recommendations regarding workforce (and perhaps workplace) adjustments are developed. Stakeholder involvement is essential to ensure that the recommended strategies are likely to be accepted and to gain their commitment to the implementation of such strategies.

SUMMARY

Six steps of health workforce planning:

1. **Set objectives, scope and process.**

2. **Describe current supply: stock (current numbers and characteristics), flows (entrants and exits), dynamics (patterns of participation) and current requirements.**

3. **Evaluate current adequacy using a range of indicators (to determine shortage or oversupply)**

4. **Predict future supply using dynamic stocks and flows modelling and predict future requirements based on chosen methodology: needs based; utilisation based; effective demand based; effective infrastructure based; or a "models of care" approach.**

5. **Model a range of projection scenarios by modelling changes in both supply and requirements and explore "best fit" scenario.**

6. **Develop strategies for workforce balance (or correcting projected imbalances)**

PART 2: NURSING WORKFORCE PLANNING IN AUSTRALIA

2.1 NURSING WORKFORCE PLANNING IN AUSTRALIA: SETTING THE SCENE

The nursing workforce in Australia is the largest component of the health workforce (AIHW/ABS 2003). This chapter sets the scene for nursing workforce planning, highlighting the specific reasons for planning the Australian nursing workforce and the current issues being faced.

The Nursing Workforce

The nursing workforce in Australia includes registered nurses (RNs), midwives and enrolled nurses (ENs). The nursing support workforce includes nursing assistants and patient care assistants and other support workers. The nursing workforce in Australia works in (and sometimes across) both the public and private health care sectors: in primary care, acute care, extended care, palliative care, supportive care, rehabilitation, disability and aged care. These health services may be provided within health care institutions, in the community or across institutional and community settings. Nurses also work in non health care settings such as educational, defence, correctional and welfare settings.

Why Plan for Nursing?

In Australia governments have a responsibility to ensure that health services are delivered in a timely, sustainable, safe and equitable manner. Nursing workforce planning is important because:

- nurses make up the majority of the health care workforce, and as such contribute to the health and well being of the Australian community;
- the provision of health care services is largely dependent on the availability of adequately skilled and knowledgeable nurses;
- there is a history of over and undersupply;
- there is a current undersupply;
- the lead time for producing registered nurses (at least 3 years) is relatively long;
- there is a current disjoint between production (education) of nurses and workplace requirements;
- it can be challenging to change work patterns and roles (industrial, professional and quality issues); and
- in times of shortage, wages for nurses are prevented from increasing to an “equilibrium” level.

Findings of National General Nursing Workforce Reports

In Australia, three key national nursing workforce studies were carried out between 2001 and 2002 examining the future requirements for nurses. While issues of sustainability, decreasing losses and examining the changing the way nurses work were highlighted, the need for an increase in nursing supply through increasing undergraduate completions was a key theme in each study. A summary of this key finding of these reports are listed below:

1. The Nursing Workforce 2010 (Karmel and Li, 2002) (commissioned by the National Review of Nursing Education and Training)
   - projected annual increase in demand for nurses of 2.56%
   - by 2010 180,522 nurses will be required in Australia
   - projected shortfall to 2010 of 40,000
   - increasing nursing graduates by 120% is projected to balance the workforce in 2020

2. Job Growth and Replacement Need in Nursing Occupations (Shah and Burke, 2001) (commissioned by the National Review of Nursing Education and Training)
   - projected job openings for new graduates between 2001-2006 are 31,000
   - annual rate of growth of 2.5%

3. Australian Nurse Supply and Demand (Preston, 2002) (commissioned by the Australian Council of Deans of Nursing)
   - nurse shortfall of 2.2% by 2006
   - projected 2006 requirement for graduates is 10,182 but supply is projected to only be 6,131
   - this represents a shortfall of 4,051 graduates (39.8%).

Nursing Workforce Trends

The findings of the AIHW Nursing Labour Force 2001 report (AIHW 2003) support the proposition that the shortage of nurses is likely to continue unless action is taken to change the supply trends. For example, recent changes highlighted in the report include:

- excluding multiple registrations, there were 260,075 registered and enrolled nurses in Australia in 2001 (an increase of 1.2% since 1999, but only 0.4% since 1995);
- the ageing of the nursing workforce continued, with the average age increasing from 39.3 years in 1995 to 42.2 years in 2001;
- the proportion of nurses working part-time stabilised between 1999 (53.8%) and 2001 (53.7%), but was higher than in 1995 (48.8). The average weekly hours worked decreased from 32.4 hours in 1995 to 30.5 hours in 2001;
- the decrease in average hours worked per week since 1995 effectively reduced the supply of full time equivalent (FTE) nurses per 100,000 population from 1,127 FTE in 1995 to 1,024 FTE in both 1999 and 2001;
- the gender imbalance in the nursing workforce continues, although the proportion of male nurses has increased from 7.3% in 1995 to 8.4% in 2001. However female nurses still make up over 90% of the nursing workforce; and
- there has been an overall increase in workload (as measured by hospital separations per FTE nurse) from 50.4 separations per FTE nurse in 1995-96 to 57.1 in 1999-2000.

Appendix B provides an illustrative overview of Australian nursing workforce trends.

The dynamics of the nursing workforce have been changing over recent years. Losses (attrition) from the nursing workforce are reported to be increasing, and this may be explained largely due to the increasing age of the workforce, but also due to other factors such as dissatisfaction with the workplace or higher paying jobs in other fields. A large

proportion of the nursing workforce is in the age group that will consider retirement in the next 10 –15 years. Workforce participation may also be related to age. Reported trends show an increased proportion of nurses (registered and enrolled) working part-time and a falling average number of hours worked per week. (AIHW 2003). Nurses in the 35-44 year age range appear to work fewer hours than those who are older or younger. As a substantial cohort of nurses have entered that age range in recent years, this has tended to reduce the average number of hours worked. It is not yet clear what will happen when this cohort moves into older age ranges during coming years.

Increasing attrition rates may also be related to organisational factors. Experienced and highly qualified nurses have left the nursing workforce for other careers due to issues such as lack of recognition for their work (feeling devalued), feeling overworked and underpaid. Recently graduated nurses are leaving due to a mismatch of their expectations of nursing work and the reality of the nursing workplace. Attrition from undergraduate nursing courses is also a concern. While there are alternative career options offering more flexibility and better working conditions, there will be a continuing syphoning of nurses from the workforce. The 2002 Inquiry into Nursing Education examines these factors in detail (2002).

The requirement for nursing services has not declined, but has expanded as the burden of illness has shifted from acute to chronic, and health services are involved in aspects of people's lives once considered not to be health issues (Aiken, 2003). The aged care and community health sector has grown, while hospital care has become more intense. Sicker patients, shorter lengths of stay and higher turnover of patients has increased the workload and productivity of nurses in the acute hospital sector. At the same time, there has been a greater requirement for nurses working in the community sector in such areas as care of the chronically ill, aged care and community-based health care services.

Nursing Undergraduate Enrolments and Completions

The "front-end" supply of nurses has been affected by the decreasing rates of domestic students entering and completing undergraduate nursing courses over the last half the 1990s. However data from the Department of Education Science and Training (DEST 2003) indicates a slight increase in both commencements and completions for domestic undergraduate nursing students between 2000 and 2002.

The Australian Vice Chancellors' Committee (AVCC) collects data on applicants for undergraduate higher education courses. This data indicates an increase in eligible applicants for undergraduate nursing places by Australian students, between 2000 and 2003. However, this increase in demand has not been matched by proportionate increases in places offered (AVCC 2003). Data from the AVCC shows that the percentage of those eligible applicants not receiving offers has increased from 7% in 1997 to 37% in 2003.

The issue of transition from undergraduate education into the workforce remains an issue. There is a perception that a significant number of graduates do not enter the nursing workforce and that a significant number of recent graduates who do enter the workforce leave after a relatively short amount of time due to dissatisfaction with working conditions. The Auditor General in Victoria (2002) found that in 1999 58% of new graduate nurses

entered the nursing workforce, with an improvement in 2001, with 75% of new graduates entering the workforce. This information was obtained by Graduate Destination Surveys administered by the Graduate Careers Council of Australia, currently the only regular source of data on nurse graduate destinations.

Nursing Workforce Planning on the Agenda

Nursing workforce planning is "on the agenda" as a result of the current shortages being experienced across Australia and internationally. Kimball and O'Neil (2002) make a number of observations supporting the notion that the nursing shortage is likely to be ongoing unless action is taken. The pressures on nursing workforce supply both presently and in the future include:

- *An ageing population*: as baby boomers age, there will be an increased demand for nursing care;
- *Increasing demand for health care*: new technologies and treatments have generally increased the demand for health care;
- *Ageing workforce*: the average age of nurses is increasing while physical demands of work remain high, at the same time the average hours of work per week is decreasing and many nurses will retire in the next decade;
- *Shortfall in new graduate nurses to meet workplace requirements:* over the last ten years, the number of new graduate nurses has not increased sufficiently to provide an adequate "front-end" supply; and
- *Unsatisfactory work environments and cultures*: resource scarcity and competition for health care resources and increasing consumer demands have resulted in increased workloads, threats to quality of nursing care, and job dissatisfaction; and as a consequence the culture of some organisations does not value nurses sufficiently and these factors are leading to increased attrition.

Policy Levers and Responsibilities Related to Nursing Workforce Planning

Many organisations from the health service provider level to State/Territory and national levels are currently involved in developing their workforce planning processes and approaches, in order to respond proactively to the current situation (AHWOC 2003). A combination of good planning and adequate responses by all stakeholders is required to resolve the situation. Most importantly, a national approach to nursing workforce planning is considered necessary to develop comprehensive, long-term strategies, bringing together the jurisdictions; the education and training, regulatory and industrial sectors; the professional organisations and consumers.

The processes for policy making regarding nursing workforce planning takes place within multiple organisations with varying levels of responsibility in terms of policy decision making and implementation of nursing workforce plans. Table 1 identifies a number of organisations in Australia that are involved in policy and planning affecting the nursing workforce in Australia. It highlights the need for a national approach to coordinate the collaboration of these groups.

Table 1: Policy and planning responsibilities affecting nursing workforce planning, Australia

POLICY AND PLANNING LEVERS	LOCAL	STATE/TERRITORY	NATIONAL
Data collection and monitoring	• Health services • Research organisations	• State and territory health departments • Professional nursing organisation branches	• AIHW • Professional nursing organisations and colleges
Setting number of undergraduate positions	• Universities		• DEST
Setting number and mix of post graduate positions	• Universities		• DEST
Setting number of vocational training positions	• Vocational education facilities	• State and territory health departments (providing funding)	
Setting tuition costs	• Universities • Local education and training facilities.	• Health departments (vocational education fees)	• DEST (university fees and repayment schemes)
Determining education curriculum	• Universities		• Community Services and Health Industry Skills Council
Determining training curriculum	• Vocational education facilities		
Registration and licensing standards		• State and territory nurse registration authorities	• Australian Nursing Council
Ongoing competency assessments		• State and territory nurse registration authorities	• Australian Nursing Council
Practice standards		• State and territory nurse registration authorities	• Professional nursing organisations and colleges
Scopes of practice	• Employers	• State and territory nurse registration authorities	• Professional nursing organisations and colleges
Immigration policy			• DIMIA
System financial incentives	• Individual health services (private)	• State and territory health departments • Unions	
Recruitment and retention programs	• Local organisations (employers)	• State and territory health departments	• AHWOC • AHWAC • DoHA

POLICY AND PLANNING LEVERS	LOCAL	STATE/TERRITORY	NATIONAL
Job design	• Local organisations. Employers, Unions, Professional groups	• Unions (branches)	
Industrial agreements	Local organisations (private)	• State and territory health departments • Unions	

Notes: AHWAC: Australian Health Workforce Advisory Committee, AHWOC: Australian Health Workforce Officials' Committee, DEST: Commonwealth Department of Education, Science and Training, DIMIA: Commonwealth Department of Immigration, Multicultural and Indigenous Affairs, DoHA: Commonwealth Department of Health and Ageing.

Source: Adapted from Canadian Policy Research Networks Inc. (2002). Human Resource Planning in Canada: Physician and Nursing Workforce Issues. Summary Report for the Commission on the Future Health Care in Canada October 2002.

SUMMARY

The nursing workforce is the largest component of the health care workforce in Australia.

Recent trends in nursing supply include: ageing workforce, decreasing average hours of work per week, decreased FTE per 100,000 population, and reported national shortages across all nursing specialties.

Pressures on the nursing workforce supply presently and in the future include: an ageing population, shortfall in new graduate nurses to meet workplace requirements (front-end supply) and unsatisfactory work environments and cultures.

Recent national studies show that while there are issues of sustainability, including the need to reduce attrition from the workforce and examine the way nurses work, to meet future nursing workforce requirements, undergraduate nurse completions and thus new entrants to the workforce must increase over coming years.

A national approach to nursing workforce planning is necessary to develop comprehensive, long term strategies bringing together state, territory and Australian governments; the education and training, regulatory and industrial sectors; professional organisations; and health care consumers and carers.

2.2 STAKEHOLDER CONSULTATION FOR NURSING WORKFORCE PLANNING

Workforce planning does not occur in a vacuum. The effects of it are felt by a variety of people who occupy different positions within the health system, ranging from the government official briefing his or her Minister, to the hospital administrator who draws up rosters, to the educationalist who designs training programs, and ultimately to the consumer whose health and wellbeing the health system is designed to ensure. How best then, to capture the views and expertise of these organisations and individuals and to ensure that all perceive the process to be transparent and equitable. This chapter identifies key groups with an interest in nursing workforce planning, and examines different methods of obtaining input and ensuring participation. Appendix C identifies stakeholder groups for nursing workforce planning, and the principal methods of engaging them in this process.

An exchange of information occurs with proper consultation. Workforce planners benefit from learning the views and judgements of stakeholders, while stakeholders acquire further knowledge from their exposure to the workforce planning process. If conducted thoughtfully, this mutual information flow should become embedded in the planning process, and ensure that when planning is undertaken it incorporates the needs of stakeholders into its assessments.

Key Nursing Workforce Planning Stakeholders

A number of groups should be considered as key stakeholders in health workforce planning. Many of these hold essential information for workforce planning; all have an interest in either its process or outcome or both. The broad groups of stakeholders are:

1) government;
2) profession (including industrial groups);
3) other professions/occupational groups;
4) inter-sectoral organisations;
5) service providers;
6) education and training;
7) researchers; and
8) consumers.

Within each broad group there may be a number of organisations, the views of which may not always be in accordance with each other. One of the challenges facing workforce planners is to be aware of and balance these sometimes disparate views. This is usually most effectively achieved through the open communication processes of consultation and liaison.

These groups are briefly described below.

Government

Government is a broad category encompassing a variety of departments and agencies at different points of the workforce continuum. It ranges from regulatory authorities, responsible for enforcing standards maintenance, to health departments – Commonwealth/state/territory

– for which the results of workforce planning may have potentially significant funding and policy implications.

The many arms of government are usually well represented on relevant committees and councils so their views are usually well known, but the sheer size of their bureaucracy can sometimes be an impediment to effective communication and liaison.

Profession
The category of 'profession' includes a variety of perspectives and organisations, ranging from industrial concerns to groups which are formed along discipline-specific lines or more thematic considerations, such as location of practice (rural areas) or shared identity (Indigenous or female medical practitioners).

Other Professional/Occupational Groups
This category includes the professional or occupational groups who work along-side the specific profession examined within the workforce planning exercise. These groups often have an interest in issues such as scopes of practice or effects of oversupply or shortage in the group being reviewed.

Inter-Sectoral Organisations
The organisations that belong in this category tend to have a broader focus than workforce, but one that is affected by the outcomes of workforce planning. Examples include committees examining quality or best practice standards in the health system, which maintain a link with workforce planning as part of their broader ambit.

Service Providers
Service providers have a direct interest in workforce planning, as they, second only to consumers, are most immediately affected by its results. For the most part this refers to public and private hospitals and health facilities, although the move away from the acute sector has broadened the scope of service provision to include more community-based health care.

Education and Training
There are several points of education on the nursing workforce continuum, ranging from initial higher education (university or vocational education) through to postgraduate education and health service based education. Consultation with providers of nursing education across this continuum is essential to establish what educational requirements there are, how these are being met and any issues regarding these. It is also important to establish links with education providers, as specific data on nurse education may not be available from any other sources.

Researchers
Many universities have researchers who may be involved with researching workforce related issues. Workforce planners should engage with researchers, who may be able to assist with many aspects of the workforce planning process or to provide specific findings related to the

workforce in question. Finding researchers will be assisted by a literature search for published works or contacting universities that have health or health service related faculties.

Consumers and Carers

The health and well-being of consumers is the raison d'etre of the health system, yet of all stakeholders, it is the views and input of consumers and carers which are the most difficult to elicit. Unlike all other stakeholders identified above, who have an opportunity to participate through existing structures and channels, consumers are often marginalised because of the diffused nature of their existence, and their sometimes more passing encounter with the health system. This means that extra steps may need to be taken to ensure their participation in workforce planning processes, however it is the role of workforce planners to be cognisant of this and ensure that consultation strategies are appropriately constructed.

Approaches To Stakeholder Participation In Nursing Workforce Planning

Stakeholder participation takes many guises – working party membership, submissions, regular liaison, conference attendance. The most effective method of ensuring stakeholder participation will vary according to the workforce or topic under review and the stakeholders to be included.

Participation operates on two levels – the ongoing communication between workforce planners and stakeholders which occurs through the existence of AHWAC itself, and through such mechanisms as cross-committee membership, conference attendance and regular liaison with organisations and individuals. This ensures that workforce planners are perpetually cognisant of issues in the broader health system.

At a more specific level, when particular workforces are being reviewed there is the opportunity for explicit input and participation by individuals and organisations concerned with that particular workforce.

A brief description of each method of involvement follows.

Committee membership

AHWAC is a panel of experts appointed by government to provide advice to them in areas of health workforce planning and policy that they consider to be of national importance. The Committee is structured so as to have a balanced representation of key stakeholders.

AHWAC draws its membership from government, the professions, the regulatory authorities, the education sector, the Australian Institute of Health and Welfare (AIHW) and consumers.

AHWAC working party membership

For each AHWAC workforce review project a panel of experts, referred to as a working party, is formed to oversee the project. The panel assists in making judgments on the assumptions to be incorporated into any projection modeling; and advises on the reliability and validity of data and the specific issues that will need to be considered in the planning process.

If used, expert panels need to be drawn from all key stakeholders. Generally this can be expected to cover government (both from the policy and service delivery perspective), the profession(s), consumers, the education and training sector(s) and individuals with specific expertise in the workforce(s) under review or the methods being used in the review.

Stakeholder organisations invited to participate in the expert panel are engaged as expert nominees from the organisation rather then representatives of the organisation. This is a subtle distinction but aims to ensure that the panel functions as a "true" panel of experts rather than just a collection of individuals advocating the particular viewpoint or theory held by their individual organisations.

AHWAC's preferred composition for each working party is to have, at a minimum, an independent chair (drawn from the membership of AHWAC); two nominees from the profession under review (drawn from the main peak body/bodies representing that profession); two nominees of government (drawn from nominations supplied by government health departments); and a consumer nominee (provided by either the Consumers' Health Forum or the Health Issues Centre). The chair of each panel is generally drawn from the AHWAC membership to ensure there is a link back to AHWAC and that there is continuity of approach across the working parties. Specific experts are also included on working parties as required. A team of analysts from the National Health Workforce Secretariat supports each AHWAC working party.

Conference attendance

Attendance at conferences dealing with nursing workforce issues, and on occasion the broader health system, play an important part in informing the knowledge base of workforce planners and of alerting them to issues and perspectives which are considered important by stakeholders. Conferences also allow for workforce planners to present papers and receive feedback, thereby continuing the cyclic nature of workforce planning and stakeholder participation.

Consultation

Consultation is of paramount importance in workforce planning. It is more than a one-off inquiry to the heads of governments and other bodies; rather it is an exercise requiring careful thought about which organisations and individuals have an interest in, or contribution to make to, workforce planning. As identified earlier, it operates on both a macro and micro level. At a macro level it involves participation in on-going forums and a constant awareness of broader issues and agendas. At a more specific level it involves identifying individuals and organisations with a particular interest in a specific workforce. For some of the more diffused workforces, , it may take longer to identify interested parties, as they may be less likely to be members of the established consultative process. On such occasions this can be supplemented by a call for submissions (see below). An effective consultation strategy is one which ensures that there is both depth and breadth to the range of individuals and organisations consulted, and is conducted in a flexible and mutually convenient fashion, appropriate to the needs and wishes of stakeholders.

Liaison

While bearing many similarities to consultation there are subtle differences about liaison. It is less formal in nature, and requires establishing and maintaining effective contacts with relevant individuals and organisations, and use over time, as required, of the knowledge and expertise the individual or organisation has to contribute. This relationship will be used to both meet challenges and identify emerging ones.

Submissions

A call for submissions has not been standard practice for AHWAC workforce reviews, but is considered an appropriate method of reaching individuals and organisations that may not be part of the established consultative process. It is sometimes used as a 'litmus test' in gauging the range of perspectives on an issue. It also allows for those who are either unable or unwilling to be consulted, to still participate in the workforce planning process. While this is an option for all stakeholders, it is the primary method of participation for individuals who are not members of the established participation process.

Cross-committee membership

This method of stakeholder participation allows for cross-fertilisation of ideas and consistency of approaches, where appropriate. As many other organisations and committees have agendas which either affect, or are affected by, workforce planning it is not unusual to have items on respective work-plans which require shared information and approaches in order to complete tasks.

SUMMARY

Workforce planners benefit from learning the views and judgements of stakeholders and incorporating these in the planning process, while stakeholders acquire an understanding of the workforce planning process. Consultation with stakeholders may also assist with filling in data gaps and the subsequent development of assumptions related to the workforce under review. The mutual exchange of information also assists with the development of and acceptability of strategies.

Key stakeholder groups for nursing workforce planning include: government bodies; the profession (including industrial and regulatory bodies); other professional or occupation groups; inter-sectoral organisations; health service providers; education and training providers; researchers; and consumer and carer groups.

AHWAC approaches to stakeholder participation for projects may include: working party membership; call for submissions; cross-committee membership; conference attendance; and individual or group consultation.

2.3 NURSING WORKFORCE PLANNING – THE PROCESS AND METHODS USED BY AHWAC

The general planning approach described in part 1 of this paper may be applied to the nursing workforce. It is important to note that this chapter focuses on large-scale (national or state/territory jurisdictional) workforce planning, which largely uses a "top-down" approach to workforce planning. However, if the structure or functioning of the workforce has recently changed or is predicted to change within the planning period, then a mix of both "top-down" (involving new structures, roles and accountabilities) and "bottom-up" (initiated in specific, peripheral areas and built upon) approaches should be used (Beaumont and Boyd 2001).

As noted previously it is recognised that there are alternative approaches to nursing workforce planning to the process and methods discussed in this chapter. The different approaches to nursing workforce planning and the calculation methods for forecasting future supply and requirements used in recent studies in Australia are discussed in a forthcoming AHWAC companion paper – *The Australian Nursing Workforce – An Overview of Recent Workforce Planning Projects*.

For AHWAC, there are six important steps involved in the general process of nursing workforce planning, these are:

1) setting objectives, scope and approach;
2) describing the current workforce and current requirements, including provision of services to the population;
3) evaluating the adequacy of current workforce supply;
4) predicting future workforce supply and future workforce requirements;
5) modelling a range of projection scenarios; and
6) developing strategies to balance workforce supply with workforce requirements.

Step One: Define Objectives, Scope And Approach

An essential step in the planning process is to gain agreement among key stakeholders as to who should be considered to be part of the workforce under review (eg. all practising registered nurses throughout Australia or a specialist group of nurses). For specialist nurse workforces this may also include a description of the unique functions/services performed.

Secondly, it is important to define the objectives and scope of the planning exercise. Chapter 2 provides a number or questions to ask to assist with setting the scope of the planning exercise. Once objectives and scope are clarified, a number of other essential elements for successful planning must be put in place.

The following checklist of requirements for effective workforce planning is a useful starting point:

- clear objectives (set aims and clarify considerations of scope);
- an agreed process;
- an appropriately resourced organisation to conduct the planning;
- use of acceptable methodologies and calculation tools;
- access to relevant and reliable data;

- participation and commitment of key stakeholders to the process and the recommendations to enable implementation of planning outcomes; and
- recognition that planning is a dynamic process requiring updating and refinement of information, processes and results.

Step Two: Describe The Current Workforce And Requirements

The purpose of the second stage of the planning process is to gain a comprehensive picture of the present practising nursing workforce. To those with little experience in workforce planning, this may seem like a reasonably simple process, however, a lack of relevant reliable data can frequently make this task very difficult.

The current practising workforce

The information required to describe a nursing workforce at baseline generally includes a description of the demographic characteristics of those presently practising and their levels of participation (eg full-time/part-time). It also includes an examination of how the workforce operates and about the number of new entrants to, and losses from, the workforce. Data for this purpose are most often gained from AIHW labour force surveys conducted in conjunction with nurse registration renewals in each State/Territory, but it may also been collected by direct surveying of health services or nurses.

The size and characteristics of the workforce should be determined by examining the following:

- number in the workforce;
- age and sex (by five year age cohorts);
- number of hours worked per week (by age group and sex);
- distribution of the workforce (eg State/Territory; urban/rural; hospital/community, pubic/private);
- number employed by qualification;
- number of new entrants per year by source of entry (eg graduates; migration);
- number of re-entrants per year;
- number of exits per year (eg retirements; drop-out; migration); and
- number of potential entrants (ie undergraduates, those qualified but not working).

Describing the present practising workforce is not just a “numbers” exercise. The description should include:

- the type of work done;
- the workload;
- the specific skills and knowledge (competencies) required;
- the types of health service infrastructure in which the nursing services are provided;
- the educational requirements of the workforce;
- the way in which the workforce interacts with other occupational groups within the health care setting (such as medical, allied health and other care providers);
- the model of care (if defined); and
- any staffing formulas used.

It is also important to understand trends in workforce dynamics and workforce profiles. For example, has the rate of attrition increased over recent years? Has the workforce aged over recent years? Are these trends likely to continue, and what effect do changes on workforce dynamics have on each other? These factors become extremely useful to project future supply and should contribute to the development of the various scenario predictions. The following table summarises information (data) required in terms of supply analysis and where this type of data is currently or potentially available. Time-series data is important in identifying and verifying trends. Longitudinal data on individual movements over time would be extremely useful, however it is not available nationally.

Information directly from the workforce, key nursing groups and other stakeholders is essential in describing the workforce in full. The use of stakeholder consultations, focus groups and interviews provide a rich source of information not often captured in the quantitative data. Qualitative data is also often required to "fill the gaps" where the quantitative data is unavailable or unreliable. For example, there may be no statistics available to describe the attrition rate from the workforce, so qualitative evidence may have to be used to develop key assumptions. Information describing nursing workloads is also difficult to obtain.

Table 2 highlights the information required and the potential data sources to describe Australian nursing workforce supply at a national or state/territory level. Nursing workforce data is described in more details further in part 2.5.

Table 2: Key data requirements for describing nursing workforce supply (current and future)

DATA REQUIRED	DATA SOURCE
Current supply (stock)	
Number (headcount and full-time-equivalent)	AIHW nurse labour force survey data, State based payroll/rostering systems, staff/service surveys, ABS
Distribution	AIHW, payroll/rostering systems, surveys, ABS
Gender mix	AIHW, payroll/rostering systems, surveys, ABS
Qualifications	AIHW, payroll/rostering systems, DEST, Surveys, ABS
Workforce participation	
Hours worked including trends	AIHW, Payroll, surveys, ABS
Full-time/part-time	AIHW, Payroll, Surveys, ABS
Casual/Agency/Permanent	AIHW, Payroll, Surveys, ABS.
Workforce flows	
Potential new entrants/trainees	DEST, NCVER Direct university surveys, direct vocational education facility surveys
New entrants	DEST NCVER University surveys vocational education facility surveys Nurse registration boards Work place surveys Nurse labour force surveys where linked with registration numbers (NSW) Migration data
Re-entrants	Registration boards for re-registrants Health department nursing branches/offices Workplace/area surveys
Exits (resignations, retirements, migration out)	Work place surveys Nurse labour force surveys where linked with registration numbers Registration boards Migration information

AIHW: Australian Institute of Health and Welfare;

ABS: Australian Bureau of Statistics;

NCVER: National Centre for Vocational Education and Research;

DEST: Department of Education, Science and Training.

Workforce additions

New additions to the overall or general nursing workforce predominately come from initial training or education programs (other additions are from re-entry or migration). Ideally, it is good to be able to describe the number and age and sex of appropriately qualified people who have entered the workforce in the last few years and those expected to enter it in the present and next few years. However, obtaining reliable information regarding the "trainee" nurse workforce (ie those in training and likely to enter the workforce, in age and sex cohorts) is difficult. While DEST collects commencement and completion data according to university for undergraduate programs, there is little reliable data available at the national level to determine attrition rates from courses. Apart from Graduate Destination Surveys, there is no national data to determine the number students completing their initial training or education enter the nursing workforce. National data available from DEST on commencements and completions of nursing postgraduate programs is not sufficiently detailed or consistent to provide useful information to planners. Many nurses undertaking postgraduate specialist education are already working in their specialist field, and therefore the use of this data to determine potential workforce additions may be misleading. Surveying of nurses enrolled in specialist education may be a more reliable method of determining potential new entrants to a specialty area. The development of techniques to estimation to future entrants to the nursing workforce will depend on the type of workforce in question.

Workforce additions from re-entry

Data on re-entry to the workforce may be available from nurse registration boards, if they collect data separately for those nurses who re-register. For other nurses, who may re-enter via refresher courses, data may be available from state or territory health departments who co-ordinate such programs. Information on nurses who re-enter a specialty nursing area is likely to be held at the organisational level if collected. This type of information is difficult to gain access to in a uniform way nationally, and may need to be collected by surveying the nursing workforce being investigated.

Workforce additions from migration

Again, data to describe nurses who migrate to Australia and work as nurses lacks specificity. DIMIA collects some data that may indicate the general number of nurses immigrating to Australia, however it does not define the specialty practice area of those nurse migrating to Australia. Nursing registration boards may also provide an indication of nurses from other countries who have applied for registration or enrolment in order to practise in the state or territory. Apart from midwifery, there is currently no indication of the specialty area of nursing in which the nurse will practise.

Workforce attrition

Attrition from the nursing workforce may be due to a number of factors: retirement, extended leave (such as for family reasons), leaving to work in another industry, and in the case of specialist nursing workforces, leaving the specialty to work in another. An indication of the number of nurses leaving the workforce by age and gender cohorts should be included in the projections. As the nursing workforce is relatively fluid (movement in and out over time), measuring attrition by age and gender cohorts is important. The patterns of attrition are likely to differ across gender and age cohorts. As with other variables, reliable data may not be

available from current data sets. Surveying may be required to determine attrition rates across the cohorts.

Data challenges associated with describing the specialist nursing workforces

One of the key deficits of information regarding the nursing workforce in Australia is in regard to inflows (new entrants, re-entrants, trainees) and outflows (retirements, permanent attrition) in the workforce. This type of information is particularly difficult to find for the specialist nursing workforces. Unlike the specialist medical workforces for which entry into the specialty requires the completion of a specialist training program, many nurses enter a specialty area of nursing practice prior to the commencement of a specialist educational program. Longitudinal data (that tracks individual or cohort movements over time) are not currently available at a national level, however, New South Wales can still link nurse labour force surveys responses with registration numbers, providing the capacity to determine movements over time. Some statewide payroll systems have the ability to track inflows and outflows into specialty areas of practice, but whether the nurses are "new" to the specialty or whether they are leaving the specialty permanently (as opposed to changing health setting) cannot be determined. The recent AHWAC report of the Australian Critical Care Nurse Workforce (2002a) found there was no reliable source of data to determine inflows or outflows of the workforce. Assumptions based on information from nursing organisations were used as estimations of attrition rates (outflows). Rather than assume the number of new entrants each year, the future supply was not predicted, rather, a replacement rate was estimated based on assumed attrition rates and growth in requirements.

Workforce planning for specialty areas of nursing is highly complex and poorly understood. The entry point for all nursing specialities is via the undergraduate nursing degree in universities (for RNs) and the vocational education sector (for ENs). Changes in this "front-end" have a flow on effect into speciality areas of nursing such as midwifery, mental health, aged care, critical care and operating theatre nursing over a period of time. The effects of these front-end changes are difficult to predict and, hence, factor into any planning process. An important question is "How do we plan for specialist nursing workforces for which there is little data because of the fluidity of these workforces?" This fluidity relates to movements across sectors, specialties with or without specialist training or education prior to entering specialty areas? Further understanding is required about the pathways of workforce progression and patterns of workforce participation. O'Connor (2003) suggests that the workforce may be divided into components that better represent different labour markets requiring targeted policies and strategies.

Estimating baseline requirements

An estimation of baseline requirements is made in this phase of planning. This may be used to evaluate the adequacy of the workforce as well as predict future requirements, and the method for determining the baseline will most often inform the method for prediction. This is discussed in detail in the "predict" step. Baseline requirements and the resulting estimation of adequacy, shortage or oversupply are usually converted to both a headcount and FTE.

Step Three: Evaluative Analysis

Identifying whether there is a mismatch (oversupply or undersupply) or balance in the nursing workforce at baseline is the next phase of planning. This assessment is incorporated into the predictions of future supply and requirements.

The adequacy of the workforce is analysed using a number of key indicators. The types of indicators chosen will depend on the scope of the planning process and the availability of data. For example, analysing the adequacy of the entire nursing workforce will require different measures than analysing the adequacy of a nursing specialty such as critical care (where more specific measures may be available such as nurse per intensive care unit bed). Many of the indicators listed below are not currently collected systematically by all jurisdictions in Australia.

In using the indicators a set of guiding principles have been developed for their application (although it is recognised that in some cases the nature of the indicator means that their application is considered in quite broad terms). The guidelines assist in making a judgement as to whether the indicator suggests an adequate supply or excess in supply or a shortage. The indicators should be considered as a total package. If all, or most, indicators suggest a likely shortage or excess then the conclusion on adequacy is straightforward. Divergence in what the indicators are suggesting will be more difficult to assess. If this is the case it is suggested that more weight should be provided to those indicators that have used the more reliable data sources.

In applying the indicator approach the following questions need to be addressed and a set of guiding principles followed:

- How will each indicator be applied? That is, will it be applied as an absolute measure or as a comparative measure (eg., among states). Will it relate to a point in time or used to examine change across time?
- For what values of the indicator will it be concluded that supply is not adequate?
- What is the relative weight that will be attached to each indicator in making an overall judgement on the adequacy of current supply?

It also needs to be acknowledged that in most cases for the indicators currently used by AHWAC, there are no agreed or acknowledged benchmarks, or thresholds, etc. to guide interpretation and judgement of the available data. However, the ongoing development of guiding principles should ensure that judgements are made uniformly across workforce reviews and by working parties. It is also important to ensure transparency in assumptions and judgments.

It is also important to be able to discern if an indicator is providing evidence of an overall workforce shortage/surplus or more an indication of workforce distribution problems. Again this distinction may not be easily made but it is a key consideration in adequacy analysis. Distribution will be important in terms of both state/territory and urban/rural/remote.

The following is a description of key indicators that may be used to assess the nursing workforce (AHWAC 2002a, Buchan and May 1998, Grumbach, Ash, Seago et al 2001). At

the present time, the most useful indicators are those that can be described with “hard data”. The following list is provided in order of their ability to successfully convey a conclusion of the adequacy of a workforce. Given that Australia is currently dealing with a nursing workforce shortage the discussion is written in the context of the indicators suggesting a workforce shortage. Generally if the opposite trend to that described is observed, the indicator would imply a workforce over supply.

1. Vacancy rates (unfilled positions). Vacancies are generally defined as funded, unfilled nursing positions for which active recruitment is taking place. A vacancy rate is the proportion of all nursing positions (usually expressed as an FTE), which are vacant. Monitoring of vacancies and vacancy rates over time is important in determining whether there is a problem or not. Some periods of the year have greater turnover of staff, so basing an estimation workforce adequacy on one “snap-shot” measurement may give a false impression. Vacancy data for large scale nursing workforce projects is not easily accessed. Some jurisdictions maintain a centralised database of vacancy data by specialty, however this is not available for the private sector or for all jurisdictions. Survey data may be available from colleges of nursing or other organisations researching health care resources. Again, because of the patchy availability of nursing vacancy data, stakeholder consultation is of great importance in determining whether there is a problem filling nursing positions or not. It can be argued that vacancy rates only measure “funded” positions vacant and therefore may underestimate the total need for staff according to patient needs.

2. Use of overtime/excess hours. The use of “overtime” refers to the number of hours nurses work in excess of their rostered hours. The extent to which nurses work overtime hours (persistent over a period of time) may be an indication of staff shortage or staffing difficulties. Data on un-rostered overtime is not collected consistently across jurisdictions. However, data collection activities to gauge nursing workforce shortages are improving across all jurisdictions and some collect centralised overtime data on a regular basis (eg. New South Wales Department of Health). The collection of overtime data according to nursing specialty may not be available. Overtime data is collected at the unit level and may also be available from the payroll systems of health services. Surveying specific nurse specialties for indication of number of hours working overtime may be a way to overcome the lack of data available to determine the extent that nurses are working excess hours. As with turnover and wastage rates, it is important to assess if the problem is organisational or widespread. Consulting with nurse managers, health service managers and nurses will also provide planners with an indication of how much overtime nurses are working.

3. Use of agency/casual staff. Most health services use casual (agency or nurse bank) nursing staff to manage short term or unexpected staff shortages (due to illness, holidays, study periods etc). The increasing use of casual staff, or the use of casual staff to fill vacancies may be an indicator of recruitment and retention issues at the organisational level. It may also be an indicator of a wider shortage. If the demand for agency staff is increased and nurses are able to leave the permanent workforce and work as much as they require casually, a shortage may be indicated. Data to describe the use

of agency nurses (eg. hours per week) is limited. Some jurisdictions collect this type of data, but not always by specialty area. Another source of data to determine the extent of agency or casual work nurses are doing is from the AIHW nurse labour force surveys. Another method for collecting data on agency/casual nurse utilisation is via survey of the nursing workforce in question. Some data may also be available from existing research bodies that collect data specific to specialty areas of health care such as intensive care. Again consultation with nurse managers will provide planners with an indication of the utilisation of agency/casual nursing staff and data is usually held at the unit level. Information to determine the use of casual or agency nurses should be collected

4. Turnover/wastage rates. Turnover refers to employee moves, including transfer, while wastage refers to permanent exits from individual organisations. These rates are often used as indicators of recruitment and retention difficulties within organisations. Whilst they may indicate a broader problem with recruitment and retention in the supply, they are not necessarily adequate as a measure as overall supply adequacy. To determine a larger scale problem, surveying many organisations may be appropriate.

5. Nursing workload. Increasing nursing workload over a period of time may be an indication of nursing shortage. In effect, this either measures a higher number of patients per nurse, or more acute or complex patients to manage per nurse. Nurse rostering and patient dependency systems may be able to provide evidence of increasing nurse workloads that along with other measures may indicate a shortage.

6. Cancellation of elective surgery due to staff shortages. This measurement is potentially a most useful indicator of an acute nurse staffing shortage in a hospital or group of hospitals. This may indicate not only that there is a shortage of nurses permanently employed in a hospital, but that casual staff are also unavailable to staff the beds required for the post-operative recovery of surgical patients. This type of data is not routinely collected across all hospital nursing specialties. In the collection of such data, its important to link it to nurse staffing numbers and this may be available with linkage of nurse rostering systems and other data systems monitoring patients.

7. Bed closures due to staffing shortages. In certain circumstances, hospital beds are closed due to nurse staff shortages. Again, this is an indicator of an acute shortage of nursing staff, and ongoing monitoring is required to determine if it is a measure of longer-term nurse staffing issues. Statewide or national data is difficult to obtain, and bed closures may not be linked with nurse staffing levels in the data that is available.

8. Normative nursing staffing standards as benchmarks. This indicator measures hospital nurse staffing relative to patient census or bed numbers. Where the proportion of nurses to patients or bed numbers falls below the average, this may be considered to indicate a shortage of nurses. Again, the limitation of this approach is that historically, there has been little evidence to define an adequate level of staffing, however more recently studies have attempted to define the best mix of staffing for patient outcomes (references). In some Australian jurisdictions (eg Victoria) minimum nurse staffing levels have been identified, and these may be used to determine overall adequacy of nurse staffing.

Trends in staffing levels relative to beds or patient numbers may provide an indication of undersupply.

9. Nurse: patient ratios (ideally as based on best practice evidence). In some areas of nursing practice there are defined nurse to patient ratios based on the model of nursing care in place. These may be used to determine whether there is an adequate supply. An example of where nurse:patient ratios may be used as an indicator of adequacy is intensive care units, where a standard ratio of one RN to intensive care unit patient is practiced. Ratios can be used to determine the appropriate number of RNs and this is compared with the actual number of RNs available. This use of nurse:patient ratio is only useful when there is a defined "best-practice" ratio, although measuring changing nurse: patient ratios over a period of time may also be an indicator of adequacy.

10. Nurse to population benchmarks. This approach to measuring the adequacy of the supply of nurses is based on measuring the supply of nurses relative to the overall population. The use of nurse:population ratios is a useful indicator of adequacy if there is some evidence for what an adequate level of nurse to population is. It may be useful if used to measure trends over time as an indication of changing adequacy. However, a factor in its limitation as a measure of adequacy over time, is that it may not reflect the different way nursing services are provided. For example there may be an evident reduction in RN to population ratio, but this may be due to the introduction of large numbers of other health care workers who essentially perform some of the tasks of nurses.

11. Patient outcomes linked to staffing levels/skill mix. The affect of nurse staffing levels on patient outcomes may be a useful adequacy indicator. Reduced nurse staffing levels and levels of registered nurses to other categories of nurses have been linked to poorer outcomes for hospital patients compared with those with higher levels of nurse staffing. Measures included mortality rates, infection rates, length of hospital stay, drug error rates and accident rates. These may be an indicator of nurse shortage, or it may indicate cost-cutting by the health service management. However, to meaningfully determine the impact of reduced levels of nurses to patients, studies should be carried out to examine how lower levels of staffing impact on patient outcomes. In Australia there is little evidence of the effect of nurse staffing to patient outcomes.

12. Labour market assessments. General labour market assessments may be available from the Department of Employment and Workplace Relations (DEWR) to indicate shortages in particular labour markets. Skills shortages are defined as existing where employers are unable to fill or have considerable difficulty filling vacancies in occupations or subsets of occupations.

Qualitative data are often useful as an indicator of adequacy. Two sources of such information are:

1. Subjective reports from health service managers or staff. The most common indicator that there is an undersupply of nurses is from reports from nurse unit managers or directors of nursing services who express concerns they are having difficulty filling

nursing vacancies. They may also report having to use a higher proportion of casual or agency nurses. Other reports may include increased staff workloads and unhappiness amongst nurses as pressure mounts.

2. Consumer based assessments. Consumer based assessments are considered important in relation to assessing the adequacy of the nursing workforce in question. Some information may be available from "quality-assurance" programs where consumers respond to surveys following their care. Information may also be available by interviewing consumers or liaising with consumer representative groups/organisations.

Step Four: Predictive Analysis

The predictive phase of the planning process has two important components:

- predicting the future supply of nurses;
- predicting future requirements for nurses

Here the information gathered in the descriptive and evaluative phases of the planning process is used together with information about supply-side and requirement-side trends and the drivers of these trends.

Predicting future nursing workforce supply

As previously indicated, predicting future workforce supply first requires a detailed description of the present practising workforce to provide a baseline. Secondly, this baseline may require adjusting for any assessed shortage or excess identified during the evaluative phase. Thirdly, a computer-based modelling or calculation tool may be used to facilitate moving from the present workforce supply situation to an analysis of future workforce supply scenarios.

The choice of calculation tool is determined by a number of factors including the overall aims of the planning exercise (objectives and conceptual framework) and the data available for forecasting. O'Connor (2003) describes two main methods of modelling supply: an input/output analysis, and an analysis using Markov chains.

The input/output analysis takes the workforce in year one and determines entry rates (new entrants, re-entrants, migration), subtracts exit rates (retirements and other leavers) and then calculates the workforce size in year two.

Markov Chain analysis develops transition matrices based on the key aspects of workforce participation (by age and gender cohorts) and calculates participation rates by these cohorts by year for each of the input/output factors (entrants and exists as in the inputs/outputs model).

It is argued that Markov chain analysis using key aspects of workforce participation factors (such as age and gender cohorts) provides a more sensitive estimation of future supply because the changes in participation rates amongst age and gender cohorts can be incorporated in the projections (O'Connor 2003). However, it may not be appropriate for small workforces and it may be considered too complex. It also requires a number of data

items that may not be available, such as expected entrants and expected exits by age and gender.

The choice of method for forecasting supply and requirements therefore, will depend on a number of factors such as data availability, the overall importance or appropriateness of key participation factors, size of the workforce being modelled, the transparency of the model, and the judgement of planners regarding the accuracy of modelling approach.

The type of calculation tool favoured by AHWAC for nursing workforce planning is a "stocks and flows" model using a Markov process. As outlined, this type of model takes base-line supply data including age, gender and hours worked in five-year age groups and projects this forward for the planning period taking into account expected in-flows and out-flows. New workforce entrants from education programs (graduates), re-entrants, and migration are added as inflows, while losses due to retirements, resignations, migration etc are outflows.

The challenge in using this type of calculation tool for the nursing workforce is that it requires specific data that may not be available to the degree required. For example, there may not be any data available at a national or even State/Territory level to determine the number of new entrants, or those about to enter nursing in general or nursing specialties in particular. data to determine outflows, such as those leaving the area of practice or retiring, may also be lacking. Many nurses leave a nursing specialty to work in another field of nursing. It is difficult to capture these types of movements. Assumptions then need to be made, based on anecdotal evidence and incorporated into the modelling process. Identified trends in terms of workforce participation should also be incorporated into the modelling process. Because of the uncertainty of future supply, a number of scenarios should be developed to provide planners with the flexibility they require. For example, attrition rates and entry rates can be adjusted to show how these will impact on the future supply predictions.

It is also important to consider the "drivers" of nursing workforce supply (or what attracts and retains nurses in the workforce) and how these might change in the future. A large proportion of the nursing workforce is now over the age of 40 years. Many nurses in this age group (baby boomers) entered nursing for different reasons than their younger counterparts. A new generation of school leavers are more focused on lifestyle, personal economic considerations and acceptable workplace conditions (Victorian Auditor General's Report, 2002).

Factors influencing the supply of new nurses include:

- options for school leavers;
- relative wages of nurses;
- educational requirements;
- supply of course places for nursing students;
- costs of courses;
- job opportunities for recent graduates;
- incentives and barriers to entry, including industrial requirements; and
- perceived working conditions.

Factors influencing retention of registered nurses include and the significance of these may depend on the age profile of the workforce:

- the general economy (alternative career options for nurses);
- relative wages compared with alternative occupations;
- conditions of employment, including workload, flexibility and industrial requirements;
- support for new nurses in the workforce;
- relative job and promotional opportunities;
- relative job satisfaction in comparison with alternative occupations;
- the proportion of males to female nurses (as many female nurses leave or reduce hours due to family commitments); and
- industrial requirements influencing workplace incentives and barriers.

Predicting future requirements for nurses

For workforce planning to be responsive to health service needs, emphasis on requirements for services related to a particular segment of the workforce should be equal to the emphasis on supply. This allows planning to be broader in focus, able to examine interrelationships between occupational categories, and explore substitution possibilities (Bloor and Maynard 2003). Requirement based planning allows the question: What kind of workforce do we need to meet the requirements of the workplace (which in turn should be based on patient/population needs)?

There are two elements to requirement analysis for purposes of predicting future workforce requirements. First it is necessary to describe the present situation, secondly, to analyse how these requirements may change during the planning period due to factors such as changes in population health needs, or models of service delivery, or health service structures, functions or funding etc.

The approach used to describe and predict requirements for nursing services will depend on the overall objectives of the workforce planning exercise as discussed at the beginning of this chapter. O'Brien-Pallas (2001) suggests there are three main approaches to requirement analysis and forecasting (viz., utilisation based, needs based, and effective-demand based). These should be expanded upon to include infrastructure and models of care based approaches (in effect variations of the broader approaches, but applicable to specific types of health care or specific health care services). In reality a combination of approaches may be used, and often are. For example, in the AHWAC studies of the critical care nurse and midwifery workforces (AHWACa 2002 & AHWACb 2002) a combination of needs, utilisation, models of care and infrastructure approaches were used. The methods outlined in Tables 3-7 are for large-scale nursing workforce planning. More intricate and precise methods of nursing workforce planning may be employed in smaller scale planning. For further information about broad approaches to requirement analysis adapted to reflect a nurse workforce perspective see Appendix D.

One of the most commonly used approaches to predicting nursing workforce requirements is the "utilisation based" approach. Under this approach the current mix and distribution of nursing services is assumed to be adequate and based upon population utilisation rates of

services. To predict future requirements, a population growth factor is applied to the base-line requirements (which are based on utilisation of health services).

Table 3: Utilisation based approach to predicting future nursing workforce requirements

Requirement approach	Method for predicting future requirements
Utilisation based	Uses population-based utilisation rates as baseline. Applies utilisation rates to projected demographic profile of the population.

The limitation of the utilisation based approach to predicting nursing-workforce requirements is the assumption that the way services are presently provided is unlikely to change. It also assumes that the only factor likely to change demand for nursing services significantly during the planning period is the growth in population and change in population structure.

A more idealistic approach is the "needs based" approach (Table 4). This estimates future requirements on the basis of estimated population health care needs and deficiencies (epidemiological factors) and the most effective and efficient ways of addressing these needs. This approach ignores the fact that resources may not be allocated to address all the underlying health needs of a population and that competition for scarce resources will mean that requirements for nursing services will ultimately be determined by the broader decisions society makes about the level of resources committed to health care.

Table 4: Needs based approach to predicting future nursing workforce requirements

Requirement approach	Method for predicting future requirements
Needs based	Select or develop a population 'health need' indicator using accepted and appropriate measures and expertise to estimate a rate/s. Estimated optimal nursing workforce requirements for addressing population health needs. Apply selected 'health needs' rate/s to population growth and characteristics projections for the planning period.

An alternative, but potentially more complex, approach to predicting requirements is to use an "effective demand based" approach (Table 5). This approach is based more on population need, however economic considerations are introduced to predict demand based on what society is willing to allocate towards health care.

This approach incorporates needs based factors (such as epidemiological and population data) as well as general economic data and data specifically related to health care expenditure. The problem with using this approach is the complexity involved in the modelling process and the reliance upon data related specifically to nursing services, which may not be readily or widely available.

Table 5: Effective demand based approach to predicting future nursing workforce requirements

Requirement approach	Method for predicting future requirements
Effective demand based	Estimates the size of the economy supporting health care and the proportion of the economy devoted to health care. Estimates the proportion of health care expenditures allocated to nursing services. Estimates the number of nurses that could be employed using these resources. Provides a fiscal resource context for needs/utilisation methods.

An "effective infrastructure" approach to predicting workforce requirements is particularly useful for certain nursing workforces, notably those reliant on the presence of infrastructure for the provision of services (Table 6). For example, critical care nurses, paediatric nurses, operating theatre nurses and others whose work is defined by infrastructure. Obviously, requirement for such specialist nurses is constrained by the presence of the relevant infrastructure and this infrastructure is frequently hospital based. Hence, growth in requirements for these workforces will be influenced by the service plans of hospitals and information from health service planners is required. These growth estimates may be informed by projected growth in bed numbers (eg critical care beds) or operating theatres etc. If this is not available, other estimates for growth may include estimating the population health need for a particular type of service, or estimating funding that may be available to grow these services.

Table 6: Effective infrastructure approach to predicting future nursing workforce requirements

Approach	Method
Effective Infrastructure	Estimates the present ratio of defined infrastructure to relevant segment of the population. Estimates requirements for services based on utilisation trends, population need and availability of technology/infrastructure. Estimates the likely growth in defined infrastructure based on service planning information.

Finally, a "models of care" approach to nursing workforce planning provides opportunity for a more patient focused approach to planning vis-à-vis provider-focused approach (Table 7). As yet, few health workforce planners have had experience with this approach to workforce planning. Conceptually, it may begin with a definition of a model of care (or possibly a model of service) to achieve optimal consumer outcomes for a particular segment of the population or consumer group followed by an assessment of the functions and best-skill-mix required to provide the model of care. This information is then used to inform workforce planning from a

"bottom up" perspective. A "models of care" approach may also refer to the determining of a whole workforce (ie look across selected occupational groups) to provide planners with a mechanism to plan a workforce according to a particular type of service or health need (eg mental health services). Therefore, a "models of care" approach can sit either at the organisational or large-scale level, can be needs based, effective demand based or utilisation based.

In terms of predicting future workforce requirements, a "models of care" approach should be based upon estimates of change in requirements for the type of services associated with the model of care (eg midwifery) or model of service (eg emergency care). Requirements are likely to be effected by population growth, incidence of disease and structure and health service planning and financing arrangements.

Table 7: Models of care based approach to predicting future nursing workforce requirements

Requirement approach	Method for predicting future requirements
Models of Care	Estimates growth in requirements for "model of care" or "model of service" using population growth and expected structural changes in the defined care or service area. Nursing skill mix is determined based on assessment of required functions to provide model of care. Requirement projections are based on "best" skill-mix to achieve "model of care" for future. Estimates growth in requirements for each relevant "skill-mix" of nurses essential for the provision of the model of care.

Drivers of demand influencing requirements for nurses

The demand for nursing services is driven by many factors. However, because of the nature of nursing employment, it is most directly driven by the available funds for health services in which nurses work. Other more indirect drivers of demand, which will have an effect are broader in nature and include population health need (population, growth, ageing and morbidity drivers) and the general economic situation. Changes or trends in these demand side factors should be identified and then taken into account in the prediction of future requirements. Recent studies (HRSA 2002, Karmel and Li 2002) have shown that the major factors driving demand for nursing services are:

- population growth;
- population ageing;
- health care financing trends; and
- changes in work organisation

Other drivers of demand include:

- disease incidence and prevalence;
- funding, availability, and access to health services;

- service standards;
- prevention strategies;
- health policies based on desired population health outcomes;
- service policy and planning frameworks and changes;
- general economic factors;
- technology induced changes; and
- consumer expectations.

Requirements data considerations

Table 8 highlights the data that may be required to determine both current and future requirements for nurses. The selection of data used will be determined by the methodological approach used.

In terms of data available to describe requirements for nursing workforces, there is little that directly describes episodes of nursing care (unlike, for example the Medicare database which is able to provide information on type of service provided, cost and trends in private medical services). However, nursing services are closely linked to nearly all hospital admissions, so utilisation of nursing services is most often indicated by hospital and other health service utilisation. Trends in health care utilisation are often used to indicate the change in requirements for nursing services. Other sources of data directly related to the requirement for nursing services is health service or health department payroll data, which describes the number of hours of nursing work. When used with data to describe patient days, an indication of nursing requirements may be available. More refined systems to define nursing workload are constantly evolving to better describe the level of nursing care required.

Data to describe the numbers and skill mix of nurses based on patient needs and other activities are limited in Australia. This type of information is essential to determine nursing requirements based on a “models of care” approach.

It is generally agreed that health care spending (particularly in relation to inpatient or residential care) directly relates to provision of nursing services. The utilisation of nursing services may be more clearly defined in some community-based services where information on episodes of care is collected.

Table 8: Summary of key data sets used to describe workforce requirements (current and future)

DATA REQUIRED	DATA SOURCE
Population growth/distribution and ageing	ABS
Disease incidence and prevalence	AIHW, state and territory health departments
Health care financing	AIHW, state and territory health departments
Health service utilisation	AIHW, State/Territory health departments, data directly from health services (public and private)
Patient data: episodes of care, severity, patient mix	Australian/State/Territory health departments, AIHW, direct surveying of community based or private organisations.
Changing workforce mix	Surveying, consultations, health department payroll data, health service data
Health care service standards and benchmarks (including ratios of nurse:patient)	Industrial bodies, professional organisations, health departments, health services.
Health care service planning	Australian/State/Territory health departments, Private hospital organisations
Health care policies and priorities	Health departments (state and territory, commonwealth), private health sector, health services, professional organisations.
General economy	Treasury, Productivity Commission, ABS and private forecasting agencies such as Access Economics
Technological change	Consultation with experts, expenditure data on new technolgies
Consumer expectations	Consultation, surveys, reports from consumer organisations and other sources.

Abbreviations: ABS: Australian Bureau of Statistics; AIHW; Australian institute of Health and Welfare.

Step Five: Model a Range of Projection Supply and Requirements Scenarios

This phase of the planning process has three essential components, they are:

- modelling the effects of different levels of growth in requirements under a "business as usual" workforce supply situation;
- modelling the effects of increasing or decreasing the level of supply; and
- modelling variation in both requirement and supply to find a best-fit scenario.

The National Health Workforce Secretariat uses a "stocks and flows" or input/output calculation tool which uses Markov chain analysis, where appropriate to both the objectives of the project (and therefore conceptual framework) and where data and other factors are adequate. This calculation tool models a range of supply and requirements scenarios. The steps involved with developing these scenarios are detailed below.

Model variation in requirements under a "business as usual" workforce supply prediction scenario

The first set of projection scenarios usually draws on a number of high and low workforce requirement growth estimates. The growth rate is determined by the analysis of present and future workforce requirements as identified in the earlier section of the predictive planning phase and may be influenced by estimates of population growth, service need, utilisation trends or anticipated increases in funding for the employment of nurses in a particular area of nursing for example. The effects of new models of care or innovations in staffing will also have an underlying effect of requirements, which may be factored into requirements projections.

This information is used to develop a compound growth factor, which is applied on a year by year basis by multiplying the base-line supply (including any shortage/oversupply) by 1+ compound growth factor (determined by the estimation of growth in requirements for the respective workforce). Usually a number of workforce requirement growth rate scenarios are generated (eg low, medium and high) because it is well understood the future is not always easy to predict.

These generated scenarios are used to examine what the future workforce situation will look like if no new supply initiatives were to be made; in other words, a supply "business as usual" scenario. Lower level growth in requirements estimates could be based on the assumption that health service providers propose to substitute other workers to do some of the work presently done by the workforce under review. Higher level growth in requirements might be based on estimates of increased morbidity and associated increase in utilisation rates. A no-change requirements-scenario would be based on maintaining requirements at current assessed levels. This simulation modelling includes building in all the known information about workforce characteristics, entries and losses and participation rates as outlined under "descriptive workforce supply analysis".

Model variation in workforce supply predictions

The next step in the modelling process is to examine the effect on supply if certain initiatives are made, such as increasing or decreasing the number of new entrants into the workforce from educational programs, migration, re-entry programs and attrition.

The current (baseline) supply is divided into five-year age/gender cohorts from 20-24 years through to 70+ years. The model allows use of a non-working pool if this is considered appropriate, however this has not been applied in the medical context.

For each age/gender cohort the workforce supply in each year is estimated by starting with the previous year's workforce, adding graduating students entering the workforce and net migration (positive for net inflows, negative for net outflows), and subtracting losses (permanent exits from the workforce, such as deaths and retirements, and temporary movements out of the workforce). A fifth (20%) of each cohort is moved to the next cohort to age the workforce.

Workforce supply is measured in headcounts, FTEs, and hours worked per week according to the relative contributions of each age/gender cohort. FTEs are calculated for each age/gender cohort as the headcount multiplied by the average hours worked per week by that cohort, divided by the average hours worked per week for that particular workforce, in total.

The following assumptions are used to define the workforce supply:

- the year for which supply data are compiled (current/base year of projections);
- total size of the workforce, and number of practitioners by age/gender cohort;
- average hours worked per week by age/gender cohort;
- annual losses from the workforce for each age/gender cohort;
- annual net migration into or from the workforce for each age/gender cohort; and
- age/gender of graduating students.

In addition to the above, the following assumptions are optional and may be used (both must be entered in the model if used): non-working pool (an estimate may be used); and re-entry from the non-working pool (the model converts numbers to rates to ensure re-entry is related to size of this pool).

In order to simulate varying supply trends and model workforce losses and entries, the following assumptions regarding graduates and workforce dynamics are inputs into the modelling process. (The default value for each is noted in brackets beside it.)

Other components of the model include the full time equivalence conversion factor, where standard hours worked per week (default=system standard) is used to compute full-time equivalence rates. The weekly average total number of hours worked can be adjusted to allow for annual leave and/or sick leave etc. (such adjustments are automatically reflected in both the requirements and the supply trends). Workforce participation levels can also be modified, by varying the actual hours worked per week (where the default is 0) or adding in a variation in hours worked to demand (again the default for this assumption is 0).

Graduates:

- number of graduates by year (default = sum of last year for each future year);
- proportion of graduates entering the workforce (default = 1);
- proportion of graduates entering the non-working pool (default = 0); and
- proportion of graduates leaving Australia (default = 0).

Workforce dynamics:

- total losses (default = sum of last year);
- total net migration (default = sum of last year);
- total re-entry (if non-working pool is used – default assumes pool not used);
- +/- workforce loss rates (default = 0);
- +/- workforce re-entry rates (default = 0); and
- +/- workforce migration rates (default = 0).

The adequacy of the base year supply is estimated and any over/under supply is input into the model. The default value is 0 (no current under/over supply). A series of indicators is examined to determine the initial over/under supply to be included (as outlined previously). If the current workforce is assessed as meeting current requirements then it is assumed that the current workforce is in balance and requirements equal supply. If the evaluation of workforce adequacy indicates that an under or over supply situation exists then as far as practicable this needs to be quantified in terms of FTEs. This estimate is then taken into account when calculating future workforce requirements through adjustments to the baseline supply figure.

Projection Ranges, Statistical Variance And Sensitivity Analysis

For each workforce a range of projection scenarios are developed. Alternative projections and projection ranges are generated by varying requirements and supply assumptions/inputs. There are two related approaches:

- *Statistical variance.* Where assumptions are based on statistics with known statistical variance the upper and lower projection limits are generated by replacing standard assumptions with +/- 95% confidence limits. All assumptions are varied simultaneously.

- *Sensitivity analysis.* Where the accuracy of assumptions is not statistically defined high and low projection limits are generated by replacing standard assumptions with a selected multiple of the assumption. Each assumption is separately tested to assess the relative impact of uncertainty for the given amount of variation. If time permits a series of changes are introduced to assess the range of variations over which the assumption remains constant. (This is a Markov process.)

Finding the “best fit” scenario

The projected supply scenarios (usually based on various exit rates, and/or graduate entry rates) are compared with projected requirement-scenarios (usually based on no growth, low growth or high growth). The supply and requirement scenarios that achieve the best match across the planning period (and are feasible) are then highlighted. For example, with high growth in requirements, the workforce may only reach balance if attrition and retirement rates are kept low and the number of new graduate entrants, or re-entrants or entrants from migration are increased annually.

The option generally used to achieve balance of supply with requirements is the number of graduating students/trainees. However, requirement trends are also explored in particular to determine if substitution between workforce categories is possible.

Additionally changes in working conditions can influence workforce participation rates (hours worked) and workforce dynamics (loss and re-entry rates). These factors are explored to determine if balance can be achieved without additional training and/or if underlying trends require proactive management of the workforce.

Step Six: Developing Strategies For Correcting Predicted Workforce Imbalances

There are two approaches to respond to nursing workforce imbalances: altering supply factors and altering demand factors. As highlighted in earlier chapters, altering supply is perceived to be easier than altering demand. This section outlines potential options that may be available to respond to workforce imbalances.

Altering supply to address shortages - recruitment:

- increase entrants to training programs (undergraduate/post graduate nursing courses);
- reduce the length of nursing programs to increase throughput;
- reduce barriers to nursing courses/programs (costs, place, timing) to attract entrants;
- open access routes for recruitment to a broader range of applicants (mature aged, graduates from other courses);
- improve perceptions of potential entrants into the workforce: Alter entry pay rates, perceptions of career opportunities and emotional rewards to compete with alternative careers;
- overseas recruitment; and
- increase "returners" to the nursing workforce with ready access to re-entry courses (family friendly hours, no cost).

Altering supply to address shortages - retention:

- altering management practices (more participatory);
- more flexible staffing arrangements (lifestyle/family friendly);
- pay incentives;
- more opportunities for career development;
- increase access to professional/educational development; and
- address workload issues and safety issues with new management practices, skill mixes
- put in place strategies to delay retirement.

Traditionally, altering supply has been the most common response to imbalances. However, more attention should be paid to demand side factors that may also be adjustable. Adjusting demand is more difficult than adjusting supply, however, because of the long lead times in improving supply (at least 3 years to produce a registered nurse), making adjustments in the demand for nursing services may be necessary in the short term, such as identifying staffing requirements in terms of skill mix through a skills based assessment process rather than assuming traditional models of care and existing qualifications requirements.

Altering requirements/demand:

- reorganise the way care is provided in terms of skill mix including the possibility for substituting with other health care providers;
- change funding arrangements;
- use new technologies to reduce workload (automate);
- public health/health education to reduce demand for care (long term);
- change health care setting (eg from hospital to community based care); and
- change consumer expectations (long term).

The implementation of nursing workforce plans requires a coordinated approach from all agencies involved with nursing education, health service planning and funding, human

resources management across the public and private health sectors. However, in some cases, unilateral decisions may be required rather than waiting for consensus from all agencies. Individual agencies can make an enormous difference when prepared to take the lead and make changes.

2.4 NURSING WORKFORCE PLANNING AND WORKFORCE REDEVELOPMENT: PLANNING FOR CHANGE

While the focus of this paper has been on national level, occupationally based (nursing) workforce planning, this chapter aims to provide an initial exploration of workforce planning within the context of change. It focuses on planning from a more integrated, patient focused, team based approach, in which workforce requirements are based on competencies (skills and knowledge) rather than professional boundaries. This type of planning could potentially offer the possibility of more efficient, effective and sustainable arrangements for care in the future. However, it is acknowledged that workforce planning must recognise the complexity of nurses' roles and the framework under which they practice. This chapter draws on recent literature and is included to highlight some of the evolving thinking on workforce planning.

Health workforce planning aims to find a balance between workforce supply and requirements. This has often been done by focusing on the existing professional, or occupational structures, with the underlying assumption that these structures are adequate to meet future health service requirements (Masterton and Humphris, 2001, Bloor and Maynard, 2003). However, for workforce planning to address current nursing shortages within a changing and challenged health care environment, examining work practices and other factors that can alter demand may broaden policy options (Aiken 1995, O'Brien-Pallas et al 2001) and address the "deeper, more complex issues" of the nursing workforce (Romonow 2002). Examining work practices, changing roles and scopes of practice within a team-based approach may be incorporated in a process for workforce redevelopment.

The aim of workforce redevelopment addressing changing requirements or unsustainable supply, should be to maintain a level of care (deemed to be acceptable) or enhance the current level of care or health care outcomes. Recent studies show a relationship between nursing staffing models and patient outcomes. Altering skill mix should not be based on cost-effectiveness alone, but on improving patient outcomes, either through better staffing or better use of skill mixes (Needleman, Buerhaus, Mattke et al 2002, McGillis Doran, Baker et al 2003). Changing the skill mix in health settings or services may provide improved care, processes and efficiency. However some studies have shown that there may be unintended consequences in changing the skill mix or model of care to larger multi-disciplinary teams. These consequences may include decreased staff morale and increased workload, increased time and cost required for the co-ordination of care, reduction in continuity of care, and increasing costs associated with training and supervision (Sibbald, Shen and McBride 2004).

A "models of care" approach to workforce planning, may be part of the process of workforce redevelopment. It begins with identifying patient needs and determining the best skill mix of health care workers to provide the care (assessing competencies, reviewing skill mix and planning for teams) and planning the workforce around these factors. A models of care or skill mix approach to planning is thought to work best in a relatively 'closed' care situation or for a defined patient population. There is no universally applicable skill mix across the health care sector. It may, however, inform larger scale workforce planning and related processes such as education and human resources management.

Integrated Workforce Planning

The word “integrated” has two different, but related meanings in relation to workforce planning, particularly within the context of change.

1. Integrated workforce planning

This refers to integrating workforce planning functions with workforce production (education and training), workforce management and organisation, and health service planning functions

2. Integrated health care planning

This refers to planning health care (and therefore health workforces) across occupational boundaries and may also refer to planning based on integrating care across institutional boundaries. It implies a “team-based” approach to workforce planning.

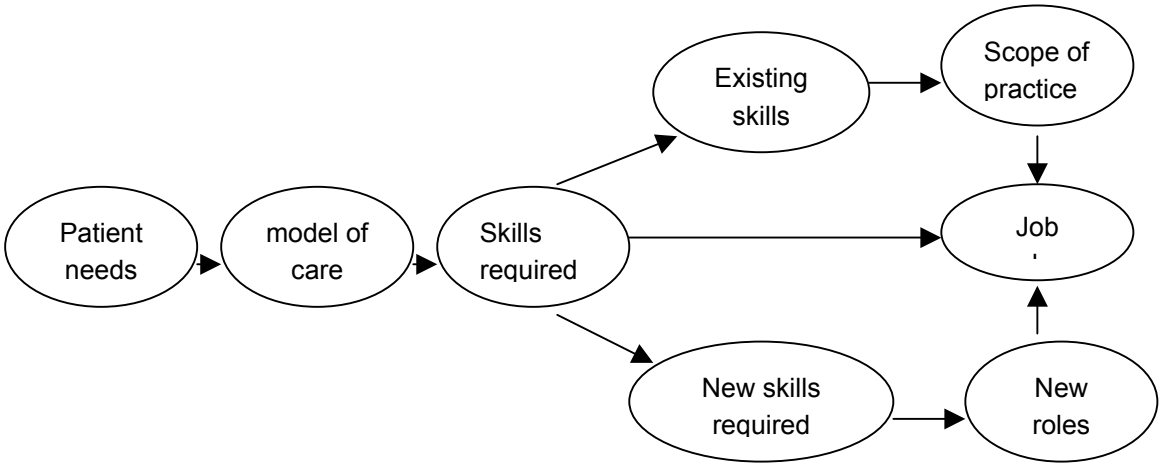
Competency Based Planning

A competency based model for workforce planning has the potential to assist organisations bridge the gap between where they are now and where they want to be in the future. It involves conducting a workforce skills and knowledge analysis to match the workforce requirements of a particular care setting (National Institutes of Health, 1999). A competency approach to planning allows consideration of new roles, and also makes explicit the skills and knowledge required to deliver a particular type of health service that may already exist and suggest the most appropriate use of those competencies (Masterton and Humphris, 2001). A competency-based approach to planning is thought to work best in a relatively closed care situation, however, it can set the pace for changes roles and skills in the broader health care setting (Scottish Executive 2002).

In theory, competency-based planning does not accept traditional role boundaries, but instead concentrates on the actual skills and knowledge required. In effect, job roles are seen as clusters of tasks and activities which are grouped and may be re-grouped in a variety of combinations depending on the situation (Edmonstone 1999). However, in reality, given current pay structures, regulatory requirements and professional barriers, it is suggested that the health service be analysed in terms of the required competencies, and these should be translated into the competencies of existing or developing occupational groups (Scottish Executive 2002). This also provides guidance for extending the scope of practice for occupational groups in order to best meet patient needs.

The following diagram has been adapted to show how competencies can be assessed to inform the development of new job roles and in turn workforce planning.

Figure 2: Model of workforce requirements based on defining skills



Adpated from Edmonstone J, 1999
Integrated Workforce Planning. The acid test for the education commissioning consortia? Journal of Management on Medicine. Vol. 13 No. 1, pp33-40

Skill Mix Review for Workforce Planning

The concept of skill mix may be interpreted in a number of ways: the mix of skills or competencies held by an individual; the ratio of senior (or highly skilled) to junior (or with lower skills) within a single discipline; or the mix of different disciplines within a given care setting or organisation (multidisciplinary) (Sibbald, Shen and McBride 2004). This section refers mainly to the multidisciplinary skill mix within a health care setting.

One of the main conclusions drawn from most nursing workforce planning exercises is that it is unlikely the requirements for nurses will be met given the sustained shortages being experienced, unless the front-end supply is dramatically increased (Preston 2002, Karmel and Li 2002). One response to this finding is to increase the supply of nurses by increasing the numbers of nurses entering undergraduate education (increase production). Another response to sustained shortage is to examine the way in which nurses work and determine the best way to utilise their skills. Optimum skill mix is context dependent, and so will vary from one health care service to another (Sibbald, Shen and McBride 2004) therefore each situation requires separate analysis.

Sibbald et al (2004) suggest that skill mix change may be brought about a number of ways through: enhancing the roles or scope of practice of a particular group; substituting by expanding the breadth of some roles across professional boundaries; delegating tasks up or down traditional uni-disciplinary ladders; and innovating by creating new jobs and new workers.

Once the nature of the problem or issue is analysed, and a skill-mix review is determined to be the best solution the review may begin. It examines all the skills of all workers in a defined health care setting and attempts to determine the best use (most effective and efficient) use of those skills. Ideally it should look beyond occupational or professional boundaries and shouldn't be a stand-alone exercise, but linked to other organisational developments

(Buchan, Ball, O'May, 2000). It aims to provide recommendations for the best mix of staff in terms of their individual or (more realistically) group skills. Importantly, a change in skill mix should have as a basic principal improvement or enhancement of care (patient outcomes). Other aims might include the improvement of processes, staffing levels and morale and increased efficiency (cost effectiveness). A skill mix review, should therefore begin with an analysis of a number of factors including workload, patient outcomes, processes and costs at the base-line (prior to changing skill mix). If a change in skill mix is implemented an evaluation of these factors after changes to skill mix should be carried out.

There are a number of drivers for skill mix reviews (Buchan, Ball, O'May, 2000, Hall and Goulay 2001) these include:

- skills shortages in particular professions or occupational groups;
- sustained shortages of particular professions or occupational groups;
- service change;
- perceived inefficiencies in staff utilisation (cost);
- changing case mix/patient dependencies;
- quality/outcome concerns;
- new approaches (models of care);
- changing roles;
- establishment of new services;
- technological innovation; and
- health sector reform/changes in regulation/legislation.

To ensure planning is not channelled into traditional assumptions about staff roles and skill mixes, the following questions should be asked:

- Do people in the workplace have skills that are not being used that should be used?
- Is there capacity to increase the skills and therefore increase the scope of practice?
- Do people in the workplace perform tasks that could be performed by others?
- Would changes in skill mix satisfy service demands better?
- Can changes be made quickly enough?
- Are proposed changes sustainable?

Factors promoting successful skill mix change within health settings include basing change on proven efficacy; appropriate staff education and training; removal of unhelpful demarcations (between both occupational groups and organisational boundaries); adequate pay and reward systems; and strategic and human resource management (Sibbald et al 2004).

A generic approach to skill mix design and therefore planning, is not likely due to the specific needs of health care settings, regions or patient groups.

Planning for Teams

One recommendation for planning future health care workforces is to base planning on teams. Team based planning recognises that health services are most often delivered by teams of people, although they may be from different occupational groups. Planning care around a team allows better integration of care and in effect should be more patient centered

than occupational centered. Team based planning is also a form of competency based planning, as it examines the set of competencies required and the right mix of skills or practitioners to deliver the care. Rather than defining these competencies for individual, they are defined in occupational categories. However, because the mix of skills has been reviewed, it allows for the examination of potential for changing roles and skill mix (SIWPG 2001). The most effective and efficient means of providing care in a given type of service is identified and the resulting "best mix" of staffing provides the basis for future planning.

The Scottish Integrated Workforce Planning Group (Scottish Executive 2002) suggests that in order to develop a plan that adequately meets workforce requirements a number of principles based on an integrated approach to planning should be applied:

- integrate workforce planning with health service planning, education planning, finance and organisational planning;
- plan for service delivery teams with the best skill mix;
- plan across multiple dimensions of time, organisation, geography and staff groups; and
- use a continuous, iterative approach including monitoring and evaluation.

Buchan (2002) highlights some of the constraints to re-organising and developing health care along an integrated, team based, patient centered lines. These include:

- regulation and legislation: may interfere with increasing scopes of practice for some practitioners;
- education and training providers (may have limited capacity to respond to workforce requirements with new curriculums and training content);
- pay and employment conditions: new roles, new workers will require adequate pay and career structures; and
- resistance to change from health care professional groups who have concerns about patient safety and erosion of professional power.

Making Change Achievable

As mentioned earlier, planning initiatives based on integrated, team based care cannot be achieved without a whole system commitment to workforce development. This includes education and training functions, workforce management functions and health service planning and financing functions.

There are a number of initiatives that may help to enable alterations in scope of practice and establishing a broader range of shared competencies in order to provide more integrated, patient-focused care. These include:

- educating for team work;
- sharing education (common competencies);
- putting in place processes for up-skilling;
- examine pay structures to better match roles and responsibilities; and
- examine the role of certification, licensure and scope of practice.

While regulation may be seen to be a barrier to implementing change in terms of skill mix and scope of practice, it is argued that removing professional boundaries (self regulated licensure) in favour of jurisdictional regulation and bureaucratically mandated scopes of

practice may be more of a "quick fix" response to supply and cost issues. Such moves may have implications in terms of quality and outcomes of patient care and cause more political turmoil than is necessary at present (Tomblin-Murphy & O'Brien-Pallas, 2002).

Increasing scopes of practice is achievable within the current regulatory structures, and has been evidenced with the recent introduction of a number of functional adjustments amongst health care providers, such as:

- the emergence of the "nurse practitioner" role;
- the expansion of the scope of practice of enrolled nurses in the acute care setting;
- the increasing use of assistants in nursing and personal care workers, providing lower level nursing type care; and
- the use of technicians in specialist areas such as intensive care (renal technicians) and operating theatres (anaesthetic technicians).

Educating the professional health workforce within in a framework of common foundation learning would go a long way toward developing a workforce capable of working better as a team.

The United Kingdom "Futures Project" (Cochran 2002) highlights some of the initiatives to make change happen. These include:

- redesign roles around patient needs rather than occupational functions;
- have three levels of health care workers: 1. specialist consultant: medical, nursing, allied health, 2. health care practitioner, 3. support worker;
- roles for health care practitioners based on specialisation in care areas rather than traditional professional field;
- aim to deliver care as much care "in situ" (where patient is located) as possible;
- professional and trained workers to work together as teams;
- common core education for professional health care practitioners;
- enable up-skilling of health care practitioner to specialist and support worker to health care practitioner;
- unify regulatory framework; and
- modernise pay systems to reflect new roles.

Putting it Together for Nursing Workforce Planning

Basing planning on changing needs is more complex than using traditional methods based on clearly defined occupational categories. The Scottish Integrated Workforce Group (Scottish Executive 2002) provides a step-by-step approach to determine workforce requirements in such a manner. This brings together the concepts highlighted in this chapter such as planning for teams, planning based on skill mix and integrated planning. This type of planning is most suited to defined care areas, as each type of service is different, requiring different skills and mixes. However, the framework may be applicable to most health services.

1. Set the context (scope of study)
2. Demand position (what services changes are planned? What changes are necessary though not yet planned? Are there factors which will impact on service?

3. Benefits: what are the benefits of service changes?
4. Workforce needs for service change:
   - Numbers: how do these need to change to support service change?
   - Team design: does the team need additional skills? Will people be assigned tasks for their skills? Can the mix of skills be improved? Is the service delivery to be redesigned and to what effect
   - Resultant needs: how many staff with what characteristics are needed?
5. Supply position: what factors are likely to have an impact on supply?
6. Capacity and capability to supply:
   - Numbers: How many of the type of staff required can be recruited? How many suitable staff can be retained? How many suitable staff can be offered redeployment?
   - Skills: Do existing staff need to have skills developed? What scope is there to train new staff?
   - Resultant supply: How many staff with required characteristics can be obtained, when? What are the knock on workforce planning effects?
7. Workforce planning gaps: What requirements are not met by supply plans? Is the gap and shortage or a delay?
8. Action to correct gaps: What action can be taken to fill gaps?

Because a “models of care” or skills mix approach should be based around the needs of a specific patient population or health care setting, it is not possible to prescribe a “universal” or ideal mix of health care workers across the board (Buchan and Dal Poz, 2002). A national approach to health workforce planning, therefore can be informed by changes at the organisational or system level of health care, but cannot apply a “one size fits all” approach to planning when addressing skill mix or models of care across all health workforces.

If change in the way health services are to be provided, or workforces are to be developed, then different or enhanced processes and approaches to health workforce planning may be required. The extent to which this can be done will depend on the ability to conceptualise and design workable methods and models, the availability of data, and the commitment of stakeholders to the process.

SUMMARY

For workforce planning to address current nursing shortages within a changing and challenged health care environment, examining work practices, changing roles and scopes of practice within a team-based approach and other factors may broaden policy options.

A "models of care" approach to workforce planning, may be part of the process of workforce redevelopment. It begins with identifying patient needs and determining the best skill mix of health care workers to provide the care (assessing competencies, reviewing skill mix and planning for teams).

Optimum skill mix is context dependent, and so will vary from one health care service to another. A "models of care" or skill mix approach to planning is thought to work best in a relatively "closed" care situation or for a defined patient population. There is no universally applicable skill mix across the health care sector.

Altering skill mix should not be based on cost-effectiveness alone, but on improving patient outcomes, either through better staffing or better use of skill mixes.

Changing the skill mix in health settings or services may provide improved care, processes and efficiency. However some studies have shown that there may be unintended consequences in changing the skill mix or models of care to larger multi-disciplinary teams.

Skill mix change may be brought about through: enhancing the roles or scope of practice of a particular group; substituting by expanding the breadth of some roles across professional boundaries; delegating tasks up or down traditional uni-disciplinary ladders; and innovating by creating new jobs and new workers.

Factors promoting successful skill mix change within health settings include basing change on proven efficacy; appropriate staff education and training; removal of unhelpful demarcations (between both occupational groups and organisational boundaries); adequate pay and reward systems; and strategic and human resource management.

2.5 NURSING WORKFORCE DATA

Workforce planning is dependent on reliable, timely, accessible data. Each step of the workforce planning process is dependent upon the type of information or data available, as well as the time and budget available for sourcing and analysing the data.

This chapter highlights the major data sources for nursing workforce planning in Australia and suggests ways in which these sources may be improved or built upon.

When reviewing an individual nursing workforce at a national level, the first task is to obtain data from established national data-bases, such as those held by AIHW (labour force and health service utilisation), the Department of Health and Ageing, professional nursing organisations and colleges (membership and trainee data) and ABS. Once essential information gaps are identified, data collection activities are undertaken. In most cases, data will need to be gathered from state and territory health departments, private health service organisations and any other organisations that collect data related to the specific nursing workforce in question. When large gaps in required data still exist, and time and funding are available, direct surveying of the workforce or the workplaces in which they work may be the only method to gather the information.

Consultation with experts and other stakeholders is an essential part of the data/information gathering process. There are currently many gaps in the information required to describe the nursing workforce in Australia, particularly in terms of its adequacy, inflows and the outflows. Anecdotal evidence is essential to “fill in” these information gaps and allow the development of assumptions and scenarios in the workforce planning process.

The following table juxtaposes workforce planning functions with the usual sources of data used to facilitate the process. A detailed description of these data sources follows, including a summary of their limitations. Finally, at the end of the chapter a list of suggested improvements are provided to assist with nursing workforce planning.

Table 9: Workforce planning function, by usual data source

Workforce planning function	Usual data source
▪ Describe the current workforce	- AIHW nurse labour force surveys - Professional nursing organisations and colleges - Nurse Registration Boards - Payroll data systems (state-based) - ABS census - Private sector organisations
▪ Describe the current education program	- Universities - DEST - ACDNM - NCVER - Professional nursing organisations and colleges - Vocational education institutions - Hospitals
▪ Estimate workforce inputs, outputs, participation and dynamics (including trends)	- AIHW nurse labour force surveys - Universities - ACDNM - NCVER - DEST - Vocational education institutions - Professional nursing organisations and colleges - profession surveys - workplace surveys - payroll data - ABS - Consensus of stakeholders
▪ Assess the adequacy of the supply and distribution of the current workforce drawing on a range of adequacy indicators and views of the profession and other key stakeholders	- State-wide data collections such as vacancies, overtime, use of casual/agency staff - AIHW nurse labour force surveys for benchmarking and comparisons - Reports from health services - Health service data (including measures of workload, patient acuity, bed numbers etc)
▪ Assess the likely impact of new technologies on nurse productivity and future demand for services	- Profession survey - State/Territory health authorities

	- Expert opinion
▪ Project workforce supply and requirements for the next ten years using a range of needs/demand based scenarios and supply based scenarios (sensitivity analyses)	- AIHW population morbidity data - Epidemiological data - Health service planning information and data - ABS population estimates - AIHW hospital utilisation trends - Other sources of health service utilisation trends - Health service funding data - General economic indicator data - Stakeholder information
▪ Balance workforce requirements and supply	- Recommend change in supply factors - Recommend change in demand factors
▪ Monitor and report to AHMAC whether supply and requirements are changing as expected, and also that recommendations are being implemented as agreed	- AIHW labour force survey - Monitor indicators - State/Territory health authorities - Stakeholder consultation

Australian Institute Of Health And Welfare

1. Nurse Labour Force Survey

In 1990, the AHMAC commissioned AIHW to develop national health labour force statistics for the major registrable health professions including nursing. Currently, the nursing labour force survey is conducted by AIHW annually. Presently, it is the only source of detailed national nurse labour force data available.

The surveys are conducted via the State and Territory nurse registration authorities utilising the nurse registration renewal process. Each authority then forwards a computer file of the survey data to the AIHW for aggregation into a national data set, and the registration boards supply registration numbers by age and sex for weighting purposes.

The surveys and their reporting have been the subject of concerns in terms of timeliness, consistency, and response rates. However, the AIHW with AHWAC and stakeholders such as nurses' registration authorities, health departments and the Australian Nursing Federationhave been working toward addressing such concerns since November 2001. As a result of this collaboration, a nationally consistent questionnaire was administered in 2003. Actions to improve the timeliness of reporting are currently being undertaken, including streamlining data processing through the use of a central agency.

2. Nursing students at Australian universities and other Educational Institutions

Each year, the AIHW purchases from DEST a de-identified data set of all students commencing, undertaking and completing health courses at Australian Universities. Time series data back to 1989 are available.

3. Australian hospital statistics collection

Since 1985-86, through State health authorities, the AIHW has been collecting both establishment and morbidity data for all public hospitals in Australia.

The annual Australian public hospitals data collection by AIHW includes the following data relevant to workforce planning: FTE staffing numbers in nursing, demographic and administrative data, principal diagnoses and external causes for admitted patients, patient procedures, average length of patient stay, patient days, patient separations and separation rates per 100,000 population, available beds (including per 100,000 population), by state/territory or region.

The National Hospital Morbidity Database has been used as a key source of data on service trends. The Database is a compilation of summary records for all admitted patients in public and private hospitals in Australia from 1993-94 to 2000-01. The data include demographic, length of stay, diagnoses of the patient and the procedures they underwent in hospital.

The latest data published in Australian Hospital Statistics, AIHW Cat. HSE 20, 2002 can be viewed on the AIHW website at www.aihw.gov.au/publications/health.

4. Other AIHW data collections

AIHW has national collections of cancer, cardiovascular disease, mortality, mental health, aged care and disability that provide service utilisation and population trends in a number of fields of medical service provision. These can assist in projecting growth in demand for nursing services.

Australian Bureau of Statistics

1. ABS Census of population and housing

The ABS conducts a national population census every five years. Information collected by the census includes: age and sex, geographical location, income, work status, and marital status etc. Most employed nurses are classified using the four digit codes of the Australian Standard Classification of Occupations (and the six digit codes for Directors of Nursing and unregulated health workers.

Table 10: Classification system used by the Australian Bureau of Statistics for collecting data on nurses

Australian Standard Classification of Occupations (ASCO) code	Nursing practitioner classification
1292 - 11	Director of Nursing
2320	Nursing Professionals (nfd: not further defined):Treat and care for the physically or mentally ill, the elderly, and mothers and

Australian Standard Classification of Occupations (ASCO) code	Nursing practitioner classification
	their babies in hospitals, nursing homes, medical centres and the community. They provide health counselling for individuals and families, manage human and material resources for a nursing group or unit and are responsible for the professional development of nurses and for researching issues concerned with nursing practice.
2321	Nurse Manager: Manages a hospital nursing care unit or other sub-unit of a hospital, nursing home or health care facility, or supervises nursing staff for a particular unit or shift.
2322	Nurse Educator: Assesses, plans and implements and evaluates nursing education and professional development programs.
2322	Nurse Researcher: Conducts research into nursing issues.
2323	Registered Nurse: Provides nursing care for patients in hospitals, nursing homes, extended care facilities or other health care facilities and ain the community.
2324	Registered Midwife: Provides care and advice during pregnancy, labour and birth and provides postnatal care for women and babies.
2325	Registered Mental Health Nurse: Treats and cares for people with mental illness, disorder or dysfunction, or for those experiencing emotional difficulties, distress or crisis, in hospitals, nursing homes and the community.
2326	Registered Developmental Disability Nurse: Provides nursing care to people with intellectual disabilities.
3411	Enrolled Nurse. Assists registered nurses, doctors and other health professionals in the provision of patient care in hospitals, nursing homes and other health care facilities.
Unregulated nursing workers	
6314-11	Personal Care Assistant: Assists with the care of patients in a range of health care facilities, or in the client's home.
6314-13	Nursing Assistant: Assists registered nurses in hospitals, nursing homes and other health care facilities, in the provision of patient care.

Strengths and limitations of Census Data

Strengths of the census data for workforce planning purposes include:

- measurement of long-term (20 to 30 year) trends in Australian nursing workforce numbers and characteristics.;
- marital status and age of children for all nurses. This data enables comparisons to be made with other professional workforces;

- country of birth and language spoken at home data for all nurses; and small-area data on composition of the nursing workforce; and
- there is very good data for small geographic areas, which is not currently possible to obtain from the AIHW Nurse Labour Force Survey.

Limitations applying to the census data include:
- there is no definition of nurses by area of specialty practice (apart from the broad categories in the above table);
- similarly, there is a finer level of detail in the AIHW Nurse Labour Force survey than in the Census for other questions, such as area of activity, hours worked, level of nursing and establishment (work setting);
- the Census does not ask a question on nursing role; nor on year of initial registration;
- while qualification is available from the Census, it is 'highest qualification'. Nurses may have a highest qualification in a field other than nursing (eg, management). The Census does not ask about year or place of initial nursing qualification, and there is no question on nursing courses completed;
- in the Census, those who answer the occupation question that they are nurses are counted as such. This does not correspond to the nurse labour force survey, where it is certain that all respondents are registered or enrolled nurses;
- no adjustment has been made in the published numbers for non-response to the occupation question, although it is known to result in an undercount.. AIHW has calculated that this is around 3-4 % for nurses, based on other ABS data, and that medical practitioner clinicians are under-reported by about the same amount; and
- the population census is undertaken only every five years, and the data are already considered out-of-date by the time they are published, because processing the large volume of responses is slow.

3. Monthly labour force survey, with quarterly occupation data

The ABS reports labour force data for all occupations every three months. However, the sample size means that there is a high standard error for estimates of the numbers of practising nurses. Hence there is a great deal of volatility in the quarterly figures; this volatility means that the data are not particularly useful for workforce planning purposes. However, the ABS Labour Force Surveys may provide some useful information on trends.

Migration

1. Migration of health professionals to and from Australia

DIMIA is the source of information on health professionals permanently migrating to or from Australia, and migrating temporarily for the purpose of employment or education.

The data for each migrant are collected on passenger cards and include:
- age, sex, country of previous residence, purpose of migration, duration of stay (incoming); and
- age, sex, country of intended residence, purpose of migration, duration of stay (outgoing), where purpose includes permanent migration, employment and education.

Summary migration statistics are published in the AIHW's nurse labour force publications.

A limiting factor of this data set is its inability to define the specialty practice of the nurses who are migrating into Australia or out of Australia.

Nursing Education Data

1. Department of Education, Science Education and Training (DEST)

De-identified data for both undergraduate and postgraduate nursing students in the university sector is available directly from DEST. DEST data can provide information on new entrants to nursing courses, course completions, total numbers enrolled in nursing courses. It can also provide student data such as: course and university, level of course, age, sex, postcode of home location, Aboriginality, country of birth, citizenship and Australian residency status, and full-time or part-time attendance.

This data source is adequate for identifying undergraduate nursing students. However, due to many postgraduate courses with generic nomenclature, it is difficult to accurately estimate the numbers of students in specific specialist postgraduate courses. This type of identification is essential for specialist nursing workforce planning. In response to the inadequacy of data available from DEST, direct surveys of universities offering nursing courses were conducted to enable an accurate description of numbers of both undergraduate nursing students and postgraduate nursing students categorised according to their specialist areas of study, which could be used for workforce planning purposes (Ogle, Bethune, Nugent, Walker 2002).

Nursing student data is available to the public on the DEST website: www.dest.gov.au

2. National Centre for Vocational Education and Research (NCVER)

NCVER collects data related to activity in the public vocational education and training system in Australia. The data for specific health occupations are derived using the Australian Standard Classification of Occupations (ASCO) as used by ABS. The ASCO classifications is assigned to identify the type of occupation a course relates to. The NCVER website is: www.ncver.edu.au

3. Universities

Data may be required directly from universities via nursing schools or course co-ordinators if DEST data is not adequate.

4. College of Nursing NSW

Apart from universities, a major provider of postgraduate nursing education in Australia is the College of Nursing (NSW). Data is available directly from the College on entrants and completions and attrition rates for all available courses.

5. Australian Vice Chancellors Committee (AVCC)

The AVCC provides data on applicants to nursing courses at universities, number places offered, number of enrolments and numbers of eligible applicants not offered places at Australian universities. This type of data is available from the AVCC website: www.avcc.edu.au

6. Australian Council of Deans of Nursing and Midwifery (ACDNM)

The ACDNM may provide information on nursing and midwifery student numbers, entrants and completions. The website for ACDNM is www.cdnm.edu.au

7. The Graduate Careers Council of Australia (GCCA)

The GCCA is funded through the AVCC. It conducts graduate destination surveys that may be useful to determine where graduates of nursing courses work. The Graduate Research Centre conducts the surveys and provides summary and more detailed findings available to the public. The website for GCCA is: www.gradlink.edu.au

8. Professional nursing organisations and colleges

Data from the professional nursing organisations and colleges may assist in determining numbers of nurses in particular specialties as well as workforce participation information. However, not all specialist nurses are members of the Colleges representing their specialty. The collection of data via member survey or workplace survey is done on an ad hoc basis (due to financial and other resource constraints) therefore is not a readily available source of information. This is in contrast to many specialty medical colleges, which tend to be better resourced and therefore run regular surveys and are able to provide useful workforce planning information.

9. Other nursing education providers

Some hospitals offer post-graduate certificate courses in nursing specialty areas (eg Critical Care). There is no centralised collection of data regarding such courses or the numbers of entrants or completions. Information must be collected directly from the course co-ordinators at the individual health service.

Information From Research Centres

Information on specific nursing workforce specialties may be available from research centres that collect health workforce data. An example of this is the Australian and New Zealand Intensive Care Society Research Centre for Critical Care Resources, which collects data on critical care infrastructure as well as staffing (medical and nursing). This type of data is of great use to workforce planners as it provides not only numbers, hours worked and other valuable information, but a source of information on requirements for the workforce.

Information useful to other nursing specialties may be available from other institutions that examine particular types of care (eg perinatal research institutes may hold information useful to midwifery workforce planning).

State and Territory Information

1. Nurse Registration Boards/Authorities

Nurses' Registration Boards are a potential source of useful workforce data in terms of general supply information for both registered nurses and enrolled nurses. Information such as new registrants, overseas nurses and re-registrants is generally available, as is information regarding total number of registered or enrolled nurses.

However, nurse registration data does not capture information about the specialist nurse workforces, unless they are required to have a separate authorisation to practise (such as midwifery or mental health nursing). The ease or ability of each jurisdiction to provide information depends upon the systems in place at the nurses' registration boards. Each registration board is able to provide numbers of initial nurse registrations (new entrants to nursing in the jurisdiction) and most are able to provide data on registered nurses from overseas. However, some jurisdictions are not able to separate out new midwifery/mental health registrations from new registered nurse registrations or new registered nurse registrations from overseas nurse registrations. Some data such as re-registrations is not a reliable indicator of re-entry to practice, as systems include late registration fee-paying registrants in these numbers.

Although there is currently little national consistency with the collection of registration data across the jurisdictions, most are improving their systems to enable better access to information.

2. State/Territory payroll and other data bases

The only consistent approach to nursing workforce data used by the States and Territories is via the nurse labour-force surveys. Some jurisdictions administer these surveys annually and analyse the data themselves. Apart from these, the other possible data collection is through the nurses' registration boards (which is already used in conjunction with the nursing survey data), health department payroll, staffing systems or staff reporting systems. Some States and Territories have centralised systems that capture nursing data, other States have decentralised systems and there is no ability to capture this kind of data on a state-wide basis. Across the nation there is no consistent approach to payroll or staffing systems. This makes aggregation of the data for national workforce planning virtually impossible.

3. Health service planning and funding data

Health departments may have information available regarding health service planning and funding that will impact on requirements for nursing services. Health service funding information may also be available to help determine growth in requirements for nursing services.

Private Hospital Data

Accessing nursing workforce data from the private sector depends on the cooperation of the specific private hospital organisations. There is no publicly available data on nursing workforces within the private hospital sector. However, the AIHW nurse labour force surveys provide information on nurses who indicate they work in the private sector, as does data from the ABS.

Improving Data Collections for Nursing Workforce Planning

As a result of AHWAC nursing workforce planning report (AHWAC 2002.1) a number of suggestions were made in relation to nursing workforce planning data sets.

National data sets

- AIHW surveys: the implementation of a consistent, timely national approach for the collection of nurse labour force surveys via nurse registration boards annually. The process for this began in 2002, with the development of a nationally consistent questionnaire, and recommendations for improving the timeliness of the reports with the implementation of more efficient means of survey data input. The timing of the surveys remains an issue, with some jurisdictions moving toward 3 yearly registration renewals rather than biennially or annually.

State and Territory health departments

- Examination by State and Territory health departments of the options for adjusting payroll reporting systems to allow for the capture and reporting of workforce characteristics, participation, entrants and exits.
- The development of indicators to monitor the adequacy of nursing workforces. These should include: cancellation of elective surgery due to insufficient nurse staffing; closure of beds due to insufficient nurse staffing; un-rostered over-time shifts (in excess of contracted hours) due to inability to staff beds; vacancies and use of agency and other casual nurses. Determining patient outcomes in relation to nurse staffing and skill mix should also be monitored.

Nursing registration boards

- A consistent approach for the collection and reporting of data by nurse registration authorities for the capturing new initial registrations (separating midwifery endorsements/authorisations, mental health nursing authorisations and overseas nurse registrations), and capturing re-entrants to the nursing workforce (separating re-entrants from late fee paying renewals)

Education sector:

- Consistent nomenclature of nursing courses to enable clear definition of postgraduate courses in terms of specialty.
- Improve data collection systems from universities to DEST to enable efficient monitoring of both undergraduate commencements and completions and postgraduate commencements and completions.
- Processes for the monitoring of attrition from all nursing courses.
- Processes to monitor the gap between undergraduate completions and initial nurse registrations.
- Processes to monitor uptake of graduate nurses into the nursing workforce.

Data to monitor and inform on quality:

- Research to measure the relationship between nurse staffing levels (and skill mix) and patient outcomes.
- Explore possibilities for consumer input into quality reports and dissemination of information.

PART 3: GLOSSARY, APPENDICES AND REFERENCES

GLOSSARY

This section is provided to clarify some of the commonly used terms throughout the document. Please list other terms that require definition. Except where indicated, the following definitions are derived from Stevens & Rafferty, 1994)

Health Care:
Health care refers to the goods and services used as inputs to produce health (may include one's own time and knowledge to maintain and promote health) (Follard, Goodman & Stano, 1993). Health care services are considered in their broadest context and as such include prevention, promotion, diagnosis, testing, treatment, rehabilitation, palliation, continuing care and supportive care.

Health Care Workforce
The term health workforce is used in this paper refers to the paid workforce that provides health care services to the Australian people; ranging from support workers with no formal qualifications to qualified specialists. It is acknowledged that the workforce is supported by volunteers and carers.

Health Workforce Planning
Health workforce planning is the process of estimating the required health workforce to meet future health care service requirements.

Need for health care
The ability to benefit from health care.

Individual Health Care Need:
The best that can be done for an individual in a particular health care setting or service, or what health care services an individual can benefit from.

Population Health Care Need:
The population's ability to benefit from health care. Determining population health care need includes both assessing incidence (of differing degrees of severity of a disease) and prevalence (of its effects and complications) and assessing the effectiveness of health care services (the potential of preventative or treatment services to remedy health problems).

Felt Need:
What health care services people want.

Normative Need:
Health care need defined by the expert or professional in any given situation.

Demand:
How much health care services people will wish to access, given a number of factors including need, availability of services, price of services, cost of services (in terms of monetary, time and other costs) etc. Demand will also be dictated by what society is willing to contribute towards health care services (government funding).

Health Workforce Requirements:
The number and type of health care workers required to meet the demand for health care services (or need, or provision, depending on method of assessing requirements).

Supply (workforce):
The numbers, characteristics and working patterns of health care workers available to provide the defined health care service. Supply may be effected by pressures and constraints such as changes in production (including the training of new workers), loss (retirement and other reasons for exiting the workforce) and use. Supply is also effected by political and financial, economic or lifestyle circumstances.

Outcome:
The health care benefit (or loss) achieved through the use of a health care service.

Incidence:
The number of instances of a disease or condition commencing over a period of time, often expressed as a proportion of the population.

Prevalence:
The number of instances of a disease or condition existing at one point in time, often expressed as a proportion of the population.

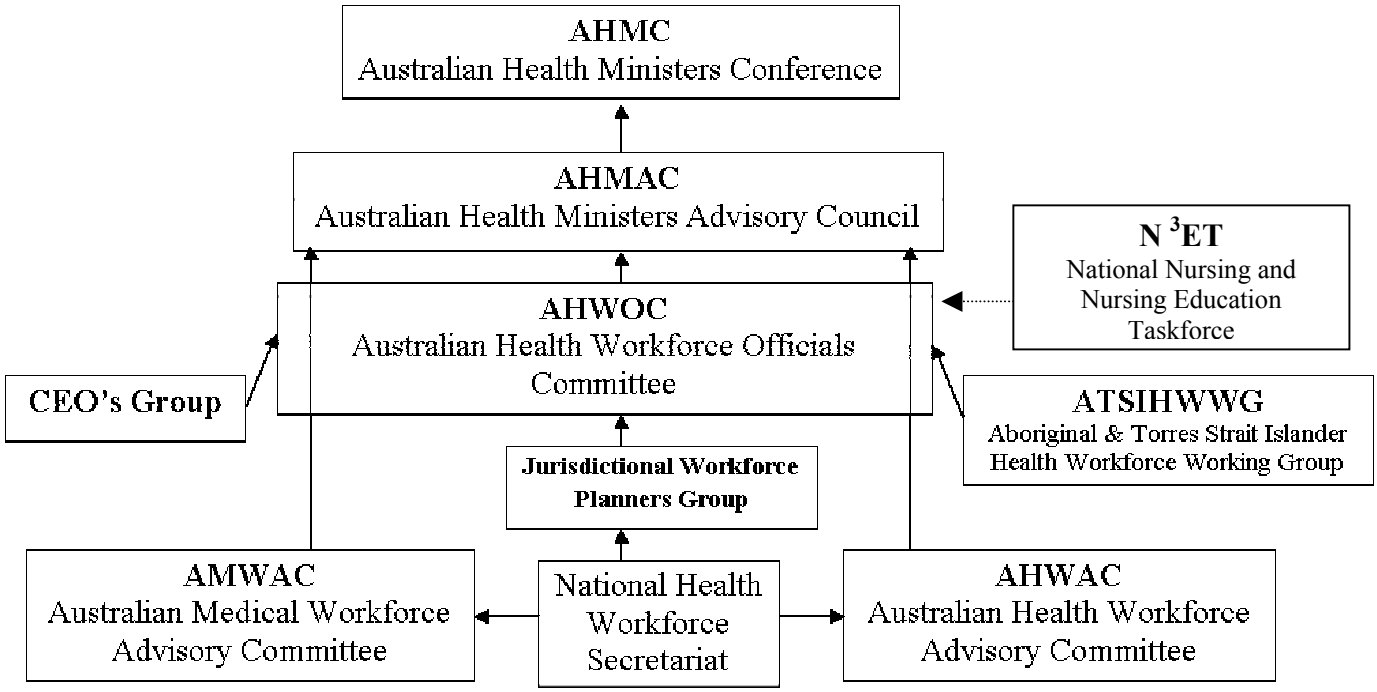
Integrated workforce planning
Integrating workforce planning functions with workforce production (education and training), workforce management and organisation, and health service planning functions

Integrated care planning
Planning health care (and therefore health workforces) across occupational and health service boundaries.

APPENDIX A: THE ORGANISATIONAL STRUCTURE FOR AUSTRALIAN NATIONAL HEALTH WORKFORCE PLANNING

The following information provides an overview of the current roles and functions of national health workforce organisations and structures as detailed by the Australian Health Workforce Officials Committee (2003): Stocktake of Current and Anticipated Jurisdictional Investment in The Health Workforce, December 2003.

Figure 2: Australian national health workforce organisations and reporting arrangements



Australian Health Ministers Conference (AHMC)

The objectives of the Australian Health Ministers Conference are to:

- provide a mechanism for regular consultation between Australian Government, State, Territory and New Zealand Health Ministers on matters of mutual interest concerning health policy, services and programs
- promote a consistent and coordinated national approach to health policy development and implementation
- consider matters submitted to the Conference by a Member Minister and to consider reports by the Australian Health Ministers Advisory Council.

Members: the Australian Government Ministers for Health and Ageing and Veterans Affairs, state and territory Health Ministers and the New Zealand Health Minister

Australian Health Ministers Advisory Council (AHMAC)

The Australian Health Ministers Advisory Council (AHMAC) was established to provide effective and efficient support to the Australian Health Ministers Conference by:

- advising on strategic issues relating to the coordination of health services across the nation; and
- operating as a national forum for planning, information sharing and innovation.

Members:

- Australian Government, State and Territory Health CEOs
- the CEO of the Department of Veterans Affairs
- the Director-General of the New Zealand Ministry of Health.

Observers:

- the Director of the Australian Institute of Health and Welfare
- the Managing Director of the Australian Government Health Insurance Commission
- Chief Executive of the National Health and Medical Research Council.

CEOs and Directors Group

The CEOs and Directors Group was established to give government employers a forum for a strategic focus on issues of national importance relating to the Vocational Education and Training (VET) sector workforce. The group represents government employers in the health and community services sectors, via its representatives on the community services and health training Australia board. The national liaison officer, Industry Training and Advisory Board Health and Community Services Ministerial Council Secretariat, who also supports the CEOs and directors group, is located in the South Australian Department of Human Services.

Australian Health Workforce Officials Committee (AHWOC)

AHWOC was established as a subcommittee of the Australian Health Ministers Advisory Council (AHMAC) in 2001 to provide a forum for reaching agreement on key health workforce issues that require collaborative action, and providing health workforce policy advice to assist AHMAC. AHWOC comprises senior health officials from the Australian Government and each state and territory, and the Australian Government Department of Education, Science and Training.

AHWOC plays a central role in coordinating the implementation of the recommendations arising from national level workforce planning, including the recommendations from the workforce reports completed by the Australian Health Workforce Advisory Committee and the Australian Medical Workforce Advisory Committee. AHWOC is supported by a small secretariat that works closely with the National Health Workforce Secretariat.

Jurisdictional Workforce Planners Group (JWPG)

The JWPG is a subcommittee of AHWOC, and provides a forum for state and territory workforce planners to discuss workforce issues. The group promotes information exchange among jurisdictions about workforce planning methodologies, processes, strategies, projects and data. The group has played a key role in the development of this report.

National Health Workforce Secretariat

The National Health Workforce Secretariat provides secretariat, administrative and project staff for AMWAC and AHWAC, and the secretariat for the Workforce Planners Group. The Secretariat has developed significant expertise in workforce planning projects.

Australian Medical Workforce Advisory Committee (AMWAC)

AHMAC established AMWAC in 1995 to help develop a strategic focus on medical workforce planning in Australia, and advise on national medical workforce matters, including workforce supply, distribution and future requirements. AMWAC has undertaken a large number of medical workforce planning reports, which can be accessed at the Health Workforce Australia website: www.healthworkforce.health.nsw.gov.au

Australian Health Workforce Advisory Committee (AHWAC)

AHWAC was formed in December 2000 to help develop a strategic focus on non-medical health workforce planning in Australia, including workforce issues, analysis of information and the identification of data needs. AHWAC's initial priorities involved nursing, but its membership has recently been expanded to include allied health representation, to enable consideration of allied health workforce issues. Further information about AHWAC is available through the Health Workforce Australia website: www.healthworkforce.health.nsw.gov.au

Aboriginal and Torres Strait Islander Health Workforce Working Group (ATSIHWWG)

ATSIHWWG was established to oversee the implementation of the Aboriginal and Torres Strait Islander Health Workforce National Strategic Framework, which has 42 strategies to improve the workforce in Aboriginal and Torres Strait Islander health. The group has representation from the Australian Government, state and territory governments, the Australian Government Department of Education, Science and Training, the National Aboriginal Community Controlled Health Organisation, the Association of Indigenous Doctors of Australia and the Congress of Aboriginal and Torres Strait Islander Nurses.

National Nursing and Nursing Education Taskforce (N^3ET)

This taskforce draws together some of Australia's leading nursing and nursing education specialists to proceed with the implementation of key recommendations arising from the 2002 National Review of Nursing Education. The Taskforce website is www.nnnet.gov.au

Other national organisations undertaking health workforce projects

In addition to AHWOC, AMWAC, AHWAC and ATSIHWWG, there are a number of other national organisations undertaking health workforce projects. National bodies including the following are undertaking health workforce related projects:

- National Mental Health Working Group
- National Public Health Partnership
- Care of Older Australians Working Group
- Rural Health Policy Subcommittee

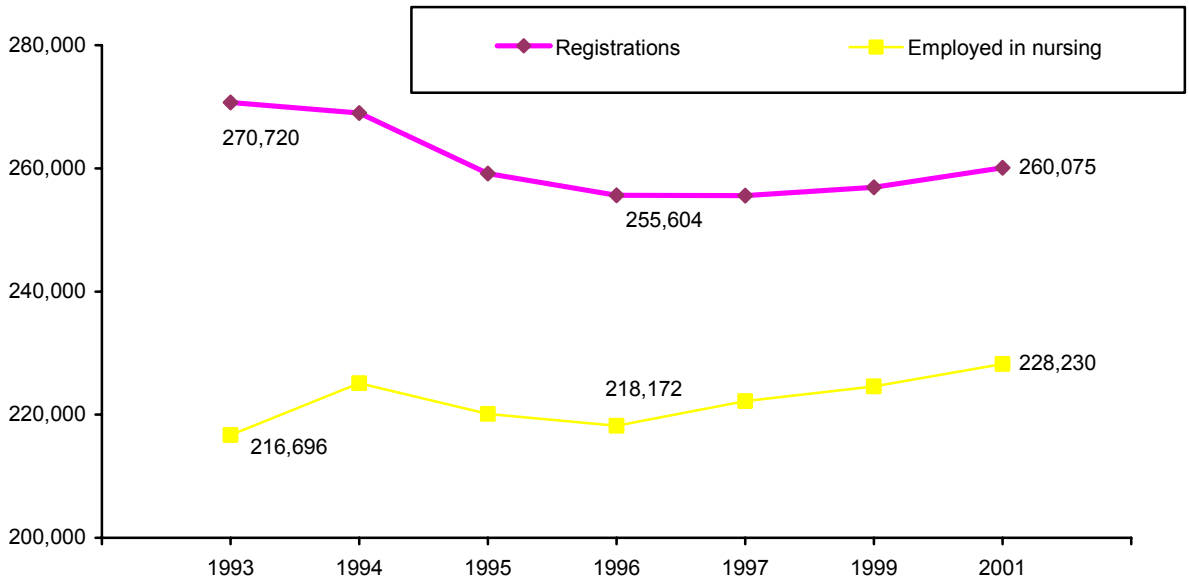
- Primary Health and Community Care Working Group
- Radiation Oncology Jurisdictional Implementation Group
- Australian Council for Safety and Quality In Health Care
- National Advisory Council on Oral Health.

These bodies are all AHMAC subcommittees, except the Australian Council for Safety and Quality in Health Care, which was established by the Australian Health Ministers Conference.

APPENDIX B: AN OVERVIEW OF THE AUSTRALIAN NURSING WORKFORCE

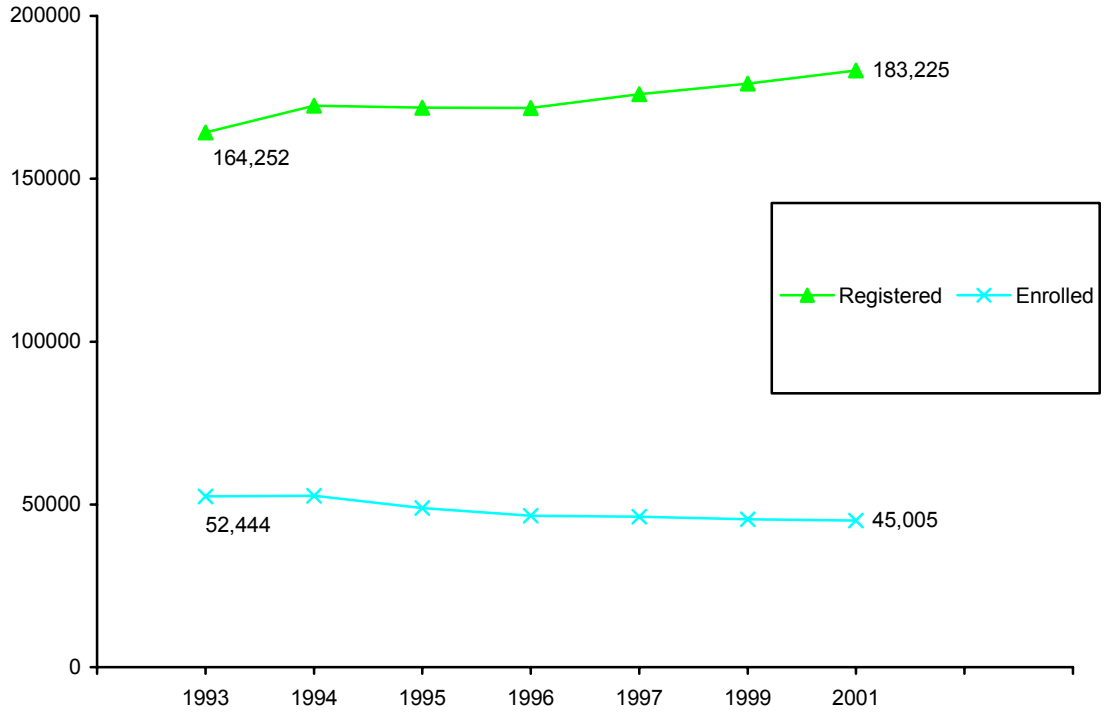
The following figures provide an overview of recent trends in the nursing workforce.

Figure B1: Nurses, registrations and employed in nursing, Australia, 1993 to 2001



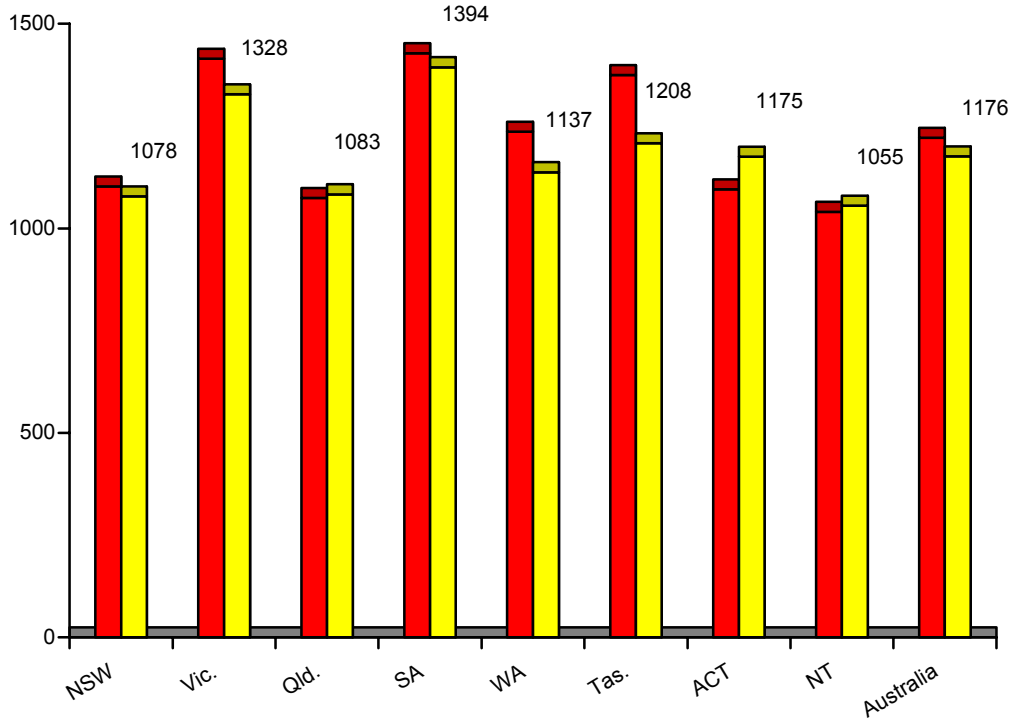
Source: AIHW, Nurising Labour Force Survey

Figure B2: Employed nursing workforce, registered and enrolled, 1993 to 2001



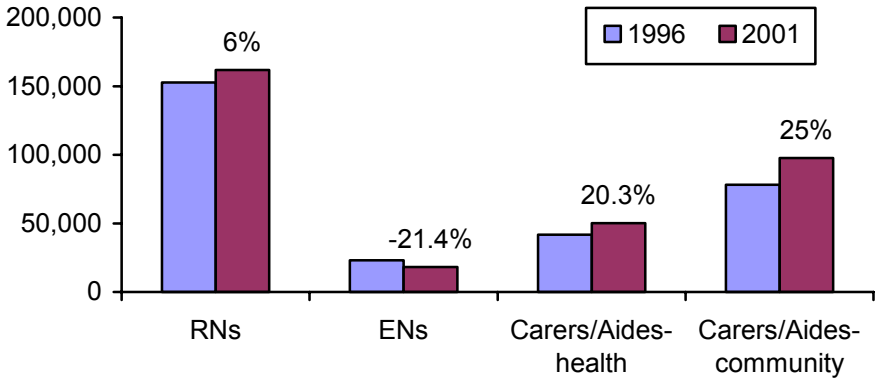
Source: AIHW Nursing Labour Force Survey

Figure B3: Employed nurses, registered and enrolled, per 100,000 population, State/Territory, 1995 and 2001



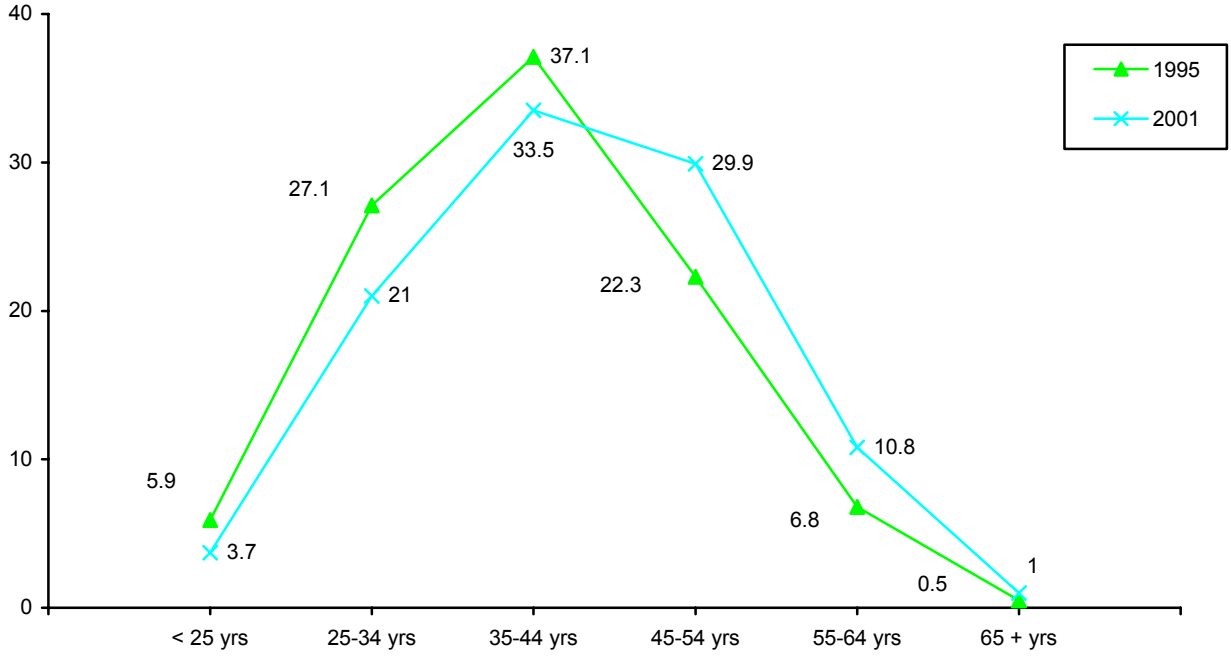
Source: AIHW and ABS

Figure B4: Nursing occupational growth: registered nurses, enrolled nurses, carers and aides, 1996 to 2001



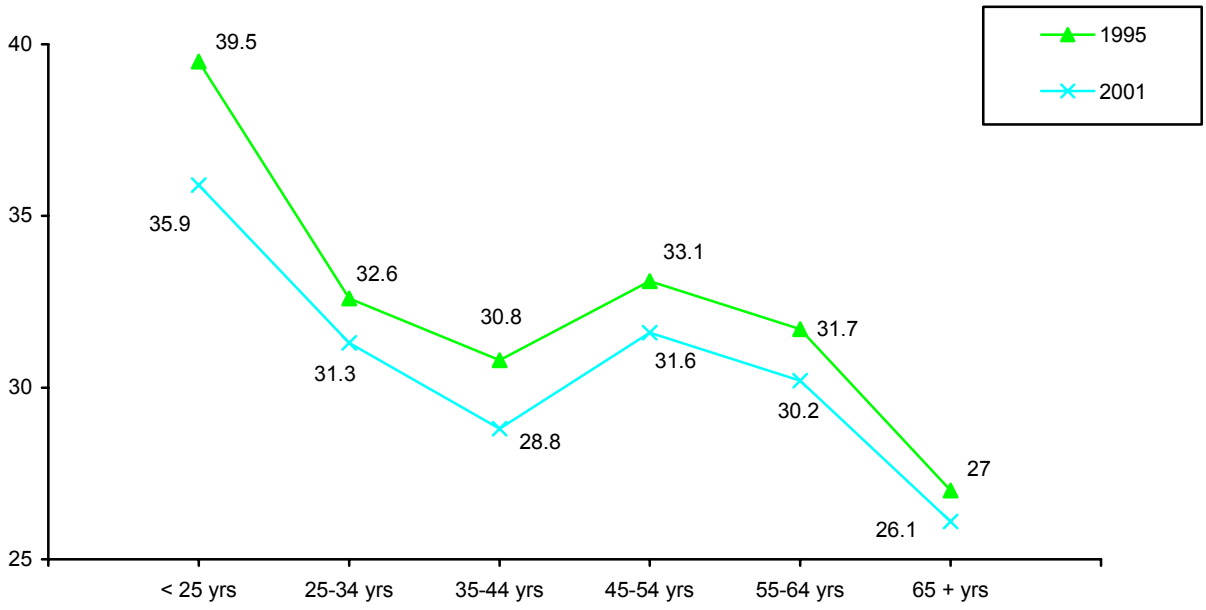
Source: AIHW 2003

Figure B5: Nursing workforce, age distribution (%), 1995 to 2001



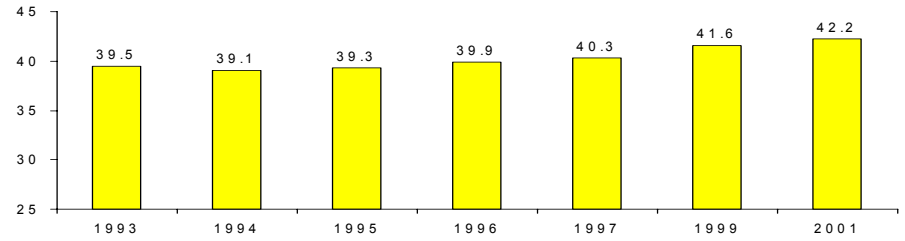
Source: AIHW Nursing Labour Force Survey

Figure B6: Nursing workforce, average hours worked by age group, 1995 to 2001



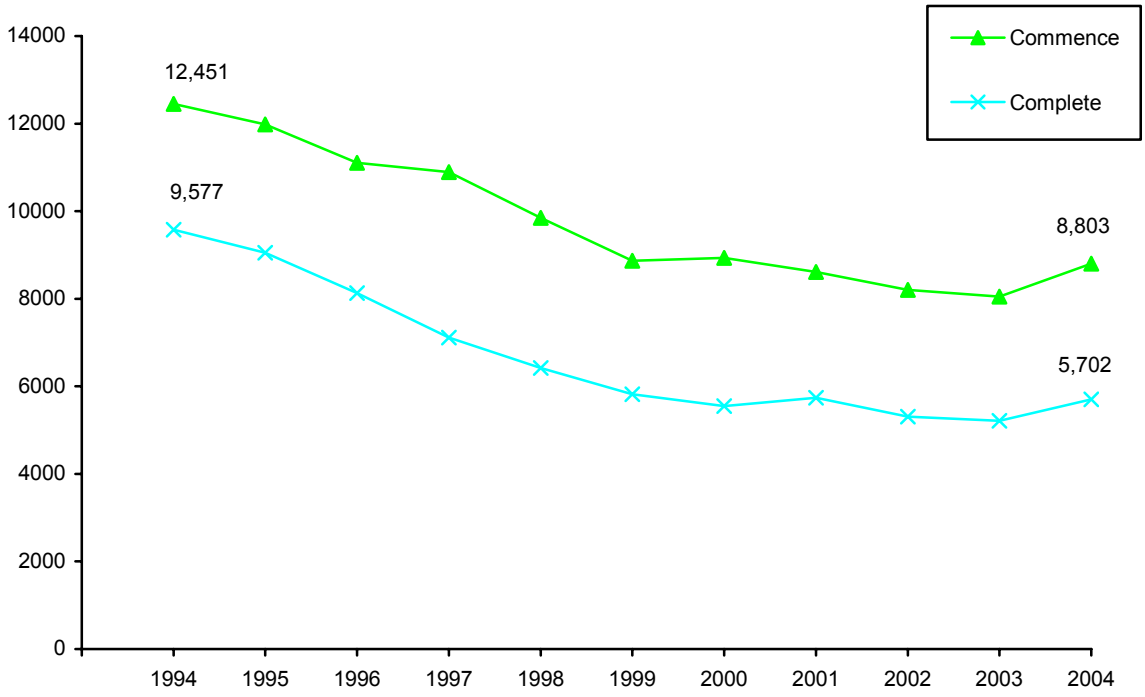
Source: AIHW Nursing Labour Force Survey

Table B7: Nursing workforce, average age, 1993 to 2001



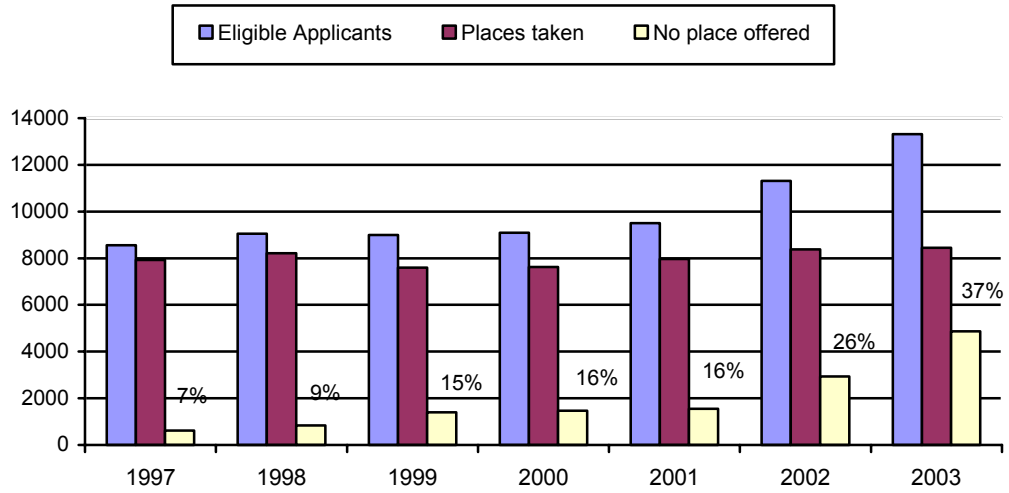
Source: AIHW 2003

Figure B8: Nursing, undergraduate commencements and completions, Australian citizens, 1994 to 2004



Source: AIHW

Figure B9: Nursing undergraduates: eligible applicants, offers and applicants receiving no offer, Australia, 1997-2003



Source: AVCC 2003

Table B1: Nursing workforce, key characteristics, 1995 and 2001

Characteristic	1995	2001
Number of nurses (registered and enrolled)	220,100	228,230
% female	92.7	91.6
Average hours worked	32.4	30.5
Average female hours	32.3	30.0
Average male hours	39.5	36.1
% working less than 35 hours per week	48.8	53.7
Average age (years)	39.3	42.2
% aged under 35 years	33.3	24.7
% aged over 45 years	29.5	41.7
FTE participation (35 hours/week) rate per 100,000 population	1,127	1,024

Source: AIHW

Table B2: Health occupations, employed practitioners, 1996 and 2001

Health occupation	1996	2001	Change	% change
Registered nurse/midwives	164,722	174,255	9,533	5.8
Enrolled nurses	24,567	19.492	- 5,075	- 20.7
Nursing assistants/personal carers	42,646	50,658	8,012	18.8
Medical professionals	46,043	51,859	5,816	12.6
Dentists	7,604	8,206	602	7.9
Dental technicians/assistants	15,714	17,678	1,964	12.5
Pharmacists	12,311	13,911	1,600	13.0
Allied and complementary health practitioners	37,662	47,987	10,325	27.4
Medical imaging workers	6,513	8,141	1,628	25.0
Medical scientists	9,516	11,111	1,595	16.8
Ambulance officers/paramedics	5,961	6,708	747	12.5
Other	31,323	40,786	9,463	30.2
Total	**404,582**	**450,792**	**46,210**	**11.4**

Source: ABS

APPENDIX C: STAKEHOLDER CONSULTATION FOR NURSING WORKFORCE PLANNING

Table C1: Nursing workforce planning participants - government

Organisation	Principal methods of involvement
Australian Department of Health and Ageing	▪ AHWAC membership ▪ Working Party membership ▪ Consultation and liaison
Australian Department of Education, Science and Training	▪ AHWAC membership ▪ Working Party membership ▪ Consultation and liaison
Australian Department of Immigration, and Multicultural and Indigenous Affairs	▪ Consultation and liaison
Australian Institute of Health and Welfare	▪ AHWAC membership ▪ Cross-committee membership ▪ Working Party membership ▪ Consultation and liaison
State and territory health authorities	▪ AHWAC membership ▪ Working Party membership ▪ Consultation and liaison
Regulatory authorities (eg. individual nurse registration boards)	▪ Consultation and liaison

Table C2: Nursing workforce planning participants – inter-sectoral organisations

Organisation	Principal methods of involvement
Australian Health Workforce Officials' Committee	▪ AHWAC membership ▪ Cross-committee membership ▪ Consultation and liaison
Australian Nursing Council	▪ Consultation and liaison
National Council for Safety and Quality in Healthcare	▪ Consultation and liaison
National Rural Health Alliance	▪ Consultation and liaison
Rural Workforce Agencies	▪ Consultation and liaison

Table C3: Nursing workforce planning participants - service providers and other health professions

Organisation	Principal methods of involvement
Hospitals and health facilities (both public and private sectors)	▪ Working Party membership (through state/territory governments) ▪ Consultation (site visits)
Peak bodies representing hospitals and health facilities (eg. Australian Healthcare Association, Women's Hospitals Australasia, Catholic Health Australia, Private Hospitals' Association)	▪ Consultation – facilitate access to individual units ▪ Liaison ▪ Submissions
Other health professions – medical, allied health	▪ Consultation and liaison ▪ Submissions

Table C4: Nursing workforce planning participants - profession

Organisation	Principal methods of involvement
Professional nursing organisations and colleges (eg. Royal College of Nursing, specific colleges depending on workforce)	▪ Working Party membership ▪ Cross-committee membership ▪ Consultation and liaison
Industrial organisations (eg. Australian Nursing Federation (National and State branches)	▪ Working Party membership ▪ Consultation and liaison
Nursing students	▪ Consultation and liaison
Individual practitioners	▪ Consultation ▪ Submissions

Table C5: Nursing workforce planning participation – education and training

Organisation	Principal methods of involvement
University schools of nursing	▪ Working Party membership ▪ Consultation and liaison
University research centres (eg. Centre for Health Economics and Research Evaluation)	▪ Consultation and liaison
Professional nursing organisations and colleges	▪ Working party membership ▪ Consultation and liaison
Australian Council of Deans of Nursing and Midwifery	▪ Member of AHWAC ▪ Consultation and liaison
Community Services and Health Industry Skills Council	▪ Consultation and liaison
National Centre for Vocational Education Research	▪ Consultation and liaison

Table C6: Nursing workforce planning participation – consumers and carers

Organisation	Principal methods of involvement
Peak bodies representing consumers and carers (eg. Health Issues Centre, Consumers' Health Forum)	▪ Committee membership ▪ Working Party membership ▪ Consultation and liaison
Individuals	▪ Consultation ▪ Submission
Groups representing those with a particular condition (eg. mental health)	▪ Consultation and liaison ▪ Submission
Thematic groups (eg. Health Consumers of Rural and Remote Australia)	▪ Consultation and liaison ▪ Submission

APPENDIX D: APPROACHES TO ANALYSING WORKFORCE REQUIREMENTS

Table D1: Approaches to analysing workforce requirements adapted to nursing

Approach	Question	Assumptions	Forecasting Method
Utilisation based	How many nurses are required to serve the future population in the same way as the current population?	Current level, mix, distribution of nursing services are appropriate. Current level, mix and distribution will remain constant. Estimated future demographic profile is accurate.	Uses population based utilisation rates as baseline. Applies rates to projected demographic profile.
Needs based	How many nurses are required to meet the health care needs of the population?	All health needs should be met. Cost-effective methods can be identified and used. Unmet needs are caused by inadequate supply. Non-needs/non cost-effective use of resources can be eliminated.	Uses population rates of health needs. Identifies human resource requirements for addressing population health needs. Applies rates to projected demographic profile.
Effective demand based	How many nurses are required to support society's commitment to health care (health care budgets)?	Health needs are only one of a set of societal priorities. Definitions of need are not precise enough. There are clear possibilities for resource trade-offs.	Estimates the size of the economy supporting health care and the proportion of the economy devoted to health care. Estimates the proportion of health care expenditures allocated to nursing services. Estimates the number of nurses that could be employed using these resources. Provides a fiscal resource context for needs/utilisation

Approach	Question	Assumptions	Forecasting Method
			methods.
Effective Infrastructure	How many nurses are required to work within given infrastructures (such as intensive care units or other specific services defined by their physical structures)	Available infrastructure acts as a constraint on requirements. Available infrastructure is dependent on funding arrangements, technological advances and population need	Estimates the infrastructure to population Estimates demand for particular services based on utilisation, population need and availability of technology. Estimates the likely growth in infrastructure based on service planning information
Models of Care	What is the model of care and how many nurses are required to practice within the model, in what mix? Or What is the model of care and which health care workers and how many are required to provide the care	The best "model of care" has been identified in terms of patient outcomes and cost effectiveness. Or The current model of care is determined and used as a basis for planning	Estimates growth in demand for type of care using population growth, expected structural changes in the defined care area (based on growth. Skill mix is determined and projected based on "best" mix for future. Estimates likely growth in type of health service

Source: Adapted from O'Brien-Pallas et al 2001

REFERENCES

Aiken L. H. (2003). Achieving an Interdisciplinary Workforce in Health Care. *New England Journal of Medicine* Vol. 348. No. 2. p.p. 164 -166.

Aitken L., Clarke S., Sloane D., Sochalski J. and Silber J. (2002). Hospital Nurse Staffing and Patient Mortality, Nurse Burnout, and Job Dissatisfaction. Journal of American Medical Association. October 23.30, 2002 – vol 288, No. 16, pp. 1987-1993.

Armstrong P. and Armstrong H. (2002). Planning for Care: Approaches to Health Human Resource Policy and Planning. Discussion Paper No. 28. Commission on the Future of Health Care in Canada. October 2002. http://www.hc-sc.gc.ca/english/care/romanow/hcc0381.html

Auditor General, Victoria (2002). Nurse Workforce Planning. Tabled 30th May 2002. http://www.audit.vic.gov.au/reports_par/agp78cv.html

Australian Health Ministers' Conference (2004) National Health Workforce Strategic Framework, Sydney
http://www.healthworkforce.health.nsw.gov.au/amwac/pdf/national_health_workforce_strategic_framework_AHMC_2004.pdf

Australian Health Workforce Advisory Committee (2002a). The Critical Care Nurse Workforce in Australia 2001-2011. AHWAC Report 2002.1, Sydney.
http://www.healthworkforce.health.nsw.gov.au/amwac/pdf/critical%20care%20-%202002.1.pdf

Australian Health Workforce Advisory Committee (2002b). The Midwifery Workforce in Australia 2002-2012. AHWAC Report 2002.2, Sydney.
http://www.healthworkforce.health.nsw.gov.au/amwac/pdf/midwifery%20-%202002.2.pdf

Beaumont P. B., Fischbacher M. and Boyd C. (2001). Workforce Planning: A Review of the Literature. A Report for the Scottish Integrated Workforce Planning Group of the Scottish Executive Health Department. University of Glasgow, March 2001.

Bloor K. and Maynard A. (2003). Planning Human Resources in Health Care: towards and Economic Approach. An International Comparative Review. Canadian Health Services Research Foundation. www.chrsf.ca

Buchan J (2000). Planning for Change: Developing a Policy Framework for Nursing Labour Markets. International Council of nurses, *International Nursing Review,* Vol. 47, p.p. 199 – 206.

Buchan J. (2002) Nursing shortages and Evidence-based Interventions: a Case Study from Scotland. International Council of Nurses, *International Nursing Review,* Vol. 49. p.p. 209 – 218.

Buchan J. and Dal Poz, M (2002). Skill Mix in the health care workforce: Reviewing the evidence. Bulletin of the World Health Organisation 2002, 80 (7) pp. 575-580.

Canadian Policy Research Networks Inc. (2002). Human Resource Planning in Canada: Physician and Nursing Workforce Issues. Summary Report for the Commission on the Future Health Care in Canada, October 2002.

Cochrane D. (2002) The Future Healthcare Workforce Project. A paper delivered at the Health Leaders Network, Brisbane 11 – 12th June 2002. http://www.hln.com.au/

Department of Health (2000). A Health Service for All the Talents: Developing the DHS Workforce. Consultation Document on the Review of Workforce Planning.

Department of Health. (2003) The NHS Knowledge and Skills Framework (NHS KSF) and Development Review Guidance – Working Draft. http://www.doh.gov.uk/thenhsksf/knowledgeandskills.pdf

Department of Human Services South Australia (2000). South Australian Critical Care Student Intake Requirements 2000 – 2004. Prepared by Edward Rawinski and Judi Brown.

Department of Human Services, Victoria (1999). Nurse Labourforce Projections, Victoria 1998 – 2009. Public Health and Development Division, Victorian Government Department of Human Services, Melbourne, Victoria. March 1999. www.dhs.vic.gov.au/phd/9903084/index.htm

Duffield C. and O'Brien-Pallas L. (2002). The Nursing Workforce in Canada and Australia: Two Sides of the Same Coin. Australian Health Review. Vol. 25, No. 2, pp. 136-144.

Duffield C. and O'Brien-Pallas L. (2003). The Consequences of Nursing Shortages: a Helicopter View of the Research. Australian Health Review. Vol.26, No.1, pp. 186-193.

Feldstein P.J. (1993) Health Care Economics 4th Edition. Delmar Publishers New York. 1993.

Folland S., Goodman A. and Stano M. (1993). The Economics of Health and Health Care. Macmillan Publishing Company. New York. 1993.

Hall T. and Gourlay R. (2001). Tools for Workforce Development. Toolkit for Planning, Training and Management. Department of Health Service Provision, World Health Organisation, 2001. http://hrhtoolkit.forumone.com/mstr_tools/tools-00.html

Hall T.L. (1988). Guidelines for Health Workforce Planners. *World Health Forum*. Vol. 9, 1998. http://www.doh.gov.uk/wfprconsult/
http://www1.od.nih.gov/ohrm/PROGRAMS/WF-Plng/wfpi/wfpi.pdf

Humphris D. (2002) Developing Common Learning: The New Generation Project. A paper delivered at the Health Leaders Network, Brisbane 11 – 12th June 2002. http://www.hln.com.au/

Institute of Medicine. (2001). Crossing the Quality Chasm: A New Health System for the 21st Century.

Karmel T. and Li J. (2002) The Nursing Workforce 2010 in National Review of Nursing Education 2002: The Nursing Workforce. Commonwealth of Australia.

Keenan P. and Kennedy J. (2003). The Nursing Workforce Shortage: Causes, Consequences, Proposed Solutions. Issue Brief, April 2003. The Commonwealth Fund, New York. www.cmwf.org

Kimball B. and O'Neill E. (2002) Health Care's Human Crisis: The American Nursing Shortage. Health Workforce Solutions for the Robert Wood Johnson Foundation, April 2002. http://www.rwif.org/newsevents/index.jsp

Masterson A. (2002). Cross-boundary Working: a Macro-Political Analysis of the Impact on Professional Roles. Journal of Clinical Nursing. Vol. 11, pp. 331-339.

Masterson A. and Humphris D. (2001). New Role Development: Taking a Strategic Approach (Chapter 10) in Developing New Clinical Roles: A Guide for Health Professionals. Churchill Livingstone, London.
National Institutes of Health (1999) Workforce Planning Initiative. Office of Human Resources Management, Office of the Director.

McGillis Hall L., Doran D. and Pink G.H. (2004). Nurse Staffing Models, nursing hours and patient safety outcomes. Journal of Nursing Administration. 2004 January; 34 (1). Pp. 41-45.

National Public Health Partnerships (2002). Planning Framework for the Public Health Workforce. Discussion Paper. National Public Health Partnership, Melbourne. June 2002.http://www.nphp.gov.au/publications/wfpapers/wfplanning.pdf

National Review of Nursing Education (2002). Our Duty of Care. Commonwealth of Australia. Canberra, 2002. http://www.dest.gov.au/highered/programmes/nursing

Needleman J., Buerhaus P., Mattke S. and Zelevinsky K. (2002). Nurse staffing levels and the quality of care in hospitals. New England Journal of Medicine,. 2002 May 30; 346 (22) pp 1715-22.

NSW Health Department (1996). Workforce Planning Study for Maternity Service Nurses, Adult Critical and Intensive Care and Operating Theatre Room Nurses. Prepared by Ron van Konkelenberg and Karen O'Connor with the Workforce Planning Unit, Organisational Development Branch, NSW Health Department, October 1996.

NSW Health Department (1997). Workforce Planning Study for Emergency and Mental Health Nurses. Prepared by the Workforce Planning Unit, Corporate Services Division, NSW Health Department, with Ron van Konkelenberg and Karen O'Connor. March 1997.

NSW Health Department (1998). Workforce Planning Study for Neonatal Intensive Care, Paediatric Intensive Care and Community Health Nurses. Prepared by the Workforce

Planning Unit, Corporate Services Division, NSW Health Department, with Karen O'Connor. February 1998.

O'Brien-Pallas L. Baumann A., Donner G., Tomblin Murphy G., Lochhaas-Gerlach j., and Luba M. (2001). Forecasting Models for Human Resources in Health Care. Journal of Advanced Nursing, vol. 33, No. 1, p.p. 120 – 129.

O'Brien-Pallas L., Alksnis C., and Wang S. (2003). Bringing the future into Focus. Projecting RN Retirement in Canada. Canadian Institute for Health Information. Ontario. www.cihi.ca

O'Brien-Pallas L., Baumann A., Donner G., Murphy G., Lochhaas-Gerlack J. and Luba. (2001). Forcasting Models for Human Resources in Health Care. Journal of Advanced Nursing. Vol. 33, No. 1. pp.120-129.

O'Brien-Pallas L., Birch S., Baumann A., and Tomblin Murphy G. (2001). Integrating Workforce Planning, Human Resources, and Service Planning. World Health Organisation. Department of Organisation of Health Services Delivery. Geneva Switzerland 2001.

Preston B. (2002). Australian Nurse Supply and Demand to 2006. A Projections model and its application. A report prepared for the Council of Deans of Nursing. Australian Council of Deans of Nursing, Melbourne.

Romanow R.J. Building on Values: the Future of Health Care in Canada. Final Report, November 2002. Commission on the Future Health Care in Canada. http://www.hc-sc.gc.ca/english/care/romanow/hcc0086.html

Scottish Executive (2002). Planning Together: Final Report of the Scottish Integrated Workforce Planning Group and Response by the Scottish Executive Health Department. January 2002. www.scotland.gov.uk/library3/health/ptfr-08.asp

Senate community Affairs References Committee (2002). The Patient profession: Time for Action. Report on the Inquiry into Nursing. Commonwealth of Australia, 2002.

Shah C. and Burke G. (2001) Job Growth and Replacement Needs in Nursing Occupations in National Review of Nursing Education 2002: The Nursing Workforce. Commonwealth of Australia, 2002.

Sibbald B., Shen J. and McBride A (2004). Changing the skill mix of the health care workforce. Journal of Health Services Research and Policy. Vol. 9 Suppl. 1 January 2004.

Steven A. and Raftery J. (1994) Chapter One: Introduction in Steven A. and Raftery J (ed) Health Care Needs Assessment Volume 1. Radcliff Medical Press. Oxford and New York. 1994.

Tasmanian Department of Community and Health Services (1994) Specialist Nurse Labour Force Requirements and Supply Projections for the Tasmanian Department of Community and Health Services, prepared by Ron van Konkelenberg, June 1994.

Tomblin Murphy G. and O'Brien-Pallas L. (2002) How do Health Human Resources Policies and Practices Inhibit Change? A Plan for the Future. Discussion Paper No. 30. Commission on the future of Health Care in Canada.

U.S. Department of Health and Human Services, Health Resources and Services Administration (2002). Projected Supply, Demand and shortages of Registered Nurses: 2000 – 2020. Bureau of Health Professions, July 2002. http://bhpr.hrsa.gov/healthworkforce/rnproject/

www.nap.edu/books/0309072808/html/

www.who.int/health-services-delivery/human/workforce/papers/integrating_workforce.pdf