Australian Medical Workforce Advisory Committee

THE SPECIALIST THORACIC MEDICINE WORKFORCE IN AUSTRALIA

SUPPLY AND REQUIREMENTS

1999 - 2010

AMWAC Report 2000.1

April 2000

ISBN 0 7313 4092 2

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

Australian Medical Workforce Advisory Committee
Locked Mail Bag 961
New South Wales Health Department
NORTH SYDNEY NSW 2059

Telephone: (02) 9391 9933
E-mail: amwac@doh.health.nsw.gov.au
Internet: http://amwac.health.nsw.gov.au

Suggested citation:

Australian Medical Workforce Advisory Committee (2000), The Specialist Thoracic Medicine Workforce In Australia, AMWAC Report 2000.1, Sydney

Publication and design by Australian Medical Workforce Advisory Committee.

Printing by J.B. Waldegrave.

CONTENTS

ABBREVIATIONS

ABS	Australian Bureau of Statistics
ACT	Australian Capital Territory
AHMAC	Australian Health Ministers' Advisory Council
AIHW	Australian Institute of Health and Welfare
AN-DRG	Australian National Diagnosis Related Groups
Aust	Australia
COPD	Chronic obstructive pulmonary disease
DGP	Divisions of General Practice
DHAC	Commonwealth Department of Health and Aged Care
FRACP	Fellow of the Royal Australasian College of Physicians
FTE	Full Time Equivalent
GP	General Practitioner
HIC	Health Insurance Commission
MBS	Medical Benefits Schedule
NSW	New South Wales
NT	Northern Territory
Qld	Queensland
RACP	Royal Australasian College of Physicians
RRMA	Rural, Remote Metropolitan Areas classification
SA	South Australia
SPR	Specialist : Population ratio
Tas	Tasmania
Terr	Territory
TRD	Temporary Resident Doctor
TSANZ	Thoracic Society of Australia and New Zealand
Vic	Victoria
VMO	Visiting Medical Officer
WA	Western Australia

LIST OF TABLES

LIST OF FIGURES

TERMS OF REFERENCE OF AMWAC AND THE AMWAC THORACIC MEDICINE WORKFORCE WORKING PARTY

The Australian Health Ministers' Advisory Council (AHMAC) established the Australian Medical Workforce Advisory Committee (AMWAC) to advise on national medical workforce matters, including workforce supply, distribution and future requirements.

AMWAC Terms of Reference

1. To provide advice to AHMAC on a range of medical workforce matters, including:

    - the structure, balance and geographic distribution of the medical workforce in Australia;
    - the present and required education and training needs as suggested by population health status and practice developments;
    - medical workforce supply and demand;
    - medical workforce financing; and
    - models for describing and predicting future medical workforce requirements.

2. To develop tools for describing and managing medical workforce supply and demand which can be used by employing and workforce controlling bodies including Governments, Learned Colleges and Tertiary Institutions.

3. To oversee the establishment and development of data collections concerned with the medical workforce and analyse and report on those data to assist workforce planning.

AMWAC Thoracic Medicine Workforce Working Party Terms of Reference

As part of its 1999-2000 work plan, AMWAC was asked by AHMAC to prepare a report on the specialist thoracic medicine workforce. The AMWAC Thoracic Medicine Workforce Working Party was established as a sub-committee of AMWAC and was asked to provide a report to AMWAC on the optimal supply and appropriate distribution of thoracic medicine specialists across Australia, including projections for future requirements.

The Working Party held its first meeting on 25 March 1999 and presented a final report to the April 2000 AMWAC meeting. The report was accepted at the June 2000 AHMAC meeting.

MEMBERSHIP OF AMWAC

Independent Chairman

Professor John Horvath Physician, Sydney

Members

Nominees of the Australian Health Ministers' Advisory Council

Mr Alan Bansemer Commissioner, Health Department of Western Australia

Dr Robert Stable Director General, Queensland Department of Health

Mr Robert Wells First Assistant Secretary, Office of the National Health and Medical Research Council, Commonwealth Department of Health and Aged Care

Nominee of Australian Institute of Health and Welfare

Dr Richard Madden Director, Australian Institute of Health and Welfare

Nominee of the Australian Medical Association

Dr Robert Hodge Federal Councillor, Australian Medical Association

Nominee of the Australian Medical Council

Dr Lloyd Toft President, Medical Board of Queensland

Nominee of the Australian Vice Chancellors' Committee

Professor Nick Saunders Dean, Faculty of Medicine, Monash University, Melbourne

Nominee of the Committee of Presidents of Medical Colleges

Dr David Theile Surgeon, Brisbane (former President, Royal Australasian College of Surgeons)

Nominee of the Royal Australian College of General Practitioners

Dr Mary Mahoney Director, Queensland Training Program

Nominee of the Commonwealth Department of Education and Training and Youth Affairs

Mr Michael Gallagher First Assistant Secretary, Higher Education Division, Department of Education and Training and Youth Affairs

Nominee of the Commonwealth Department of Immigration and Multicultural Affairs

Mr Abul Rizvi	First Assistant Secretary, Business and Temporary Entry Branch, Department of Immigration and Multicultural Affairs

Consumer Nominee

Ms Meredith Carter	Director, Health Issues Centre

Health Economist

Assoc. Prof. Jane Hall	Director, Centre For Health Economics Research and Evaluation, University of Sydney

OBSERVERS

Dr Peter Brennan	Medical Advisor, Australian Health Ministers' Advisory Council
Dr Colin Feek	Chief Medical Officer, New Zealand Ministry of Health
Mr Paul Gavel	Executive Officer, AMWAC
Mr John Harding	Head, Labour Force Unit, Australian Institute of Health and Welfare

MEMBERSHIP OF THE THORACIC MEDICINE WORKFORCE WORKING PARTY

Chairman

Dr Peter Brennan	Medical Advisor, Australian Health Ministers= Advisory Council

Members

Nominee of Thoracic Society of Australia and New Zealand

Dr John Armstrong	Director of Respiratory Medicine Princess Alexandra Hospital, Brisbane
Dr Matthew Peters	Respiratory physician, Sydney

Royal Australasian College of Physicians

Dr Christine McDonald	Chair, Specialist Advisory Committee - Thoracic and Sleep Medicine; Respiratory physician, Melbourne (from February 2000)

Government nominees

Ms Kim Boyer	Director, Community and Rural Health Tasmanian Department of Health and Community Services (until August 1999)
Prof. Richard Ruffin	Director of Respiratory Medicine Queen Elizabeth Hospital, Adelaide (also nominee of Royal Australasian College of Physicians)
Ass. Prof. Iven Young	Head of Department, Respiratory Medicine Royal Prince Alfred Hospital, Sydney

Consumer nominee

Ms Rosemary Miller	Health Issues Centre

INTRODUCTION, GUIDING PRINCIPLES AND METHODOLOGY

Introduction

The main objective of the Working Party has been to promote an optimal supply and appropriate distribution of thoracic medicine specialists across Australia, including projections for future requirements to the year 2010.

Guiding Principles

In compiling this report, the Working Party adopted the following guiding principles:

- the Australian community should have available an adequate number of trained thoracic medicine specialists, appropriately distributed to provide the thoracic medicine services it requires;
- the community is best served when thoracic medicine specialists have high standards of qualification and work with a high level of ongoing experience matched by appropriate facilities;
- the thoracic medicine workforce must provide the entire spectrum of thoracic medicine services including sub specialties;
- all Australian citizens must have access to a good standard of thoracic medicine care irrespective of geography and economic status. In achieving this, convenience to the patient must be balanced against the quality of services that can be distributed to meet that convenience;
- both public and private sectors must provide an adequate amount and quality of service;
- that there be an ongoing commitment to provide instruction and education to medical students and funding for the development of allocated academic posts;
- that there be an ongoing commitment to investigation in regard to causation, incidence and prevalence, natural history and management of all thoracic medicine and associated disorders with support and encouragement for the development of academic posts, establishment of research facilities, ongoing research programs relating to thoracic medicine disorders and the raising of funds for research programs.

The Working Party defined a thoracic medicine specialist as a physician who holds a fellowship of the Royal Australasian College of Physicians (RACP), or equivalent college, who has undertaken specified training in thoracic medicine which meets the requirements of the Specialist Advisory Committee in Thoracic and Sleep Medicine of the RACP and who practises wholly, or substantially in the specialty of thoracic medicine. This includes medical research, administration, teaching in thoracic medicine and medico legal consultations. The position can be either private practice, academic or salaried.

This definition does not include other practitioners who are not registered as a thoracic medicine specialist, but practice thoracic medicine as part of their work. Nor does it include registrars in training or practitioners who are registered as a paediatrician whose main area of practice is in thoracic medicine.

Thoracic medicine includes the investigation, diagnosis and treatment of diseases primarily but not exclusively involving the upper airways, lungs, pleura and mediastinum and includes the investigation, diagnosis and treatment of respiratory and sleep disorders and non respiratory sleep disorders.

Appendix C outlines the requirements of an optimum thoracic medicine service, including requirements for an ideal rural service.

Methodology

The approach of the Working Party has been to analyse existing data sources and to undertake consultation with relevant persons and organisations. In estimating workforce numbers, establishing a profile of the workforce and assessing its adequacy, important sources of data were:

1. The Royal Australasian College of Physicians (RACP)

The RACP maintains a variety of data, principally on number, age, gender and location of Fellows, and data on training posts and trainees.

2. Thoracic Society of Australia and New Zealand (TSANZ)

TSANZ maintains data on members' gender, qualifications and location of practice. A survey of all members of the TSANZ who were Fellows of the RACP was conducted in conjunction with AMWAC. The survey gathered information about workforce participation, distribution and future workforce expectations to gain a picture of adequacy of the current and future workforce. This survey achieved a response rate 67.4%. The results of this survey are summarised in Appendix B.

3. Australian Institute of Health and Welfare (AIHW) Medical Labour Force Survey

The AIHW annual medical labour force survey presents national labour force statistics for registered medical practitioners, principally through a survey collected as part of the annual renewal of registration. In the survey, a thoracic medicine specialist is defined as a specialist in active practice who reported being a specialist whose principal qualification was in thoracic medicine. The data presented in this report are estimates produced from the 1997 and 1998 surveys. In producing these estimates, the AIHW has assumed that non-respondents to the survey had the same characteristics as respondents. Overall the surveys had around an 87% response rate.

4. Commonwealth Department of Health and Aged Care (DHAC) Medicare provider database

Medicare provider statistics define medical practitioners according to the predominant services billed to Medicare. The Medicare statistics include all practitioners who have billed Medicare for at least one service during a financial year. The major deficiency with

the use of Medicare data for workforce planning purposes is that it does not provide data on practitioners who are salaried thoracic medicine specialists in the public hospital system and who do not render services on a fee for service basis. Medicare data thus excludes services rendered free of charge to public hospital patients, to Veterans' Affairs patients and to compensation cases.

The Working Party was informed of the Medicare data but has not reported the data on thoracic medicine specialists in this study as the data is incomplete and is therefore of limited value for this purpose. However, the Medicare services data is of some value in providing a picture of the services provided by thoracic medicine specialists.

5. AIHW National Hospital Morbidity Database

The AIHW National Hospital Morbidity database (ICD-9-CM groupings, 1997-98) has been used as a key source of data on service trends. The data is sourced from the AIHW Australian hospital morbidity database for all patients in public and private hospitals in Australia from 1993-94 to 1997-98. The data has been particularly useful in projecting thoracic medicine service trends.

6. AMWAC Survey of Divisions of General Practice

An AMWAC surveyed all Divisions of General Practice throughout Australia to obtain information on the adequacy of thoracic medicine services. This survey only had a 40% response rate. The results of the survey are summarised in Appendix E.

7. AMWAC Public Hospital Specialist Vacancy Survey

An AMWAC survey of State/Territory health departments was conducted in late 1997 to obtain information on public hospital specialist vacancies for both consultants/visiting medical officers (VMOs) and salaried/staff specialists. A vacancy was defined as a position for which funding is available and for which active recruitment is being, or has been, undertaken. Information was also sought on temporary resident doctors (TRDs) filling vacancies.

8. Rural, Remote and Metropolitan Areas classification

Wherever possible, distributional data has been interpreted using the rural, remote and metropolitan area (RRMA) classification developed by the Commonwealth Departments of Primary Industries and Energy and Health and Family Services (DPIE & DHFS 1994). A summary of the RRMA classification is provided in Appendix A.

9. Australian Bureau of Statistics (ABS)

The Australian Bureau of Statistics (ABS) population data and projections are used as the sole source on population data. In making its population projections ABS uses four different series. The population projections in this report are based on Series A/B, where

constant fertility and low overseas migration are assumed (ABS 1998).

10. ABS National Health Surveys

The ABS National Health Survey has information on smoking, asthma, cystic fibrosis etc. which was used as a source for trends in disease patterns that impact on requirements for thoracic medicine services.

Key Assumptions

The Working Party emphasises that the projections on supply and requirements are based on current national health structures and financing arrangements. If there is a change to the national health structure the Working Party recommends the supply requirements and projections be reviewed.

In conducting the projection analysis, the Working Party has assumed that the current length of the thoracic medicine training program will remain unchanged and that the majority of candidates will complete the program within this time frame. The Working Party has also assumed that the pattern of workforce participation and service delivery of the current workforce provides a suitable basis on which to project future workforce requirements.

In addition, the Working Party understands there is no definitive year to be used as a base in conjunction with projection analysis. Hence, the Working Party assumes that the data supplied in the chosen base year is unbiased and suitable for use in predicting future trends. These assumptions are necessary in the absence of any definitive data to the contrary.

It should also be noted that AMWAC favours, as a general course of action, adjustment to trainee intake as the best long term solution to any anticipated imbalances between expected supply and estimated requirements. Hence the conclusions and recommendations are framed in this context.

SUMMARY OF FINDINGS AND RECOMMENDATIONS

This report describes the current specialist thoracic medicine workforce, assesses the adequacy of that workforce, and projects workforce supply and requirements to the year 2010.

The report concludes that workforce numbers are currently inadequate, with an estimated shortfall of between 15 and 20 specialists. There also appears to be some maldistribution of the workforce.

Requirements are projected to increase at an estimated 2.0% per annum. In turn, the combination of this growth figure plus the shortfall means that there will need to be an expansion in training program intake.

The recommendation is for advanced trainee intake to increase progressively over the period 2001-2010, from the current annual intake of around 12 to 13 up to a maximum of 24 in 2005 (for expected completion in 2007). Subject to the outcome of the regular review, thereafter the expectation is for annual intake to stabilise at around 23 up to 2010.

Description of the Current Thoracic Medicine Specialist Workforce

Number of Practising Thoracic Medicine Specialists

- The current size of the practising thoracic medicine specialist workforce is estimated to be 315; based on TSANZ estimate of 315, the AIHW medical labour force survey (1998) figure of 317 and RACP (1999) data of 326.

- Data from the AIHW survey indicated that between 1995 and 1998 there has been a 15.7% increase (compound annual growth of 5.0%) in the size of the specialist thoracic medicine workforce

- Population growth between 1988 and 1997 was 1.2% per annum.

- The national specialists per 100,000 population figure to be around 1.7 to 1.8. Using population distribution as the benchmark, Queensland and Victoria appeared to have less than their share of the workforce, while New South Wales and South Australia appeared to be oversupplied.

Geographic Distribution

- AIHW survey data indicated that 93.2% of thoracic medicine specialists are located in capital cities and other major urban centres. 4.9% were in a large rural centres, and 1.9% were in other rural areas. The TSANZ/AMWAC survey indicated that 3.2% of practitioners whose main practice was located in a metropolitan area provided additional services to another practice in rural area.

Age Profile

- In 1998, the average age of thoracic medicine specialists is 46.4 years.

- The largest age cohort of specialists was aged between 35 to 44 years (41.0%).

- In total, 19.8% of the workforce was aged 55 years and over, with only a small proportion of specialists (4.1%) aged 65 years and over.

Gender Profile

- In 1998, AIHW data showed that 14.2% of the thoracic medicine specialists are women with the largest proportion of female specialists being in South Australia (36.7%).

- The largest age cohort of females practising in thoracic medicine was in the 35 to 44 year age group. Of note is that 92.3% of female thoracic medicine specialists are aged between 35 to 54 years.

Hours Worked

- In 1998, thoracic medicine specialists worked on average 57.2 hours per week and spend 43.0 hours per week on direct patient care.

- Specialists in the 35 to 44 years age category worked the highest average total hours per week (59.5 hours).

- Females worked 80.1% of the total number of hours worked by males.

- A large proportion (39.0%) of the workforce worked, on average, 50 to 64 hours per week. On the other hand, 11.5% work less than 35 hours per week and 30.5% worked more than 65 hours per week.

Work Setting

- The TSANZ/AMWAC 1999 survey found that, on average, 48.4% of the total hours worked in a typical week by the thoracic medicine workforce was in a salaried position and the remaining 51.6% of their total time was spent, on average, in a private practice. 52.2% of thoracic medicine specialists worked in both public and private practice, 38.3% worked entirely in the private sector and 19.5% worked entirely in a salaried position in the public sector.

Services Provided

- Thoracic medicine services in Australia are provided through Medicare and other insurance arrangements in fee for service practice and through the government funded public hospital system. Detailed service specific data on medical services which attract Medicare benefits is available from 1985. Public and private hospital casemix activity data is available from 1993-94.

- Hospital separations for principal and secondary procedures relating to thoracic medicine from 1993-94 to 1997-98 grew by increase of 4.4%. The largest increases were in transpleural thoroscopy (11.4%), closed biopsy of lung (10.3%) and broncoscopy through artificial stoma (9.0%). For principal procedures the increase over the period was 3.3% per annum.

- Of note is the increasing usage of procedures relating to thoracic medicine as the age of patients increase. For example, 47.8% of all hospital separations were conducted on patients 65 years and older, 58.8% on patients 55 years and older, while only 24.7% of hospital separations for principle procedures relating to thoracic medicine were conducted on patients 44 years and younger.

- Between 1993-94 and 1997-98, the total number of services provided by thoracic medicine specialists attracting Medicare benefits increased by 45.0% (a compound annual increase of 10.0%). During this period the number of providers increased by 38.5% (compound annual increase of 8.5%) and the number of services per provider increased by 4.3% (1.2% compound annual increase).

Training Arrangements

- Advanced training in thoracic medicine consists of a structured three year program. Advanced training commences with the approval of a submitted program. At least two years experience in clinical thoracic medicine is necessary. The third year of training may be spent in research or in an approved complementary year in a related discipline.

- In April 1999 there were 41 advanced trainees in thoracic medicine, the bulk of who are in the third year of the program (47.8%).

- In 1999, New South Wales (35.7%) had the greatest number of advanced trainees, followed by Victoria (23.8%) and Queensland (21.4%).

- From 1994 to 1999, there was a 16.7% increase in the number of advanced thoracic medicine trainees. Queensland had the highest increase in the number of advanced trainees since 1994 (50.0%), followed by New South Wales (15.4%).

Adequacy of the Current Workforce

Specialist to Population Benchmarks

- TSANZ an ideal urban practice would require a population catchment of 75,000 to 85,000. For a rural service a thoracic medicine specialist should be placed in a rural area close to an urban centre with a population catchment of approximately 75,000 to 85,000. For a major rural centre remote from an urban centre the population catchment should be 50,000 to 75,000. For a regular outreach service to a rural area remote from an urban centre a population catchment of 15,000 to 35,000 is required.

- AIHW data indicates that in 1998, South Australia (1:40,258), Western Australia (1:48,567), and New South Wales (1:55,931) were better supplied than the national average while Tasmania (1:117,735) Queensland (74,092) and Victoria (69,908) had more population per thoracic medicine specialist than the national average (59,457).

Public Hospital Vacancies

- The AMWAC 1997 survey of all State/Territory Health Departments found that shortages existed in three States/Territories, namely New South Wales (2 staff specialists), Western Australia (1 staff specialist) and South Australia (1staff specialists); giving a total number of vacancies of four.

Consultation Waiting Times

- The concept of waiting times to have procedures performed is something that fits well into the surgical field where patients with non life threatening conditions are put on a waiting list to have a procedure done eg a hip replacement. However in thoracic medicine there are many areas where an "urgent category" needs to be considered in a different light. In particular a request for urgent consultation on someone coughing up blood would result in the majority of these patients being seen within 24 hours of the request in most State/Territories. This is because this is regarded as a priority to be sorted out for both the patients' ease of mind and for best therapeutic success.

- Other situations, such as rapid onset of shortness of breath, would be treated as an emergency via attendance at an emergency department of a large hospital. When looking at the waiting times for consultation, these observations need to be considered.

- The 1999 AMWAC/TSANZ survey collected information on thoracic medicine specialist consultation waiting times. The results reveal that in 1999 the average waiting time for a standard first consultation with a thoracic medicine specialist in his/her private rooms was 25.7 days, while public patients waited, on average, 35.7 days. With respect to urgent conditions the average expected waiting time to see a specialist in his/her private rooms was 3.6 days while the average expected waiting time for public outpatients was 7.9 days.

Assessment of the Divisions of General Practice

- In total 40% of Divisions of General Practice responded to the AMWAC 1999 survey. The Working Party assumed that this poor response rate was an indication that the majority of the Divisions of General Practice had no concerns with the thoracic medicine workforce. However, of the 50 divisions responding to the survey, 63% were located in a rural region. The Working Party believed that the higher response rate from rural regions was an indication of the greater need for thoracic medicine services in these areas.

- The AMWAC 1999 survey of Divisions of General Practice found that 15.6% of responding divisions considered that access to 'consultant' thoracic medicine services was totally inadequate and a further 57.8% thought that access to consultant services was in short supply. The remaining 26.7% of respondents believed the access to consultant services was adequate.

- In total, there was a perceived need for 15 additional resident consultant thoracic medicine specialists and 28 additional visiting consultant specialists in thoracic medicine.

Specialists Workload

- In the TSANZ/AMWAC survey, 48.1% of respondents indicated that they planned to change the hours they worked, with 28.2% anticipating their work hours to decrease and 19.9% expecting their work hours to increase.

Conclusion on Adequacy of the Current Workforce

- The Working Party concluded that there was some indication of a shortage in the overall number of thoracic medicine specialists, estimated at between 10 and 15 specialists. The Working Party also concluded that the geographic maldistribution of the workforce requires attention.

- Factors leading the Working Party to this conclusion are the geographic distribution of specialists, with some State/Territories comparatively poorly supplied; the considered views of thoracic medicine specialists and the Divisions of General Practice; and the comparatively higher waiting times for a first consultation. A further consideration was the comparatively greater working hours for thoracic medicine specialists outside capital cities.

- The Working Party concluded that solutions to the maldistribution are not easy. Strategies need to involve the relocation of some training placements to the rural areas or the creation of regional training programs or networks so trainees are seconded to peripheral areas for periods of up to six months, providing exposure for advanced trainees to rural environments. Potential problems for this type of strategy are that doctor/patient relationships will be upset after every rotation, and research projects by trainees may be difficult across a number of different hospitals.

Projections of Requirements and Supply

Requirement Trends

- The ABS estimates that the mean age of the total population will rise 6 to 7 years. Hospital morbidity data indicates that 47.9% of all hospital separations on principle procedures relating to thoracic medicine were conducted on patients 65 years or older. The age of patients for services relating to thoracic medicine is skewed toward the elderly which indicates that the aging of the Australian population is likely to impact on the requirements for this workforce.

- The trends in the services provided by thoracic medicine specialists show that between 1993-94 and 1997-98 Medicare services by thoracic medicine specialists increased at a compound annual rate of 9.7%. From 1993-94 to 1996-97 hospital separations for principal procedures relating to thoracic medicine increased at an annual rate of 3.3%.

- Acute respiratory disease accounted for 1.2% of the total burden of disease and injury in 1996 while chronic respiratory disease accounted for 7.1% of the total burden of disease and injury. From 1981 to 1996 the per capita mortality rate for COPD decreased by 16% for males but increased by 70% for females. Mortalities due to acute respiratory disease and chronic respiratory disease increased exponentially with age to peak in the over 75 age group. The burden of disease and injury for asthma dominated at the ages under 15 and reduced with age, while the rate for COPD increased with age.

- Cystic fibrosis was once a paediatric condition but it now also requires adult care. In New South Wales there are 330 people with cystic fibrosis over the age of 18. This represents 44% of the total population with cystic fibrosis in New South Wales. By 2005 it is predicted that this number will have grown to 414 people. It has been predicted that by 2010 more than 50% of people with cystic fibrosis will be greater than the age of 18 years. The number of people with cystic fibrosis in Australia at present is estimated to be 2,500.

- Similarly, sleep medicine treatment trends may impact on future requirements. In a population of 100,000 an expectation to find 500 patients with severe sleep apnea/sleep related respiratory failure would be reasonable.

Supply Trends

- Over the past five years, an average of 12.6 new thoracic medicine specialists have entered the workforce each year. Over the next few years, the number of new thoracic medicine specialists is expected to range between 11 and 16.

- Based on the retirement intentions provided by respondents to the TSANZ/AMWAC survey, the Working Party considered that a retirement age of 65 years was an appropriate age for projection purposes. The survey found that over the next ten years and estimated 18% of the workforce indicated an intention to retire.

- At present the representation of women in thoracic medicine is 14%. It is expected that the proportion of women in the workforce will increase, as the number of female trainees continue to increase (30.4% in 1998) and the predominantly male cohort of thoracic medicine specialists aged 65 years and over proceeds through to retirement.

Balancing Projected Supply with Projected Requirements

- The standard AMWAC specialist medical workforce projection model has been used to project a thoracic medicine supply and requirements scenario to 2010. On the supply side, the model takes into account expected entrants to the workforce and those leaving, converts the number of specialists to a full time equivalent (FTE) figure using the average hours worked per week by age and gender. On the requirements side, the likely trend in demand for thoracic medicine services is included, based on the Working Party's assessment of the expected trend in requirements.

- The Working Party assessed various indicators as the basis for estimating future requirements for thoracic medicine specialists.

- Over the next ten years, the Australian population is expected to increase at an annual rate of 0.9% per annum. The effect of ageing is expected to add a further 0.4% to population estimates with, the total ageing and population increase estimated at 1.3%.

- Between 1993-94 and 1997-98 there was a compound annual increase of 9.7% in the total number of Medicare services provided by thoracic medicine specialists. The Working Party considered that the compound annual growth rate of 9.7% was unsustainable and overstated the likely need for future thoracic medicine services. In this respect it was unlikely to be a true reflection of trends in service provision, rather it may be due in part to cost shifting practices.

- The Working Party concluded that the best estimates of the future demand for thoracic medicine services would be somewhere between 1.3% (as indicated by trends in population growth and ageing) and 2.6% (as indicated by the growth of the population aged 45 years and older). On balance, a growth factor of 2.0% was considered reasonable.

- The productivity of thoracic medicine specialists as measured in hours worked will vary from time to time and by age group as not all specialists work a uniform full time working week, so it is appropriate to measure services provided in hours instead of by head count. In 1999, the 315 thoracic medicine specialists provided an estimated total of 18,219 hours of services per week. The Working Party concluded that there was a shortage of up to 20 thoracic medicine specialists in 1999, which represented a shortage of 1,157 hours per week.

Supply Trends

- Due to this currency of the data, supply projections were calculated based on the TSANZ 1999 workforce figures and using the AIHW average hours worked per week.

- The supply of the thoracic medicine specialists was projected by ageing the 1999 supply through each year of age, subtracting predicted retirements (using a

retirement age of 64.9 years) and attrition and adding to the workforce the expected number of new graduates entering the workforce per year (estimated at 12.6 per annum over the next three years).

- The number of thoracic medicine specialists was converted to hours per week by applying the average number of hours worked per week by male and female thoracic medicine specialists in each major age cohort. In doing so, the Working Party assumed that the pattern of workforce participation of the current workforce provides a suitable basis on which to project future workforce supply requirements. Hence the model takes into account the increase in female participation in the thoracic medicine workforce and any differences in hours associated with age and gender.

Projected Balance

- Using the selected growth indicator (2.0% per annum) to project workforce requirements and the estimated supply of thoracic medicine specialists (including the identified existing shortfall of 20 thoracic medicine specialists), an indication of the expected shortage or oversupply can be calculated for the years 1999 to 2003. This is shows a workforce undersupply of 5.97% in 1999, which is expected to increase to 8.1% by 2003. However, if action is taken in 2001 the output of the training program can be boosted from 2004 onwards to make up for the estimated shortfall over the period 2004 to 2010.

- To effect this increase the Working Party recommends a staged increase in advanced trainee intake up to 2007. In terms of ability to affect increases the staged scenario is preferable. It will also enable the projected trend in requirements to be monitored and the recommended increases in trainee intake can be adjusted if necessary.

- It is estimated that an incremental increase of additional two graduating specialists each year from 18 in 2004 up to 24 in 2007, then levelling out at 23 will bring the workforce progressively back into equilibrium.

- It should be noted that the expected AMWAC projection model is sensitive to the chosen requirement indicator, to the hours worked by each age and sex cohort and to the number of new specialists estimated to be entering the workforce from the training program.

RECOMMENDATIONS

The Working Party recommends:

1. To achieve an appropriate supply of thoracic medicine specialists, State/Territory health departments, in consultation with the Royal Australasian College of Physicians (RACP) and the Thoracic Society of Australia and New Zealand (TSANZ), should progressively increase the number of first year advanced trainees in thoracic medicine over the period 2001 to 2007 from the current average of 13 to between 18 and 24.

   The aim of maintaining first year advanced trainee intake within this range is to match workforce supply with an expected future growth in thoracic medicine requirements, over the projection period, of 2.0% per annum. A suggested distribution of the new commencing trainees is shown below.

Recommended distribution of thoracic medicine advanced trainee intake, by State/Territory, 2001-2006

State/Terr.	2001	2002	2003	2004	2005	2006	2005 share of commencing trainees	2008 population share
NSW	5	6	7	7	8	7	33.3	33.3
Vic	4	4	4	5	6	6	25.0	24.1
Qld	4	5	5	6	6	6	25.0	19.8
SA	1	1	1	1	1	2	4.2	7.5
WA	2	2	2	2	2	2	8.3	10.3
Tas	-	-	1	1	1	-	4.2	2.3
NT	-	-	-	-	-	-	-	1.2
ACT	-	-	-	-	-	-	-	1.5
Australia	**16**	**18**	**20**	**22**	**24**	**23**	**100.0**	**100.0**

Source: AMWAC, ABS

2. That if necessary, the co-ordination of the adjustment to thoracic medicine trainee intake be overseen by State/Territory based thoracic medicine working groups, comprising representatives from the RACP, TSANZ and State/Territory health departments.

3. That thoracic medicine requirements and supply projections be monitored regularly so they can be amended if new trends emerge; this monitoring be coordinated by RACP, TSANZ and AMWAC and the results incorporated into the AMWAC annual report to AHMAC. AMWAC will provide all necessary support.

4. That a full update of this review of the thoracic medicine workforce be undertaken in 2004.

DESCRIPTION OF THE CURRENT THORACIC MEDICINE SPECIALIST WORKFORCE

As discussed in the Introduction, there are a variety of data sources on the numbers, attributes and distribution of thoracic medicine specialists in Australia. While each of these data collections has some deficiency, it is possible to piece together a reasonably accurate and up-to-date profile of the workforce.

In establishing the profile of the current thoracic medicine workforce the Working Party defined:

- the number of thoracic medicine specialists;
- their distribution by State/Territory and geographic location using the RRMA classification;
- age and gender profiles of the workforce;
- the hours worked; and
- the services provided and performed.

The Number of Practising Thoracic Medicine Specialists

The data sources used are the records of the RACP, the AIHW 1997 medical labour force survey, the DHAC Medicare database and the TSANZ membership records.

The RACP records information about members, including age, gender, address and status of membership. In April 1999 there were 326 practising members of the RACP in the specialty of thoracic medicine.

The TSANZ records indicate there were 315 practising thoracic medicine specialists as at May 1999. The TSANZ records information on a members gender, qualification and location of practice.

Medicare data for 1997-98 identified 252 practising thoracic medicine specialists. These data refer to any specialist who billed Medicare at least once for a given item identified as provided by thoracic medicine specialists, but underestimates the number of specialists because Medicare records only include information on private practitioners.

The AIHW national medical labour force survey reports numbers based on specialists who indicate that their main, second or third specialty of practice is thoracic medicine. It also identifies specialists qualified in thoracic medicine. The 1998 survey identified 317 specialists practising in thoracic medicine, 267 specialists whose main specialty of practice was thoracic medicine and 50 specialists for whom thoracic medicine was their second or third specialty of practice. The AIHW survey identified a total of 321 specialists qualified in the area of thoracic medicine.

The Working Party concluded that the data from the TSANZ and the AIHW were the best indicators of the size of the practising thoracic medicine workforce.
These four sources are summarised in Table 1.

Table 1: Number of thoracic medicine specialists (various sources), selected years, 1997 to 1999

RACP (1997-98)	Medicare (1996-97)	AIHW (1998)	TSANZ (1999)
326	252	317	315

Sources: RACP, DHAC, AIHW, TSANZ

Table 2 shows the number of specialists practising in thoracic medicine but not reporting a qualification in thoracic medicine. Of the 25 thoracic medicine specialists not reporting a qualification in thoracic medicine, 6 were qualified in general medicine, 5 in paediatric medicine and 3 in internal medicine.

Table 2: Specialists practising in thoracic medicine but not reporting a qualification in thoracic medicine, 1998

Field of qualification	Number
General medicine	9
Paediatric medicine	5
Other	7
Not stated	4
Total	**25**

Source: AIHW

Growth in the Thoracic Medicine Specialist Workforce

Table 3 shows the changes occurring in the thoracic medicine specialist workforce since 1993-94. The picture is one of steady growth.

Data from the AIHW survey indicated that between 1995 and 1998 there has been a 15.7% increase (compound annual growth of 5.0%) in the size of the thoracic medicine specialist workforce. Medicare data show that the total number of thoracic medicine specialists billing Medicare increased by 38.5% from 182 in 1993-94 to 252 in 1997-98. This is an annual average increase of 8.5%.

Population growth between 1988 and 1997 was 1.2% per annum.

Table 3: Thoracic medicine specialists (various sources), 1993-94 to 1997-98

Thoracic medicine specialists	1993-94	1994-95	1995-96	1996-97	1997-98	Total % increase	% increase per annum*
RACP*	164		184		207	26.2	6.0
Medicare	182	201	219	239	252	38.5	8.5
AIHW**	-	230	243	256	266	15.7	5.0

*Clinical Workforce in Internal Medicine and Paediatrics in Australia, 1993 - 1997
**AIHW data - Main specialty of qualification
Sources: TSANZ, AIHW, DHAC, RACP

Distribution of the Thoracic Medicine Specialist Workforce

Table 4 uses RACP membership data and AIHW 1997 survey data to examine the distribution of thoracic medicine specialists by State/Territory.

Both sets of data indicate the national specialists per 100,000 population figure to be around 1.7 to 1.8. Using population distribution as the benchmark, Queensland and Victoria appeared to have less than their share of the workforce, while New South Wales and South Australia appeared to be oversupplied. The AIHW data (1997) provided a similar picture for the distribution of the workforce in all State/Territories except Tasmania, which had less than its share of the workforce.

According to RACP membership records, there were 1.8 Fellows per 100,000 people in 1997-98. States with a comparatively generous supply of specialists based on SPR were New South Wales and South Australia. Five States/Territories had below average specialist per 100,000 population ratios. In order of magnitude these were Tasmania, the Northern Territory, the Australian Capital Territory, Victoria and Queensland.

The 1998 AIHW survey data indicated that there were 1.7 thoracic medicine specialists per 100,000 people for Australia in 1997. States/Territories with specialist per 100,000 population ratios below average were Tasmania (0.8), Queensland (1.3), Victoria (1.4) and the Northern Territory (1.6).

Table 4: Thoracic medicine specialists:population, by State/Territory, 1998

State/ Territory	Thoracic medicine Specialists	% of total Thoracic medicine specialists	% of Australian population[a]	SPR	Specialists per 100,000 population
			RACP (1998)		
NSW	120	36.8	33.9	1:52,283	1.9
Vic	78	23.9	24.8	1:59,038	1.7
Qld	51	15.6	18.3	1:65,403	1.5
SA	31	9.5	7.9	1:47,709	2.1
WA	32	9.8	9.7	1:56,187	1.8
Tas	8	2.5	2.6	1:59,125	1.7
NT	2	0.6	1.0	1:93,500	1.1
ACT	4	1.2	1.7	1:77,250	1.3
Australia	**326**	**100.0**	**100.0**	**1:56,846**	**1.8**
			AIHW (1998)[b]		
NSW	114	38.3	33.9	1:55,931	1.8
Vic	67	21.9	24.8	1:69,908	1.4
Qld	47	15.7	18.3	1:74,092	1.3
SA	37	11.7	7.9	1:40,258	2.5
WA	38	9.9	9.7	1:48,567	2.1
Tas	4	0.9	2.6	1:117,735	0.8
NT	3	0.3	1.0	1:63,774	1.6
ACT	7	1.2	1.7	1:44,050	2.3
Australia	**317**	**100.0**	**100.0**	**1:59,457**	**1.7**

[a]Based on estimated resident population, 31 December 1997, ABS, 3101.0, March quarter,1998
[b]Figures based on all specialists practising in thoracic medicine
Source: RACP; AIHW; ABS

Table 5 uses three sources of data and the RRMA classification to show the distribution of thoracic medicine specialists by geographic location. The AIHW 1997 labour force survey data indicate that of the 265 specialists whose main practice was thoracic medicine, 93.2% were in capital cities and other major urban centres, 4.9% were in large rural centres, and 1.9% were in other rural areas. RACP (1997-98) data show that 87.1% of thoracic medicine specialists were located in major urban centres, while 12.9% were located in a rural area. TSANZ (1999) data show that 90.2% of thoracic medicine specialists are located in a metropolitan area while 9.8% are located in a rural region. Medicare data (1997-98) are consistent with the RACP data.

Table 5: Thoracic medicine specialists, by geographic location, 1998-1999

	Number	Major urban centre (%)	Large rural centre (%)	Other rural (%)	Total (%)
Region of main job (AIHW 1997)	265	93.2	4.9	1.9	100.0
RACP Fellows (1998)	325	87.1	7.1	5.8	100.0
TSANZ (1999)	265	90.2	4.1	5.7	100.0
Medicare (1997-98)	252	88.5	6.0	5.5	100.0

Sources: AIHW, RACP, DHAC

Table 6 uses AIHW (1997) and ABS data plus RRMA classification to examine the geographic distribution of thoracic medicine specialists within States/Territories. According to the AIHW data all States/Territories have a higher proportion of thoracic medicine representation in capital cities with respect to population distribution. With regard to representation in large rural centres, Tasmania (25.0), Queensland (14.9%) and New South Wales (5.2%) had a greater proportion of thoracic medicine specialists than their respective population distributions, 18.1%, 13.6% and 4.9% respectively. In other rural areas only New South Wales (6.1%), Victoria (1.5%) and South Australia (5.3%) had thoracic medicine specialists present with all three states having a lower proportion of specialists with respect to population distribution.

Table 6: Thoracic medicine specialists (AIHW), by State/Territory and geographic location, 1998

State/ Territory	Thor.Med. Spec. No.	Capital City		Major urban centre (%)		Large rural centre (%)		Rural Other (%)	
		TMS[1] (%)	*Pop (%)*	TMS[1] (%)	*Pop (%)*	TMS[1] (%)	*Pop (%)*	TMS[1] (%)	*Pop (%)*
NSW	115	76.5	*62.9*	12.2	*12.7*	5.2	*4.9*	6.1	*19.5*
Vic	66	92.4	*72.3*	4.6	*3.3*	1.5	*4.9*	1.5	*19.5*
Qld	47	74.5	*45.6*	10.6	*13.4*	14.9	*13.6*	-	*27.5*
SA	38	94.7	*73.2*	*	-	-	*1.6*	5.3	*25.2*
WA	37	100.0	*73.3*	*	-	*	-	-	*26.7*
Tas	4	75.0	*41.3*	*	-	25.0	*18.1*	-	*40.6*
NT	5	100.0	*45.6*	*	-	*	-	-	*54.4*
ACT	7	100.0	*99.9*	*	-	*	-	-	*0.1*
Australia	**319**	**85.3**	***63.7***	**6.9**	***7.6***	**4.7**	***6.0***	**3.1**	***22.7***

[1]TMS: Thoracic medicine specialist
* not applicable
Source: AIHW

TSANZ data for the geographic distribution of members by State/Territory is consistent

with AIHW data. In total 83.0% of Fellows were located in capital cities, 7.2% in other metropolitan areas, while 9.8% were in rural areas.

Table 7: Thoracic medicine specialists (TSANZ), by State/Territory and geographic location, 1998

State/Terr.	Capital city	Other metro.	Large rural	Small rural/ remote	Total	%Major urban centres
NSW	93	10	3	7	113	91.2
Victoria	43	2	3	4	52	86.5
Queensland	26	7	4	1	38	86.8
South Aust.	25	-	-	1	26	96.2
West. Aust.	25	-	-	1	26	96.2
Tasmania	2	-	1	1	4	50.0
North. Terr.	1	-	-	-	1	100.0
ACT	5	-	-	-	5	100.0
Australia	**220**	**19**	**11**	**15**	**265**	**90.2**
%	83.0	7.2	4.2	5.7	100	

Source: TSANZ

Age Profile

Table 8 examines the age and gender distribution of thoracic medicine specialists using data from the RACP (1997-98). The data show that the largest age cohort was the group aged 35 to 44 years (39.2%) followed by the 45 to 54 year age group (31.7%). In total, 18.4% of thoracic medicine specialists were aged over 55 years indicating a relatively young workforce. Women comprised 14.2% of the total workforce, and the majority (90.9%) are under 55 years of age compared with 80% of men similarly aged.

Table 8: Age profile of thoracic medicine specialists, by gender (RACP), 1997-98

Gender	<35 yrs	35-44 yrs	45-54 yrs	55-64 yrs	65-74 yrs	>75 yrs	Total
Male	24	104	84	48	5	-	265
Female	9	17	14	4	-	-	44
% Female	27.3	14.0	14.3	7.7	0.0	-	14.2
Total Persons	**33**	**121**	**98**	**52**	**5**	**-**	**309**
% of total	10.7	39.2	31.7	16.8	1.6	-	100

Source: RACP

According to the AIHW 1998 data shown in Table 9, the average age of thoracic medicine specialists is 46.4 years. The largest age cohort of specialists was aged between 35 to 44 years (41.0%). In total, 19.8% of the workforce is 55 years of age and over, with only a small proportion of specialists (4.1%) aged 65 years and over. As indicated in table 9, there was a variation in the average age of specialists by State/Territory. For example, the average age of specialists in New South Wales and the Australian Capital Territory was 47.8 years and 49.3 years respectively, while in Tasmania it was 41.0 years.

Table 9: Age profile of thoracic medicine specialists (AIHW), by age group and State/Territory, 1998

State/Terr.	< 35 yrs	35-44 yrs	45-54 yrs	55-64 yrs	65-74 yrs	Total	Average age (yrs)
NSW	8	32	33	21	5	99	47.8
Vic	5	26	14	7	-	52	44.0
Qld	1	21	8	9	3	42	46.3
SA	6	11	10	3	1	31	45.0
WA	2	13	13	2	2	32	n.a
Tas	-	3	-	-	-	3	41.0
NT	-	2	2	-	-	4	44.0
ACT	-	2	3	-	-	5	49.3
Australia	**22**	**110**	**83**	**42**	**11**	**268**	**46.4**
%age group	8.2	41.0	31.0	15.7	4.1	100.0	-

Source: AIHW

Table 10 indicates that the average age of thoracic medicine specialists in capital cities (46.6 years) and other metropolitan centres (49.9 years) is slightly higher than the average age of specialists in rural centres, 40.9 years and 43.3 years for large rural

centres and small rural centres respectively.

Table 10: Average age of thoracic medicine specialists, by geographic location, 1998

	Capital city	Other metro centre	Large rural centre	Small rural centre	Total
Average age (yrs)	46.6	49.9	40.9	43.3	46.5

Source: AIHW

Gender Profile

Table 11 shows the distribution of thoracic medicine specialists by gender by State/Territory. In 1998, AIHW data showed that 14.2% of the thoracic medicine specialists are women with the largest proportion of female specialists being in South Australia (36.7%). The AIHW data also indicated that New South Wales (18.0%) had an above average proportion of female thoracic medicine specialists than for all female thoracic medicine specialists throughout Australia. Queensland, Western Australia and Victoria had a relatively low representation of women in the workforce, 4.9%, 6.1% and 9.6% respectively, while Tasmania, the Northern Territory and the Australian Capital Territory had no representation by women in thoracic medicine.

RACP records are consistent with the data from the AIHW, with 14.4% of the workforce being female. On the other hand, only 10.5% of thoracic medicine specialists providing Medicare services in 1997-98 were women.

Table 11: Thoracic medicine specialists (AIHW), by gender and State/Territory, 1998

State/Terr	NSW	Vic	Qld	SA	WA	Tas	NT	ACT	Total
Males	82	47	39	19	31	3	3	5	229
Females	18	5	2	11	2	-	-	-	38
Total	**100**	**52**	**41**	**30**	**33**	**3**	**3**	**5**	**267**
% females	18.0	9.6	4.9	36.7	6.1	0.0	0.0	0.0	14.2

Source: AIHW

Data from the AIHW (1998) survey on the main specialty of practice was used to gain an age profile of the two genders (table 12). The largest age cohort of females practising mainly in thoracic medicine was in the 35 to 44 year age group. Of note is that 92.3% of female thoracic medicine specialists are aged between 35 to 54 years. This is consistent with the RACP data.

The TSANZ/AMWAC survey (1999) indicated the mean age for females was more than 5 years younger than for males (42.1 years and 47.5 years respectfully).

Table 12: Thoracic medicine specialists, main area of practice (AIHW), by gender and age group, 1998

Gender	<35 yrs	35-44 yrs	45-54 yrs	55-64 yrs	65-74 yrs	75 yrs & over	Total
Male	13	95	70	39	12	-	229
Female	10	14	11	3	-	-	38
% female	43.5	12.8	13.6	7.7	0	-	14.2
Total persons	**23**	**109**	**81**	**42**	**12**	**-**	**267**
% of total	8.6	40.8	30.3	15.7	4.5	-	100.0

Source: AIHW

Hours Worked

Thoracic medicine specialists work on average 57.2 hours per week and spend 43.0 hours per week on direct patient care (AIHW 1998).

Table 13 outlines the average hours and direct patient care hours worked per week by thoracic medicine specialists by age category and gender using the AIHW 1998 survey data. Specialists in the 35 to 44 years age category worked the highest average total hours per week (59.5 hours), whereas specialists in the 45 to 54 years group worked the highest average direct patient care hours per week (46.4 hours). Females worked 80.1% of the total number of hours worked by males and 83.4% of the direct patient care hours worked by males.

Table 13: Average hours worked by thoracic medicine specialists, by gender and age, 1998

Gender	25-34 yrs	35-44 yrs	45-54 yrs	55-64 yrs	65-74 yrs	Total
			Total hours worked			
Male	46.7	59.8	60.9	60.0	45.3	58.7
Female	44.5	57.6	51.3	*	-	50.8
Total	**45.7**	**59.5**	**59.1**	**58.3**	**45.3**	**57.2**
			Direct patient care hours worked			
Male	42.4	46.8	50.4	44.5	31.9	45.9
Female	37.2	29.4	31.6	*	-	32.2
Total	**40.0**	**44.2**	**46.4**	**43.5**	**31.9**	**43.0**

* Data suppressed to maintain confidentiality
Source: AIHW

Table 14 shows the average hours worked per week by thoracic medicine specialists by State/Territory in 1998 (AIHW). Thoracic medicine specialists in the Australian Capital Territory, the Northern Territory, Tasmania, Victoria and New South Wales worked, on average, more hours per week than the national average (57.2 hours). For direct patient care hours worked per week, specialists in Victoria, the Australian Capital Territory and New South Wales worked, on average, more hours per week than the average for all practitioners (43.0 hours).

Table 14: Average hours worked per week by thoracic medicine specialists, by State/Territory, 1998

	NSW	Vic	Qld	SA	WA	Tas	ACT	NT	Aus
Total hours worked	58.6	59.4	53.0	56.2	53.8	60.0	65.0	61.0	57.2
Direct patient care hours worked	43.5	54.1	42.3	28.1	33.4	15.0	51.0	30.0	43.0

Source: AIHW

Data from the AIHW survey (1998) indicates that thoracic medicine specialists in capital cities worked less hours per week on average than specialists in other areas (Table 15). Thoracic medicine practitioners in small rural centres worked, on average, 82.5 hours per week while specialists in capital cities worked, on average, 55.8 hours per week.

Table 15: Average total hours worked per week by thoracic medicine specialists, by geographic location, 1998

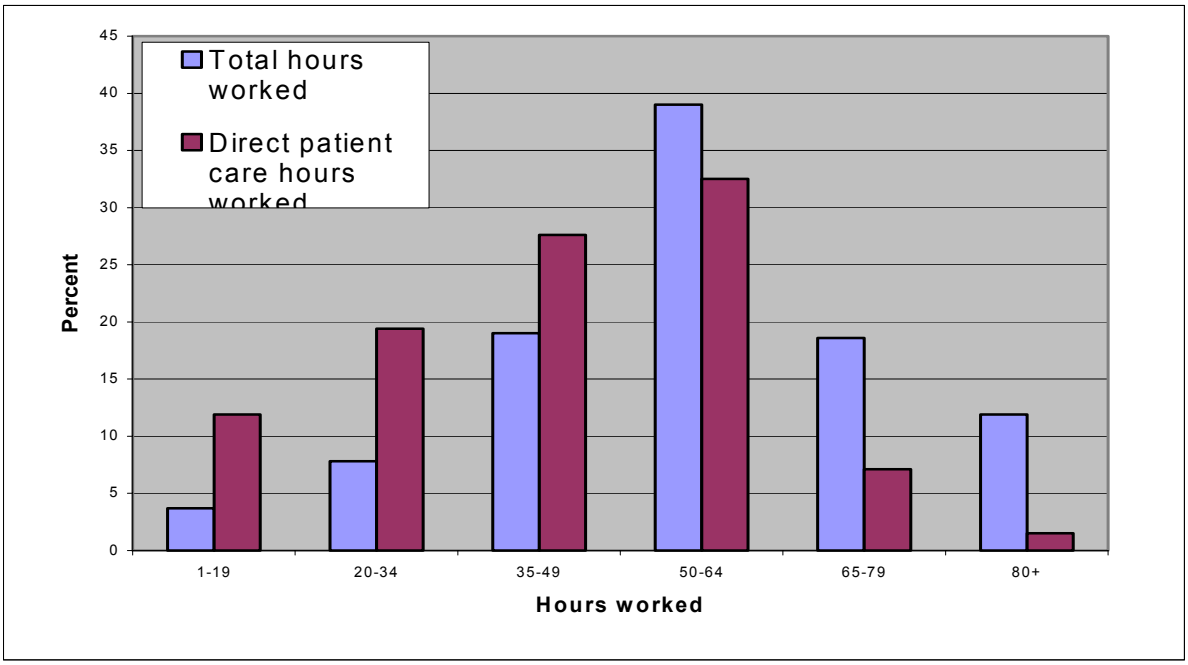
	Capital city	Other metro centre	Large rural centre	Small rural centre	Total
Total hours worked	55.8	68.1	60.7	82.5	57.2
Direct patient care hours worked	42.5	42.8	48.9	52.5	43.0

Source: AIHW

Table 16 indicates that a large proportion (39.0%) of the workforce worked, on average, 50 to 64 hours per week. On the other hand, 11.5% work less than 35 hours per week and 30.5% worked more than 65 hours per week.

With respect to direct patient care hours, 60.1% of thoracic medicine specialists worked between 35 to 65 hours per week, 8.6% worked 65 hours or more and 31.3% worked less than 35 hours per week.

Figure 1: Average hours worked per week by thoracic medicine specialists (AIHW), by percentage of the workforce, 1998



Source: AIHW

Work Setting

Respondents to the TSANZ/AMWAC 1999 survey were asked to indicate where they practised thoracic medicine. On average, 48.4% of total workforce time was spent in the public sector while 51.6% of total workforce time was spent, on average, in private practice. It should be noted that 52.2% of respondents worked in both a public position and in a private position, 38.3% worked solely in a private practice and 19.5% worked entirely in a the public sector. Of the respondents who indicated they worked in both the private and public sectors, 55.4% of total time was spent, on average, in a salaried position and 44.6% of total time was spent, on average, in the private sector.

The AIHW survey indicates that in 1998, 39.4% of thoracic medicine specialists had their main job in private rooms, 41.3% had their main job in an acute care public hospital and the remaining 19.3% worked in some other setting.

The contribution made to public hospital work by thoracic medicine specialists across States/Territories shows that in total 40.3% of work settings in any job is in acute care in a public hospital. Slight variations were recorded between State/Territories, with 56.8% of thoracic medicine specialists in South Australia, 47.4% in Western Australia, 44.7% in Queensland, 43.3% in Victoria and 30.7% in New South Wales undertaking work in an acute care public hospital (AIHW 1998).

According to the AIHW 1997 survey, 19.8% of thoracic medicine specialists provide services in work settings other than private rooms and acute care hospitals, with 33.1% of thoracic medicine specialists in New South Wales/Australian Capital Territory, 26.3%

in Western Australia, 11.9% in Victoria, 7.3% in South Australia/Northern Territory and 4.3% in Queensland working in these other settings (Table 16).

Table 16: Work setting of thoracic medicine specialists (AIHW), main job and all jobs by State/Territory, 1998

State/Territory	Private rooms	Acute care public hospital	Acute care private hospital	Other work settings	Total
		Work setting of main job			
NSW/ACT	39	31	-	35	105
Vic	26	22	-	4	52
Qld	21	17	-	2	40
SA/NT	10	22	-	3	35
WA	8	17	-	8	33
Tas	2	2	-	-	4
Australia	106	111	-	52	269
		Work settings of any jobs			
NSW/ACT	46	35	-	40	121
Vic	29	29	1	8	67
Qld	24	21	-	2	47
SA/NT	15	23	-	3	41
WA	10	18	-	10	38
Tas	2	2	-	-	4
Australia	126	128	1	63	318

Source: AIHW

Services Provided

Thoracic medicine services in Australia are provided through Medicare and other insurance arrangements in fee for service practice and through the government funded public hospital system. Detailed service specific data on medical services which attract Medicare benefits is available from 1985. Public and private hospital casemix activity data is available from 1993-94.

It is important to note that there are data limitations in determining the number of services provided by specialists in thoracic medicine. In part this is due to the substitution of services by other providers (eg. general practitioners, paediatricians and other specialists with an interest in thoracic medicine). At this stage there is no definitive national data set available to separate the number of services contributed by each provider. In addition, Medicare data only cover private practice billing activity. It has

previously been estimated that the Medicare database provides information for approximately 75% of medical services in Australia, consequently the Medicare data needs to be interpreted with this shortcoming in mind (Deeble 1991).

One advantage of the Medicare data, however, is that it can be separated into services provided by specialists and those provided by non-specialists. Medicare data also enables some broad conclusions to be drawn about the average number of sources being provided per provider.

For hospital data, the key source is the AIHWs National Hospital Morbidity database (ICD-9-CM) for thoracic medicine procedures and separations. The collection is based on admitted patient episodes and includes data for both public and private hospitals. Hospital admitted patient data are useful for monitoring the use of surgical and medical procedures performed in the hospital. A disadvantage of this data collection is that it cannot distinguish who has provided the service.

The Medicare and hospital morbidity databases cannot be aggregated to provide a picture of national activity because both record different sets of data. In addition it is acknowledged that both databases have some shortcomings as indicated in the introduction. However, these points aside, the two databases are a useful indication of the level of thoracic medicine activity and the trends in service provision over time (which is important for the consideration of the likely trend in requirements).

National Hospital Morbidity Data

The Working Party analysed thoracic medicine procedures and diagnosis for the period 1993-94 to 1997-98.

Table 17 shows hospital separations for principal and secondary procedures relating to thoracic medicine from 1993-94 to 1997-98. The data indicate that during this time there was an increase of 4.4% in hospital procedures relating to thoracic medicine. The largest increases were in transpleural thoroscopy (11.4%), closed biopsy of lung (10.3%) and broncoscopy through artificial stoma (9.0%).

Table 17: Hospital separations for principal and secondary procedures relating to thoracic medicine 1993-94 to 1997-98

ICD-9 Code	ICD-9 description	1993-94	1994-95	1995-96	1996-97	1997-98	% change 1993-94 to 1996-97
33.21	Bronchoscopy through artificial stoma	134	112	117	104	146	9.0
33.22	Fibre-optic bronchoscopy	2,284	2,528	2,357	2,197	2,111	-7.6
33.24	Closed [endoscopic] biopsy of bronchus	13,543	13,370	12,667	11,202	13,648	0.8
33.26	Closed [percutaneous] [needle] biopsy of lung	2,190	2,382	2,309	2,183	2,415	10.3
34.04	Insertion of intercostal catheter for drainage	10,272	9,600	8,467	7,018	10,594	3.1
34.2	Diagnostic procedures on chest wall, pleura, mediastinum & diaphragm						
34.21	Transpleural thoracoscopy	1,907	1,633	1,251	979	2,125	11.4
34.24	Pleural biopsy	1,349	1,336	1,242	1,184	1,383	2.5
34.91	Thoracentesis	7,981	7,272	6,307	5,082	8,543	7.0
34.92	Injection into thoracic cavity	882	910	819	827	916	3.9
Total		**51,238**	**49,682**	**46,120**	**41,108**	**53,615**	**4.4**

Source: AIHW

Table 18 shows hospital separations for principal procedures relating to thoracic medicine by age group and gender for 1997-98. Of note is the increasing usage of procedures relating to thoracic medicine as the age of patients increase. For example, 47.8% of all hospital separations were conducted on patients 65 years and older, 58.8% on patients 55 years and older, while only 24.7% of hospital separations for principle procedures relating to thoracic medicine were conducted on patients 44 years and younger. This is likely to have an impact in future requirements as the average age of Australia's population increases over the next 20 years.

Table 18: Hospital separations for principal procedures relating to thoracic medicine, by age group and gender, 1997-98

	Age group (years)								
Sex	**0-14**	**15-24**	**25-34**	**35-44**	**45-54**	**55-64**	**65-74**	**75+**	**Total**
Males	843	937	1,131	1,657	3,015	2,178	5,761	3,966	19,488
Females	419	600	791	1,406	2,232	1,293	2,872	2,519	12,132
Total	**1,362**	**1,537**	**1,922**	**3,063**	**5,247**	**3,421**	**8,533**	**6,485**	**31,620**
% of total	4.0	4.9	6.1	9.7	16.6	11.0	27.3	20.5	100.0
% female	33.2	39.0	41.2	45.9	42.5	37.3	33.3	38.8	38.4

Source: AIHW

Medicare Services

Medicare service items most common to thoracic medicine specialists in 1997-98 are listed in table 19.

Table 19: Medicare services provided by thoracic medicine specialists, most common items, 1997-98

Item	Item description	Number
110	Refer Cons-Surgery Hosp or NH Initial	90,711
116	Refer Cons-Surgery Hosp or NH Subseq	289,470
119	Refer Cons-Surgery Hosp or NH-Subseq Minor	2,358
11503	Measure Mechanical or Gas Exchange Function etc.	57,923
11506	Measure Respiratory Function-bronchodilator	60,658
11509	Measure Respiratory Function-bronchodilator & report	15,348
11512	Continuous Measure Relationship b/w Flow & Volume	29,934
11700	Twelve Lead Electrocardiography-tracing & report	5,859
11712	Electrocardiographic Monitoring	2,548
12000	Skin Sensitivity Testing 1-20 Allergens	5,335
12003	Skin Sensitivity Testing 20+ Allergens	3,013
12203	Sleep Apnoea Investigation-least eight hours	27,320
13839	Arterial puncture & blood collection,diagnostic	1,968
38403	Thoracic cavity, aspiration with paracentesis	359
38409	Intercostal drain, insertion of, not involving resection of rib (excl. after-care)	224
38436	Thoracoscopy	367
41764	Nasendoscopy/Sinoscopy/Fibreoptic exam Nasopharynx & La	3,938
41892	Bronchoscopy with other diagnostic procedure(s)	2,641
41898	Fibreoptic Bronchoscopy with transbronchial lung biopsy	702
41901	Laser Bronchoscopy and/or insertion of endobronchial stent	16
Total		

Source: DHAC

The Working Party recognised that some thoracic medicine specialists also practise in intensive care medicine. Table 20 shows Medicare services that are most commonly provided by thoracic medicine specialists who are also accredited intensive care specialists.

Table 20: Medicare intensive care services provided by thoracic physicians, 1997-98

Item	Item description	Number
13870	ICU management, 1st day (spec/cons)	264
13873	ICU management, 2ndt +day (spec/cons)	1,221
13876	Central Venous pressure etc, monitor<4 in day-ICU	1,531
41901	Ventilatory support management -ICU.	652

Source: RACP

Table 21 shows that Medicare services provided by thoracic medicine specialists over the period 1993-94 to 1997-98 increased by 45.0% with a compound annual increase of 9.7%. In the same period the number of Medicare providers in thoracic medicine increased by 38.5% with a compound annual increase of 8.5% and the number of services per provider increased by 4.3% (1.2% compound annual increase).

Table 21: Thoracic medicine Medicare Item trends, 1993-94 to 1997-98

	1993-94	1994-95	1995-96	1996-97	1997-98	% change 1994-98	annual % increase*
Number of providers	182	201	219	239	252	38.5	8.5
Services provided	423,207	474,091	523,250	587,326	613,561	45.0	9.7
Services per provider	2,325	2,359	2,389	2,457	2,435	4.3	1.2

*compound annual increase
Source: DHAC

Training Arrangements

Career training in thoracic medicine consists of a structured three year program. Advanced training commences with the approval of a submitted program. At least two years experience in clinical thoracic medicine is necessary. The third year of training may be spent in research or in an approved complementary year in a related discipline. Advanced trainees transferring to the Specialist Advisory Committee (SAC) in thoracic medicine from another discipline may be advised to undertake some supervised training in thoracic medicine following gaining Fellowship in the RACP in order to complete their three year program.

The core training consists of clinical thoracic medicine with a wide exposure to all common respiratory diseases including lung cancer, tuberculosis and experience in respiratory intensive care. It is expected that all advanced trainees in clinical thoracic medicine will gain sufficient first-hand experience in a respiratory laboratory and a sleep disorders clinic.

The RACP recommends that trainees have some experience with subspecialty and related disciplines which include thoracic surgery, infectious diseases and pulmonary infection in AIDS, adult cystic fibrosis, lung transplantation, ENT surgery, clinical allergy, immunology, and occupational lung disease.

Essential procedural skills include fibreoptic bronchoscopy and transbronchial lung biopsy, pleural biopsy and tube thoracostomy.

Centres at which programs of advanced training in thoracic medicine are in place need to meet certain clinical requirements and infrastructure support to support training.

Provision exists in the training program for part time training.

Table 22 indicates that in 1999 New South Wales (35.7%) had the greatest number of advanced trainees, followed by Victoria (23.8%) and Queensland (21.4%). In 1999 the Northern Territory and the Australian Capital Territory had no advanced trainees in thoracic medicine.

From 1994 to 1999, there was a 16.7% increase in the number of advanced thoracic medicine trainees. Queensland had the highest increase in the number of advanced trainees since 1994 (50.0%), followed by New South Wales (15.4%). South Australia, the Northern Territory and the Australian Capital Territory have experienced no growth in the number of thoracic medicine trainees from 1994 to 1999.

The Working Party recognised that around 33% to 50% of advanced trainees continue with additional study after they complete their advanced training. This impacts upon the age of entry into the workforce but does not effect the numbers entering in any given year if this practice is assumed to remain constant.

Table 22: Thoracic medicine advanced trainees, by State/Territory, 1994 to 1999

Year	NSW	Vic	Qld	SA	WA	Tas	NT	ACT	Aust
1994	13	9	6	4	4	0	0	0	36
1995	11	11	4	4	4	0	0	0	34
1996	12	15	4	6	4	0	1	0	42
1997	11	11	4	5	3	0	1	0	35
1998	15	13	8	5	4	1	0	0	46
1999	15	10	9	4	3	1	0	0	42
% increase 1994-1999	**15.4**	**11.1**	**50.0**	**0.0**	**-25.0**	**-**	**0.0**	**0.0**	**16.7**
% 1999 trainees	35.7	23.8	21.4	9.5	7.2	2.4	0.0	0.0	100.0
% population[a]	33.9	24.8	18.3	7.9	9.7	2.6	1.0	1.7	100.0

Source: RACP and ABS

In 1998, there were a total of 46 hospital accredited advanced thoracic medicine training programs (table 23).

Table 23: Thoracic medicine training programs, by hospital and by State/Territory, 1998

State	Area/hospital	Accredited posts
NSW		**16**
	John Hunter Hospital Newcastle	2
	Prince of Wales Hospital	2
	Repatriation General Hospital	3
	Royal Prince Alfred Hospital	3
	Royal North Shore Hospital	3
	Westmead Hospital	2
	St. George Hospital	1
Victoria		**12**
	Alfred Hospital	4
	Alfred & Repatriation Medical Centre	3
	Monash Medical Centre	2
	Royal Melbourne Hospital	1
	Western Hospital	1
	Mornington Peninsular Hospital	1
Queensland		**10**
	Greenslopes Private Hospital	1
	Mater Misericordiae Hospital	1
	Prince Charles Hospital	5
	Princess Alexandra Hospital	1
	Royal Brisbane Hospital	2
South Australia		**5**
	Adelaide Repatriation Hospital	1
	Repatriation General Hospital	1
	Flinders Medical Centre	1
	The Queen Elizabeth Hospital	1
	Royal Adelaide Hospital	1
Western Australia		**3**
	Royal Perth Hospital	2
	Sir Charles Gairdner Hospital	1
Total		**46**

Source: RACP

Table 24 outlines the gender and training status of advanced trainees, by State/Territory. In 1998, New South Wales had the greatest number of trainees, followed by Victoria and Queensland, while the Northern Territory, Tasmania and the Australian Capital Territory reported having no trainees in thoracic medicine. Queensland had the most female advanced trainees (44%), followed by New South Wales (37.5%) and Western Australia (33.3%), while Victoria had the lowest proportion (15.4%).

Table 24: Gender and training status of advanced thoracic medicine specialist trainees, by State/Territory, 1998

	NSW	VIC	QLD	SA	WA	NT	Tas	ACT	TOTAL
Males	10	11	5	4	2	0	0	0	32
Females	6	2	4	1	1	0	0	0	14
% Female	37.5	15.4	44.4	20.0	33.3	0	0	0	30.4
Year of training									
-1st year	4	3	4	1	1	0	0	0	13
-2nd year	7	2	1	1	0	0	0	0	11
-3rd year	5	8	4	3	2	0	0	0	22
Total	**16**	**13**	**9**	**5**	**3**	**0**	**0**	**0**	**46**

Source: RACP

Table 25 shows the age and gender of advanced trainees by the year of training. The majority of trainees are aged between 31 to 35 years. In Year 1, female trainees comprise 38.5% of trainees; in Year 2, 18.2% of trainees and 31.8% of trainees in Year 3. The increase in the number of female trainees in Year 1 of the training program continues the trend of increasing female participation in the workforce.

Table 25: Thoracic medicine advanced trainees, by year of training and by age and gender, 1998

Gender	Age					
	26 - 30 yrs	31-35 yrs	36-40 yrs	41-45 yrs	Total	%
			Year 1			
Male	5	2	1	0	8	61.5
Female	4	1	0	0	5	38.5
Total	9	3	1	0	13	100.0
			Year 2			
Male	4	4	0	1	9	81.8
Female	0	2	0	0	2	18.2
Total	4	6	0	1	11	100.0
			Year 3			
Male	1	12	2	0	15	68.2
Female	1	6	0	0	7	31.8
Total	2	18	2	0	22	100.0

Source: RACP

Over the past five years, on average, 12 trainees have completed the training program each year. Over the next three years it is expected that program completions will average 12.6 graduates annually (Table 26).

Table 26: Thoracic medicine graduates by year of completion

	1994	1995	1996	1997	1998	1999	2000	2001	2002
New Fellow Admissions	11	11	16	8	16	16	11	11	12

Source: RACP

The Main Characteristics of the Specialist Thoracic Medicine Workforce

Thoracic medicine is a small workforce, representing just 8.3% of all specialists. The Working Party estimates that currently there are 315 practising thoracic medicine specialists in Australia. This represents 1.8 thoracic medicine specialists per 100,000 population and an estimated SPR of 1:56,840.

Thoracic medicine specialists practise mostly in capital cities and major metropolitan areas, with approximately 9.9% of the workforce located in a rural area. The workforce is also unevenly spread between States/Territories, with South Australia and New South Wales, in particular having a greater proportion of thoracic medicine specialists than their population share.

The age profile of the workforce is reasonably even, with an average age of 46.7 years. In total, 18.6% of thoracic medicine specialists are aged 55 years and over, while 46.0% of the workforce is aged 44 years and under.

In total, 14.5% of the thoracic medicine specialist workforce are women, of whom 64.1% are under 45 years of age. Furthermore, 30.4% of trainees are female.

It is estimated that thoracic medicine specialists worked on average 53.8 hours per week. On average, the female specialists worked 11 hours per week less than male specialists.

Annual training program completions have averaged 13 over the last five years.

ADEQUACY OF THE CURRENT THORACIC MEDICINE WORKFORCE

There are a number of indicators of the adequacy of a medical workforce and no single measure can provide a definitive assessment. However, by examining each of the following it is possible to gain an indication of whether the workforce is adequately meeting current demand or if there is a significant shortfall or oversupply. The indicators chosen by the Working Party were:

- specialist:population ratio;
- sustainable practice guidelines;
- public hospital vacancies;
- waiting times for consultations;
- workload;
- general practitioner assessment of requirements for thoracic medicine specialists; and
- consumers assessment and invited submissions.

Specialist:Population Ratio

In Australia the TSANZ considers that population catchment requirements for a sustainable service vary substantially according to location. For example, in urban areas and rural practices close to an urban centre a population catchment of 75,000 to 85,000 is required, while in a major rural centre remote from an urban centre a population catchment of 50,000 to 75,000 is required (AMWAC 1998).

In 1998 the specialist:population ration (SPR) for thoracic medicine was estimated at 1:59,457 or 1.7 thoracic medicine specialists per 100,000 population. The Working Party believes that the value of the thoracic medicine SPRs lies in their use as tools of comparison between States/Territories. Table 4 calculated SPRs using AIHW, RACP and Medicare data. The AIHW data has been used in this section to provide some comparisons between States/Territories and provides evidence that discrepancies exist between State/Territories with regard to SPRs (table 27). For example, South Australia (1:40,258), Western Australia (1:48,567), and New South Wales (1:55,931) are better endowed than the national average while Tasmania (1:117,735) Queensland (74,092) and Victoria (69,908) had more population per thoracic medicine specialist than the national average (59,457).

Table 27: Thoracic medicine specialists:population ratio, by State/Territory, 1998

Year	NSW	Vic	Qld	SA	WA	Tas	NT	ACT	Aust.
TMS*	114	67	47	37	38	4	3	7	317
SPR	55,931	69,908	74,092	40,258	48,567	117,735	63,774	44,050	59,457
No./100,000	1.8	1.4	1.3	2.5	2.1	0.8	1.6	2.3	1.7

* thoracic medicine specialist
Source: AIHW, ABS

Sustainable Practice

The TSANZ considers an acceptable specialist service in thoracic medicine requires competence in the diagnosis, investigation and management of common thoracic diseases including bronchogenic carcinoma and pulmonary infections including pulmonary tuberculosis; competence in fiberoptic bronchoscopy and transbronchial biopsy, pleural biopsy and tube thoracostomy; interpretation of complex lung function tests; and desirably, expertise in sleep disorders medicine and pulmonary intensive care medicine.

Table 28 shows that an ideal urban practice would require a population catchment of 75,000 to 85,000. For a rural service a thoracic medicine specialist should be placed in a rural area close to an urban centre with a population catchment of approximately 75,000 to 85,000. For a major rural centre remote from an urban centre the population catchment should be 50,000 to 75,000. For a regular outreach service to a rural area remote from an urban centre a population catchment of 15,000 to 35,000 is required.

Table 28: Population catchment required for a viable specialist service in thoracic medicine

• urban practice:	75,000-85,000
• rural practice close to an urban centre:	75,000-85,000
• major rural centre remote from urban centre	50,000-75,000
Regular outreach service	
• close to an urban centre	40,000-50,000
• remote from an urban centre	25,000-35,000
• rural area remote from an urban centre	15,000-25,000
Factors increasing population requirements	
• large numbers of general practitioners	
• secondary or tertiary referral hospital in close proximity	
Factors decreasing population requirements	
• elderly population	
• large seasonal influx of tourists	
• remoteness of practice from major urban centre	
• absence of regular consultative service from major urban centre	
• greater proportion of Aborigines	
• fewer general practitioners in catchment area	

Source: TSANZ and AMWAC

To allow adequate back up, a large number of general practitioners should be present, allowing for time away for study and recreational leave as well as after hours cover. There should be access to a local hospital with staff trained in thoracic nursing and access to other specialists and pathologists. The area serviced would need to have a catchment population sufficient to maintain an adequate level of thoracic medicine skills, an adequate level of remuneration, and a sufficient variety of thoracic problems to maintain practitioner interest. Other specialist services of importance are pathology services, radiology services (general, oncology and physicist) and the availability of a specialist physician and specialist surgeon for cross referral and consultation.

Appendix C provides a summary of information provided by TSANZ for the provision of a specialist thoracic medicine service including population requirements, infrastructure requirements and personnel requirements.

Public Hospital Vacancies

The AMWAC 1997 survey of all State/Territory Health Departments found that shortages existed in three States/Territories, namely New South Wales (2 staff specialists), Western Australia (1 staff specialist) and South Australia (1staff specialists); giving a total number of vacancies of four.

It should be noted that whilst the number of vacancies was low, the relative community need for services in other disciplines may have been comparatively greater, resulting in the prioritisation of funding to other specialty positions.

Consultation Waiting Times

The concept of waiting times to have procedures performed is something that fits well into the surgical field where patients with non life threatening conditions are put on a waiting list to have a procedure done eg a hip replacement. However in thoracic medicine there are many areas where an "urgent category" needs to be considered in a different light. In particular a request for urgent consultation on someone coughing up blood would result in the majority of these patients being seen within 24 hours of the request in most State/Territories. This is because this is regarded as a priority to be sorted out for both the patients' ease of mind and for best therapeutic success.

Other situations, such as rapid onset of shortness of breath, would be treated as an emergency via attendance at an emergency department of a large hospital. When looking at the waiting times for consultation, these observations need to be considered.

The 1999 AMWAC/TSANZ survey collected information on thoracic medicine specialist consultation waiting times. The results are shown in table 29 and reveal that in 1999 the average waiting time for a standard first consultation with a thoracic medicine specialist in his/her private rooms was 25.7 days, while public patients waited, on average, 35.7 days. With respect to urgent conditions the average expected waiting time to see a specialist in his/her private rooms was 3.6 days while the average expected waiting time for public outpatients was 7.9 days.

Table 29: Average waiting time (days) for a standard first consultation and an urgent procedure, by private rooms/public outpatient department and State/Territory, 1999

State/Territory	Standard consultation*	Urgent condition*
	Private rooms	
NSW/ACT	26.3	2.9
Victoria/Tasmania	28.1	3.4
Queensland	25.5	3.9
South Australia/Northern Territory	20.7	5.8
Western Australia	20.0	5.2
Total	**25.7**	**3.6**
	Public outpatients	
NSW/ACT	24.2	3.9
Victoria/Tasmania	35.7	9.7
Queensland	49.2	9.2
South Australia/Northern Territory	43.0	8.5
Western Australia	36.4	12.3
Total	**35.7**	**7.9**

* Waiting times were self reported data to the TSANZ/AMWAC survey, 1999.
Source: TSANZ/AMWAC survey of thoracic medicine specialists

Thoracic Medicine Specialists Workload

As previously indicated, thoracic medicine specialists worked in 1998, on average, 57.2 hours per week with 26.8% working more than 65 hours per week (AIHW). In total, 69.5% of respondents indicated they worked more than 55 hours per week and 11.5% worked less than 35 hours per week.

Female thoracic medicine practitioners worked, on average, 7.9 hours per week less than their male counterparts. Table 30 shows that thoracic medicine practitioners in capital cities worked, on average, 55.8 hours per week, while specialists in other metropolitan centres worked 68.1 hours per week. Thoracic medicine specialists in large rural centres worked, on average, 60.7 hours per week and specialists in small rural centres worked, on average, 82.5 hours per week.

In capital cities 76.2% of thoracic medicine specialists' time, on average, was spent on direct patient care and in other metropolitan areas 62.8% of specialists' time was spent on direct patient care. In large rural centres specialists spent, on average, 80.6% of total work time on direct patient care, while specialists in small rural centres spent, on average, 63.6% of total hours worked on direct patient care (table 30).

Table 30: Average working hours of thoracic medicine specialists, by geographic location, 1998

	Capital city	Other metropolitan centres	Large rural centre	Small rural centre	Total
Total hours worked	55.8	68.1	60.7	82.5	**57.2**
Direct patient care hours worked	42.5	42.8	48.9	52.5	**43.0**
% of total hours worked on direct patient care	76.2	62.8	80.6	63.6	**75.2**

Source: AIHW

In total, 28.2% of respondents to the TSANZ/AMWAC survey indicated that they expected their work hours to decrease, while 19.9% indicated that they expected to increase their hours worked. The States/Territories of Queensland (43.8%) and South Australia / the Northern Territory (40.0%) had the greatest proportion of respondents expecting to reduce the hours they worked. Reasons given by respondents who expected to decrease their work hours were, in order of frequency, lifestyle preferences; family considerations; personal health considerations; and retirement. A significant difference was observed between the age of the respondent and plans to change the hours worked ($p<0.05$) with younger respondents planning to increase the hours they worked and older respondents planning to decrease the hours they worked. No associations were observed between intention to reduce hours worked and gender, or hours currently worked.

General Practitioner Assessment of the Need for Thoracic Medicine Specialists

In total 40% of Divisions of General Practice responded to the AMWAC 1999 survey. The Working Party assumed that this poor response rate was an indication that the majority of the Divisions of General Practice had no concerns with the thoracic medicine workforce. However, of the 50 divisions responding to the survey, 63% were located in a rural region. The Working Party believed that the higher response rate from rural regions was an indication of the greater need for thoracic medicine services in these areas.

The AMWAC 1999 survey of Divisions of General Practice found that 15.6% of responding divisions considered that access to 'consultant' thoracic medicine services was totally inadequate and a further 57.8% thought that access to consultant services was in short supply. The remaining 26.7% of respondents believed the access to consultant services was adequate. There was no difference observed between state/territories or geographic location with respect to access to consultant services. In total, there was a perceived need for 15 additional resident consultant thoracic medicine specialists and 28 additional visiting consultant specialists in thoracic medicine.

In addition, 53.5% of responding Division of General Practice considered that current access to thoracic medicine 'specialist treatment' services was in short supply and a

further 14.0% considered specialist treatment services to be totally inadequate. The remaining 32.6% considered access to specialist treatment services in thoracic medicine was adequate. In total there was a perceived need for an additional 10 resident treatment specialists in thoracic medicine and an additional seven visiting treatment specialists.

Conclusions on Adequacy of the Current Specialist Thoracic Medicine Workforce

The Working Party concluded that there was some indication of a shortage in the overall number of thoracic medicine specialists, estimated at between 10 and 20 specialists. The Working Party also concluded that the geographic maldistribution of the workforce requires attention.

Factors leading the Working Party to this conclusion are the geographic distribution of specialists, with some State/Territories comparatively poorly supplied; the considered views of thoracic medicine specialists and the Divisions of General Practice; and the comparatively higher waiting times for a first consultation. A further consideration was the comparatively higher working hours for thoracic medicine specialists outside capital cities.

The Working Party concluded that solutions to the maldistribution are not easy. Strategies need to involve the relocation of some training placements to the rural areas or the creation of regional training programs or networks so trainees are seconded to peripheral areas for periods of up to six months, providing exposure for advanced trainees to rural environments. Potential problems for this type of strategy are that doctor/patient relationships will be upset after every rotation, and research projects by trainees may be difficult across a number of different hospitals.

PROJECTIONS OF REQUIREMENTS

Population

Australia has a growing and an ageing population. The 1999 population was estimated at 18.9 million (ABS 1999), and the population is estimated to increase to 20.2 million by 2006 and 21.0 million by 2011 (ABS 1998). Between 1999 and 2010, the projected growth rate of the total population is 0.9% per annum.

ABS estimates that the median age of the total population will rise from 34.3 years in 1997 to between 40.1 and 41.1 years in 2021. As a proportion of the total population, those aged 65 years and over represented 12.1% (2.2 million) in 1997, and this proportion is projected to increase to 12.9% (2.6 million) in 2006, 14.0% (3.0 million) in 2011, and 17.9% (4.0 million) in 2021. These changes represent a growth rate in the over 65 year age group of 2.0% between 1997 and 2011 and 3.1% between 2011 and 2021.

The effects of ageing on demand for health services is estimated at 0.4% with a combined effect of population growth and ageing on demand for services of 1.3%.

Trends in Service Provision

The trends in the services provided by thoracic medicine specialists are summarised in Table 31 using Medicare data and hospital and morbidity data. The data show that between 1993-94 and 1997-98 Medicare services by thoracic medicine specialists increased at a compound annual rate of 9.7%. From 1993-94 to 1997-98 hospital separations for principal procedures relating to thoracic medicine increased at an annual rate of 3.3%. For principal and secondary procedures the increase over the period 1993-94 to 1997-98 was 4.4% per annum (table 17).

Table 31: Trends in services provided by thoracic medicine specialists, 1993-94 to 1997-98

Indicator			**Compound annual increase %**
Medicare Services	**1993-94**	**1997-98**	9.7
	423,207	613,561	
	1993-94	**1997-98**	
Hospital separations for principle procedures	27,729	31,620	3.3

Source: DHAC, AIHW

A significant factor contributing to increases in service utilisation across all medical specialties is the ageing of the population. According to the AIHW (1996), between 1988 and 1993, life expectancy increased from 73.1 to 75 years for males and from 79.5 to 80.9 years for females (p 20). At the same time Australia=s total fertility rate per woman has been relatively stable at approximately 1.89 which is well below the acknowledged replacement level (2.1) (ABS, 1994). These demographic trends imply a shift in service provision for all specialties from care of the young to care of the elderly.

Burden of Disease and Injury

In 1999 the AIHW published the first national burden of disease study for Australia (AIHW, 1999). Burden of disease was calculated using the common metric called the Disability-Adjusted Life Year (DALY) which is a combined measure of mortality, disability, impairment, illness and injury. One DALY represents one year of healthy life lost due to premature mortality and disability in a given population.

Acute respiratory disease accounted for 1.2% of the total burden of disease and injury among the Australian population in 1996 while chronic respiratory disease accounted for 7.1%. Asthma and chronic obstructive pulmonary disease (COPD) accounted for the majority of the burden of chronic respiratory diseases (88%). The burden of disease associated with asthma was higher among women than men, while the burden associated with COPD was higher among men. Between 1981 and 1996, the per capita mortality burden for chronic obstructive pulmonary disease decreased by 16% for males and increased by 70% for females. The burden associated with asthma dominated at the ages under 15 years and reduced with increasing age, while the rate for COPD increased with age to peak for men in the 55 to 74 year age group and for women in the 75 and over age group. Mortality due to acute respiratory disease and chronic respiratory disease increased exponentially with age to peak in the over 75 age group.

This data shows the link between burden of disease and illness associated with respiratory disease and age. It confirms that the ageing of the Australian population is likely to have an impact on requirements for the provision of services relating to thoracic medicine.

Consumer Assessment and Invited Submissions

To assist the Working Party, a number of expert opinions were invited on the adequacy of the workforce.

Cystic Fibrosis

Once a paediatric condition but it now also requires adult care. In New South Wales there are 330 people with cystic fibrosis over the age of 18. This represents 44% of the total population with cystic fibrosis in New South Wales. By 2005 it is predicted that this number will have grown to 414 people. It has been predicted that by 2010 more than 50% of people with cystic fibrosis will be greater than the age of 18 years. The number of people with cystic fibrosis in Australia at present is estimated to be 2,500.

There are no statistics available for the mean age of survival for cystic fibrosis patients in Australia, however data from the US Cystic Fibrosis Foundation show that the age of survival (median years) is 32.3 years.

Some recommendations for the care of people with cystic fibrosis were outlined in a 1999 report by Cystic Fibrosis Victoria Inc. which proposed that for a clinic with approximately 50 patients, a physician/director and a registrar with a special interest in

cystic fibrosis each have a 0.5 workload. Support staff such as physiotherapist, dietician, occupational therapist and social worker would also be required. These needs would have to be increased where there is a higher proportion of very unwell patients with more highly complex needs such as in adult cystic fibrosis care (Cystic Fibrosis Victoria 1999).

Cystic Fibrosis Australia considers the paediatric services available in Australia appear to be sufficient as far as medical specialists are required. However, the facilities for care of adults with Cystic Fibrosis are not adequate and are not funded sufficiently.

Sleep Medicine

In December 1999 160 individuals had passed or provisionally passed the sleep medicine practitioner credentialing process. By the end of 2000 this is expected to rise to 170 giving a ratio of sleep medicine practitioners to population of 1:110,000. Grunstein advised the Working Party that in a population of 100,000 an expectation to find 500 patients with severe sleep apnea/sleep related respiratory failure would be reasonable. Considering that many of these practitioners would be seeing patients with general respiratory disease, this would be a sufficient number to maintain a practice.

The Working Party noted that it is hard to project how many practitioners in sleep medicine will be needed. It is expected that in the future, practitioners who practise mostly in sleep medicine will evolve rapidly.

Changes in Technology and Options for Service Provision

Technological advance may have an impact on the utilisation of thoracic medicine services. The impact is, however, difficult to quantify. Generally, it is considered technology has two long term impacts - boosting practitioner productivity and broadening the types, and sophistication, of procedures and treatments that are available to the public. New technology may also allow other specialties, GPs and/or other health professions to be able to perform some of the tasks that are currently referred to thoracic medicine consultants.

Recognition of the difficulty of quantifying the impact in technological advance is one of the reasons the AMWAC process includes regular updating of the data and conclusions contained in the original reports.

PROJECTIONS OF SUPPLY

Entry Into the Workforce

Over the past five years, an average of 12.6 new thoracic medicine specialists have entered the workforce each year. Over the next few years, the number of new thoracic medicine specialists is expected to range between 11 and 16.

Retirements

In the AMWAC/TSANZ 1999 survey of thoracic medicine specialists respondents provided an indication of their retirement intentions. On average, it would seem that the use of 65 years as a retirement age is appropriate for projection purposes. Within the next 3 years 6.3% of thoracic medicine specialists intend to retire and a further 11.8% indicated they intended to retire in the following nine years.

AIHW data indicate that the average age of thoracic medicine specialists is 46.4 years and that 11 thoracic medicine specialists are aged 65 years and over (4.1 % of the workforce) (see Table 9).

Female Participation in the Workforce

The representation of women in the workforce is approximately 14% (RACP 14.2%; AIHW 14.3%). It is expected that the proportion of women in the workforce will increase, as the number of female trainees continues to increase (currently 35.3%) and the predominantly male cohort of older thoracic medicine proceed through to retirement.

The AIHW 1997 survey indicated that, on average, female thoracic medicine specialists worked 11 hours less per week than do male thoracic medicine specialists. This has implications for the future workforce supply for the thoracic medicine workforce as the female specialist currently contribute approximately 80% of the average total hours per week worked by male specialists.

Overseas Trained Doctors

Thoracic medicine specialists entering the Australian workforce through the Australian Medical Council specialist college pathway are expected to be small and to have a minimal effect on overall workforce supply.

Thoracic Medicine Specialists Views on Adjustments to Trainee Numbers

In total, 88.8% of respondents to the TSANZ/AMWAC 1999 survey considered that there should be an increase in the number of trainee thoracic medicine specialists in rural areas, while 1.9% thought the number should stay the same and 9.3% thought there should be a decrease. In metropolitan areas, 24.7% of respondents thought an increase in trainees was needed, while 30.7% considered the number should remain the same and 44.6% thought there should be a decrease in trainees in metropolitan areas.

Provision of Services in Rural and Remote Areas

The Working Party believes that the provision of thoracic medicine services outside capital cities is undersupplied. Data from the TSANZ/AMWAC survey of thoracic medicine revealed that 14.8% of thoracic medicine practitioners had their main practice in a rural area, while 2.7% of practitioners who had their main practice in a metropolitan area indicated they also provided additional services to a practice in a rural area.

Substitution

A number of respondents to the AMWAC 1999 survey of Divisions of General Practice thoracic medicine specialists commented on the role of GPs and general physicians in the treatment of thoracic medicine, noting that the majority of thoracic medicine related problems were treated by GPs in their area with only more complex problems being referred to thoracic medicine specialists in metropolitan regions.

BALANCING SUPPLY AGAINST REQUIREMENTS

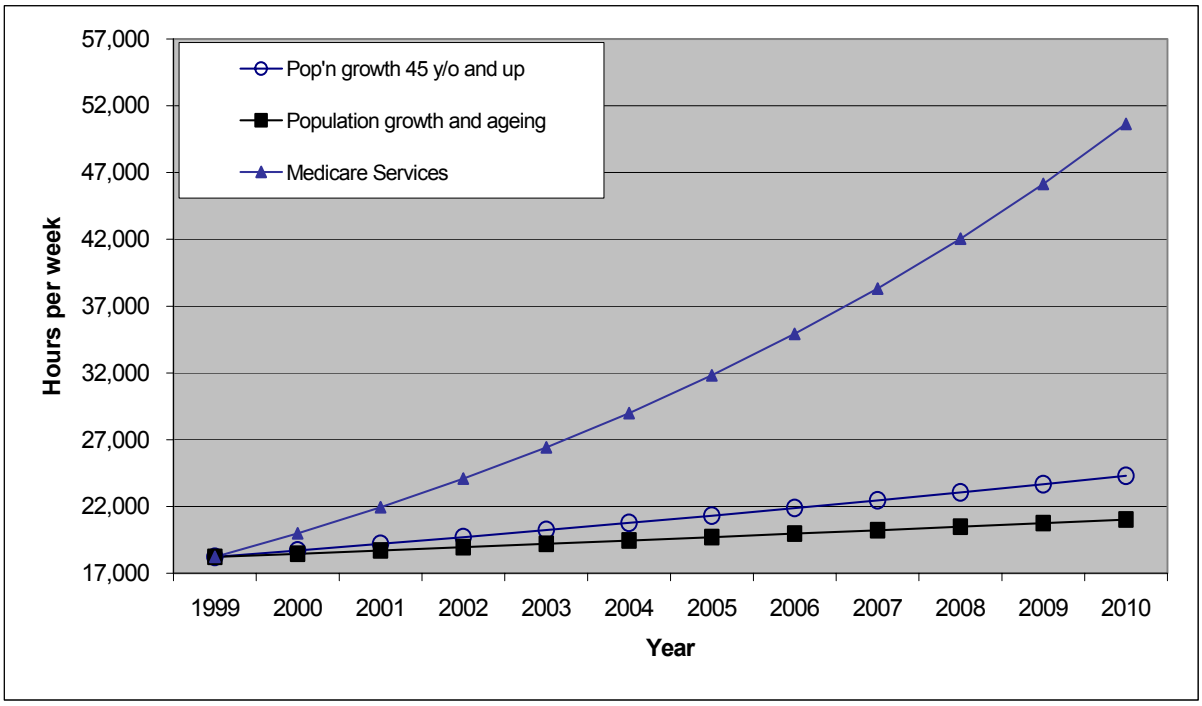
The standard AMWAC specialist medical workforce projection model has been used to project a thoracic medicine supply and requirements scenario to 2010. On the supply side, the model takes into account expected entrants to the workforce and those leaving, converts the number of specialists to a full time equivalent (FTE) figure using the average hours worked per week by age and gender. On the requirements side, the likely trend in demand for thoracic medicine services is included, based on the Working Party's assessment of the expected trend in requirements.

Both supply and requirements have been projected over a ten year period. It is recognised that a ten year projection period is a long time frame for assumptions to remain valid. However, this time frame was chosen because five years was considered to be too short for any impact on training numbers to move through, given that the thoracic medicine training program is a minimum three years.

Requirement Trends

The Working Party assessed various indicators as the basis for estimating future requirements for thoracic medicine specialists (Figure 2). These include population growth taking into account the effect of the ageing population on services, the ABS population growth estimates of people aged 45 years or older (1997 to 2011) and recent (1993-94 to 1997-98) growth in Medicare service provision by thoracic medicine specialists.

Figure 2: Requirement projections for thoracic medicine specialists based on hours currently worked per week using selected growth indicators



Over the next ten years, the Australian population is expected to increase at an annual rate of 0.9% per annum. The effect of ageing is expected to add a further 0.4% to population estimates with, the total ageing and population increase estimated at 1.3%.

Between 1993-94 and 1997-98 there was a compound annual increase of 9.7% in the total number of Medicare services provided by thoracic medicine specialists. The Working Party considered that the growth rate was unsustainable and overstated the likely need for future thoracic medicine services. In this respect it was unlikely to be a true reflection of trends in service provision; rather it may be due in part to cost shifting practices and provision of services by non-respiratory physicians.

The Working Party concluded that the best estimates of the future demand for thoracic medicine services would be somewhere between 1.3% (as indicated by trends in population growth and ageing) and 2.6% (as indicated by the growth of the population aged 45 years and older). A growth factor of 2.0% was considered reasonable.

The productivity of thoracic medicine specialists as measured in hours worked will vary from time to time and by age group as not all specialists work a uniform full time working week, so it is appropriate to measure services provided in hours instead of by head count. In 1999, the 315 thoracic medicine specialists provided an estimated total of 18,219 hours of services per week. The Working Party concluded that there was a shortage of up to 20 thoracic medicine specialists in 1999, which represented a shortage of 1,157 hours per week.

Supply Trends

Three data sources used to describe the thoracic medicine workforce provided similar age profiles. The AIHW (1997) data indicates that 18.6% of the workforce is aged over 55 years, RACP (1997-98) data indicate that 18.4% of the workforce is aged over 55 years and the TSANZ/AMWAC 1999 survey indicated that 19.6% of the workforce were similarly aged. Due to this currency of the data, supply projections were calculated based on the TSANZ 1999 workforce figures and using the AIHW average hours worked per week.

The supply of the thoracic medicine specialists was projected by ageing the 1999 supply through each year of age, subtracting predicted retirements (using a retirement age of 64.9 years) and attrition and adding to the workforce the expected number of new graduates entering the workforce per year (estimated at 12.6 per annum over the next three years).

The number of thoracic medicine specialists was converted to hours per week by applying the average number of hours worked per week by male and female thoracic medicine specialists in each major age cohort. In doing so, the Working Party assumed that the pattern of workforce participation of the current workforce provides a suitable basis on which to project future workforce supply requirements. Hence the model takes into account the increase in female participation in the thoracic medicine workforce and any

differences in hours associated with age and gender. These projections show that based on the estimated number of graduates over the next 10 years remaining constant (average of 12.6 graduates per year), supply will be increased from the estimated 1999 level of 18,219 hours per week to an estimated 19,587 hours per week in 2004 and an estimated 21,022 hours per week by 2010.

Table 32: Projected supply of thoracic medicine services, by FTE hours worked per week, 1999 to 2010

Year	Expected entrants into the workforce	Estimated FTE hours for the total thoracic medicine workforce
1999	16	18,219
2000	11	18,565
2001	11	18,768
2002	12	18,998
2003	13	19,274
2004	13	19,587
2005	12	19,888
2006	13	20,130
2007	13	20,394
2008	12	20,638
2009	13	20,819
2010	13	21,022

Source: AMWAC

Projected Balance

Using the selected growth indicator (2.0% per annum) to project workforce requirements and the estimated supply of thoracic medicine specialists (including the identified existing shortfall of 20 thoracic medicine specialists), an indication of the expected shortage or oversupply can be calculated for the years 1999 to 2003. This is outlined in Table 33 and shows a workforce undersupply of 5.97% in 1999, which is expected to increase to 8.1% by 2003. Note that the thoracic medicine advanced training program runs for a minimum of three years so no alterations to graduating numbers can be made during this period. However, if action is taken in 2001 the output of the training program can be boosted from 2004 onwards to make up for the estimated shortfall over the period 2004 to 2010.

Table 33: Projected supply of, and requirements for, thoracic medicine specialists (FTE hours per week), 1999 to 2004[a,b]

Year	Number of Graduates	Projected Requirements	Projected Supply	Balance	% Shortage
1999	16	19376	18219	-1157	5.97
2000	11	19763	18565	-1198	6.06
2001	11	20159	18768	-1391	6.90
2002	12	20562	18998	-1564	7.61
2003	16	20973	19274	1699	8.10

Note: a - based on average retirement rates and a FTE working week of 57.2 hours; b - assumes a shortage of 20 FTE thoracic medicine specialists in 1999
Source: AMWAC

To bring the workforce supply and requirements back into equilibrium would require an additional graduate output of up to 25 individuals in 2004. This would require a three-fold increase in the number of training positions in one year and is clearly not practical. Accordingly, the Working Party suggests a staged increase in trainee intake from 2001. In terms of ability to effect increases the staged scenario is preferable. It will also enable the projected trend in requirements to be monitored and the recommended increases in trainee intake can be adjusted if necessary.

Table 34 shows the effects of a staged increase to bring the thoracic medicine workforce back into balance. An incremental increase of additional two graduating specialists each year from 18 in 2004 up to 24 in 2007, then levelling out at 23 will bring the workforce progressively back into equilibrium.

Table 34: Graduate output required to move projected supply into equilibrium with projected requirements (2.0% growth per year), by hours worked per week, 2003 to 2010[a,b]

Year	Number of new graduates	Projected Requirements (FTE hrs/week)	Projected Supply (FTE hrs/Week)	Balance (shortage)	% Shortage
2004	18	21392	19717	1675	7.83
2005	20	21820	20239	1581	7.25
2006	22	22257	20838	1419	6.38
2007	24	22702	21515	1187	5.23
2008	23	23156	22270	886	3.83
2009	23	23619	22975	664	2.73
2010	23	24091	23670	421	1.75

Note: a - based on average retirement rates and a FTE working week of 57.2 hours;
b - assumes a shortage of 20 FTE thoracic medicine specialists in 1999
Source: AMWAC

It should be noted that the expected AMWAC projection model is sensitive to the chosen requirement indicator, to the hours worked by each age and sex cohort and to the number of new specialists estimated to be entering the workforce from the training program. If expected requirement growth for thoracic medicine specialists is above or below that indicated, or if a significantly lower or higher average number of hours is worked per week across the workforce, or the number of new entrants into the workforce varies significantly from that estimated, then the model will need to be updated to account for these changed

scenarios. This monitoring process is particularly important in terms of training program outputs because of the degree of uncertainty in these estimates, which is associated with the flexibility afforded by the time required to complete the program.

Ideally, the number of commencing trainees should be increased proportionately less in the comparatively well supplied State of South Australia and kept roughly in line with projected State/Territory population shares in 2010. In particular, consideration needs to be given to addressing distributional problems by improving service provision in the relatively poorly supplied States and Territories, namely, Queensland, Victoria, Tasmania, the Australian Capital Territory and the Northern Territory. The relative undersupply situation could also be compounded in Queensland and New South Wales, given that these States have a comparatively high proportion of thoracic medicine specialists aged 55 years and over.

However, new training positions require an appropriate infrastructure (Appendix C) to ensure that trainees gain adequate supervision, experience and support. The Working Party and the RACP consider that the additional places for new commencing trainees should be provided where there are suitable supervisors and infrastructure. Trainees should be enrolled based on the understanding that at the end of their training they will be encouraged to consider working with population groups with a high level of unmet need for thoracic medicine services.

The Working Party would like to note its concern over the geographic maldistribution of the workforce. In this respect, whilst it is recognised that provincial/rural centres require a minimum level of appropriate infrastructure and population catchment to sustain a thoracic medicine service, it would seem useful if State/Territory health departments, the RACP and the TSANZ could work together to consider innovative solutions that may help reduce the maldistribution within the workforce.

RECOMMENDATIONS

The Working Party recommends:

1. To achieve an appropriate supply of thoracic medicine specialists, State/Territory health departments, in consultation with the Royal Australasian College of Physicians (RACP) and the Thoracic Society of Australia and New Zealand (TSANZ), should progressively increase the number of first year advanced trainees in thoracic medicine over the period 2001 to 2007 from the current average of 13 to between 18 and 24.

   The aim of maintaining first year advanced trainee intake within this range is to match workforce supply with an expected future growth in thoracic medicine requirements, over the projection period, of 2.0% per annum. A suggested distribution of the new commencing trainees is shown in Table 35.

Table 35: Recommended distribution of thoracic medicine advanced trainee intake, by State/Territory, 2001-2006

State/Terr.	2001	2002	2003	2004	2005	2006	2005 share of commencing trainees	2008 population share
NSW	5	6	7	7	8	7	33.3	33.3
Vic	4	4	4	5	6	6	25.0	24.1
Qld	4	5	5	6	6	6	25.0	19.8
SA	1	1	1	1	1	2	4.2	7.5
WA	2	2	2	2	2	2	8.3	10.3
Tas	-	-	1	1	1	-	4.2	2.3
NT	-	-	-	-	-	-	-	1.2
ACT	-	-	-	-	-	-	-	1.5
Australia	**16**	**18**	**20**	**22**	**24**	**23**	**100.0**	**100.0**

Source: AMWAC, ABS

2. That if necessary, the co-ordination of the adjustments to thoracic medicine trainee intake be overseen by State/Territory based thoracic medicine working groups, comprising representatives from the RACP, TSANZ and State/Territory health departments.

3. That thoracic medicine requirements and supply projections be monitored regularly so they can be amended if new trends emerge; this monitoring be coordinated by RACP, TSANZ and AMWAC and the results incorporated into the AMWAC annual report to AHMAC. AMWAC will provide all necessary support.

4. That a full update of this review of the thoracic medicine workforce be undertaken in 2004.

APPENDIX A: RURAL, REMOTE AND METROPOLITAN AREAS CLASSIFICATION

The Commonwealth Departments of Health and Family Services and Primary Industries and Energy, Rural, Remote and Metropolitan Areas classification, has been used to classify the geographic location of the job of responding medical practitioners in the following seven categories. The data used in determining these categories are based on the 1991 population census.

Metropolitan areas:

1. *Capital cities* consist of the State and Territory capital cities of Sydney, Melbourne, Brisbane, Perth, Adelaide, Hobart, Darwin and Canberra.

2. *Other metropolitan centres* consist of one or more statistical subdivisions which have an urban centre of population of 100,000 or more in size. These centres are: Newcastle, Wollongong, Queanbeyan (part of Canberra-Queanbeyan), Geelong, Gold Coast-Tweed Heads, Townsville-Thuringowa.

Rural zones:

3. *Large rural centres* are statistical local areas where most of the population reside in urban centres of population of 25,000 to 99,999. These centres are: Albury-Wodonga, Dubbo, Lismore, Orange, Port Macquarie, Tamworth, Wagga Wagga (NSW); Ballarat, Bendigo, Shepparton-Mooroopna (Vic); Bundaberg, Cairns, Mackay, Maroochydore-Mooloolaba, Rockhampton, Toowoomba (Qld), Whyalla (SA); and Launceston (Tas).

4. *Small rural centres* are statistical local areas in rural zones containing urban centres of population between 10,000 and 24,999. These centres are: Armidale, Ballina, Bathurst, Broken Hill, Casino, Coffs Harbour, Forster-Tuncurry, Goulburn, Grafton, Griffith, Lithgow, Moree Plains, Muswellbrook, Nowra-Bombaderry, Singleton, Taree (NSW); Bairnsdale, Colac, Echuca-Moama, Horsham, Mildura, Moe-Yallourn, Morwell, Ocean Grove-Barwon Heads, Portland, Sale, Traralgon, Wangaratta, Warrnambool (Vic); Caloundra, Gladstone, Gympie, Hervey Bay, Maryborough, Tewantin-Noosa, Warwick (Qld); Mount Gambier, Murray Bridge, Port Augusta, Port Lincoln, Port Pirie (SA); Albany, Bunbury, Geraldton, Mandurah (WA); Burnie-Somerset, Devonport (Tas).

5. *Other rural areas* are the remaining statistical areas within the rural zone. Examples are Cowra Shire, Temora Shire, Guyra Shire (NSW); Ararat Shire, Cobram Shire (Vic); Cardwell Shire, Whitsunday Shire (Qld); Barossa, Pinnaroo (SA); Moora Shire, York Shire (WA); George Town, Ross (Tas); Coomalie, Litchfield (NT).

Remote zones:
These are generally less densely populated than rural statistical local areas and hundreds of kilometres from a major urban centre.

6. *Remote centres* are statistical local areas in the remote zone containing urban centres of population of 5,000 or more. These centres are: Blackwater, Bowen, Emerald, Mareeba, Moranbah, Mount Isa, Roma (Qld); Broome, Carnarvon, East Pilbara, Esperance, Kalgoorlie/Boulder, Port Hedland, Karratha (WA); Alice Springs, Katherine (NT).

7. *Other remote areas* are the remaining areas within the remote zone. Examples are: Balranald, Bourke, Cobar, Lord Howe Island (NSW); French Island, Orbost, Walpeup (Vic); Aurukun, Longreach, Quilpie (Qld); Coober Pedy, Murat Bay, Roxby Downs (SA); Coolgardie, Exmouth, Laverton, Shark Bay (WA); King Island, Strahan (Tas); Daly, Jabiru, Nhulunbuy (NT).

APPENDIX B: SURVEY OF MEMBERS OF THE THORACIC SOCIETY OF AUSTRALIA AND NEW ZEALAND.

METHODOLOGY

To assist with the establishment of a profile of the thoracic medicine workforce in Australia, a mailed survey of all members of the TSANZ who were Fellows of the RACP was conducted in September 1999. The survey was administered by AMWAC in consultation with the TSANZ. In total, 287 questionnaires were distributed and 195 members responded, which is a response rate of 67.9%.

RESULTS

The results of this survey are presented in the following sequence:

- An analysis of the response rate, which includes a description of the profile of respondents;
- An examination of factors influencing future workforce participation and requirements, including retirement expectations and plans to reduce hours of work; and
- A description of consultation waiting times.

Response rate analysis

Distribution

Table B1 shows that the State/Territory distribution of survey respondents was similar to the distribution of the thoracic medicine practitioners who are Fellows of the RACP. The majority of respondents (79.2%) were located in the eastern states of New South Wales (40.4%), Victoria (21.3%) and Queensland (17.5%). In comparison with the AIHW survey (1997) New South Wales, Queensland and the Australian Capital Territory respondents may be slightly over represented while South Australia and Western Australia thoracic specialists may be slightly under represented in the responses to the survey.

Table B1: Distribution of TSANZ/AMWAC 1999 survey respondents compared with the distribution of all thoracic medicine practitioners who are fellows of the RACP (1998), by State/Territory

	NSW	Vic	Qld	SA	WA	Tas	NT	ACT	Aust
TSANZ/AMWAC survey respondents (n=185)									
% respondents	40.4	21.3	17.5	7.7	8.7	1.6	0.5	2.2	100.0
RACP workforce survey 1998 (n=326)									
% of members	36.8	23.9	15.6	9.5	9.8	2.5	0.6	1.2	100.0

Source: RACP and TSANZ/AMWAC survey of thoracic medicine specialists

In total, 85.2% of survey respondents were located in a metropolitan area and 14.8% were located in a rural area, while the AIHW data indicated that 91.5% of thoracic medicine specialists were located in a metropolitan area and 8.5% in a rural area (table B2). Table B2 indicates that there could be a slight over representation of rural thoracic specialists to the TSANZ/AMWAC survey when compared to the AIHW labour force survey (1997).

Table B2: Geographic distribution of thoracic medicine specialists, TSANZ/AMWAC 1999 survey and AIHW 1998 survey

	Metropolitan only	Rural only	Aust
TSANZ/AMWAC survey respondents (n=185)			
% respondents	85.2	14.8	100.0
AIHW medical labour force data (n=327)			
% of thoracic medicine workforce	91.5	8.5	100.0

Source: AIHW and TSANZ/AMWAC survey of thoracic medicine specialists

Age Profile

The age of survey respondents ranged from 31 years to 72 years with an average age of 46.8 years. The majority (75.6%) of respondents were aged between 35 years and 54 years; 2.7% of respondents were aged 65 years and over, while 19.5% were aged 55 years and over. Table B3, indicates that the age profile of respondents was consistent with the age profile of the thoracic medicine workforce as indicated by the AIHW 1997 medical labour force survey.

Table B3: Age profile of thoracic medicine practitioners, AMWAC/RACP 1999 survey, and AIHW 1998 medical labour force survey

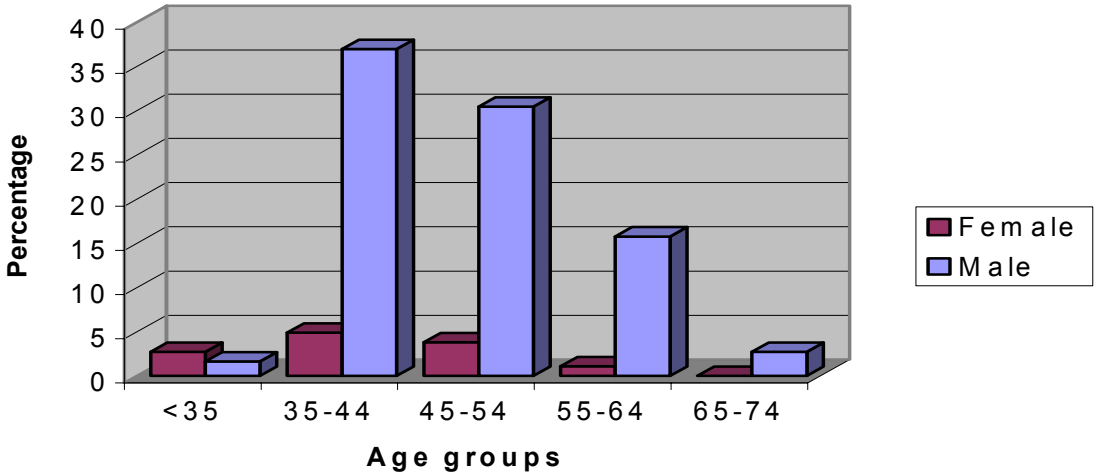
	<35 yrs	35-44 yrs	45-54 yrs	55-64 yrs	65-74 yrs	75 yrs & over
AMWAC/RACP survey respondents (n=185)						
% respondents	4.3	41.9	34.2	16.9	2.7	0.0
AIHW medical labour force data (n=327)						
% thoracic medicine workforce	6.8	38.7	35.0	13.5	4.9	0.0

Source: AIHW and TSANZ/AMWAC survey of thoracic medicine specialists

Gender Profile

Figure 1 shows the age distribution of male and female thoracic medicine practitioners. In total 87.5% of survey respondents were men and 12.5% were women. The gender profile of survey respondents is similar to that given by RACP data in which 85.8% were men and 14.2% were women. The mean age for female specialists was more than 5 years younger than that for male specialists, respectively, 42.1 years and 47.5 years. Of note was that the majority of thoracic medicine specialists whose main practice was located in a rural region were male practitioners (96.3%).

Figure B1: Age profile of thoracic medicine practitioners, by sex, 1999



Source: TSANZ/AMWAC survey of thoracic medicine specialists

Workforce Status

In total, 95.4% (185) of survey respondents indicated they were currently working in the field of thoracic medicine, of whom 74.3% were working full time and 25.7% were working part-time. A further 9 respondents did not complete the body of the questionnaire because they were not currently practising in adult thoracic medicine. Of this latter group two had retired from the workforce, three indicated that they were employed in another field of medicine and one was employed in a full time academic position with no clinical work.

The remainder of this report focuses on the information provided by the 185 respondents, who were currently active in the workforce.

Response Rate Conclusions

The Working Party concluded that a response rate of 67.4% was acceptable. Furthermore, it was concluded that the profile of respondents was sufficiently consistent with the RACP and AIHW profiles of the thoracic medicine workforce to provide representative data of the thoracic medicine workforce.

Qualifications

In total, 181 (98.4%) survey respondents held Fellowship of the RACP. Of these respondents, 63.0% indicated they received advanced training under the auspices of the Specialist Advisory Committee in Thoracic Medicine (SACTM). A further 28.2% received advanced training prior to the establishment of the SACTM while 7.7% indicated they received advanced training under another specialist advisory committee (SAC), (Table B4).

Table B4: Advanced training for Fellowship of the RACP, 1999

Advanced training	Number of specialists	%
Under the auspices of the SACTM[1]	114	63.0
Prior to the establishment of a SAC[2]	51	28.2
Under the auspices of some other SAC[2]	14	7.7
Other	2	1.1
Total	**181**	**100**

1. Specialist Advisory Committee in Thoracic Medicine
2. Specialist Advisory Committee

Source: TSANZ/AMWAC survey of thoracic medicine specialists

Of the 14 respondents who indicated they gained advanced training under the auspices of another specialist advisory committee, 9 were under the auspices of the Specialist Advisory Committee in General Medicine and 2 were under the auspices of the Specialist Advisory Committee in Intensive Care. The remaining 3 respondents gained their advanced training under the auspices of other specialist advisory committees.

Type of Thoracic Medicine Practice

Respondents to the TSANZ/AMWAC survey were asked to indicate the type of thoracic medicine they practice. Table B5 shows that the majority (82.8%) of respondents were thoracic medicine/sleep specialists. A further 24 (13.3%) indicated they were a general physician with a major interest in thoracic medicine.

Table B5: Type of thoracic medicine practice, 1999

Type of practice	Number	Specialists	% in rural areas
Thoracic Medicine/Sleep Specialist	149	82.8	8.1
General Physicians with Major Interest in Thoracic Medicine	24	13.3	62.5
Other	7	3.9	28.6

Source: TSANZ/AMWAC survey of thoracic medicine specialists

There was a wide variation between states with respect to type of practice (Table B6). For example, in South Australia, Tasmania and the Northern Territory all respondents were thoracic medicine specialists, whereas in New South Wales, Victoria, Queensland and the Australian Capital Territory between 10% and 20% were general physicians with a major interest in thoracic medicine. Victoria and Western Australia reported having 'other' qualified specialists with a major interest in thoracic medicine.

Table B6: Type of thoracic medicine practice by State/Territory, 1999

	% Thoracic medicine specialist	% General Physician	% Other specialist	Total number of respondents
New South Wales	82.4	17.6	-	68
Victoria	75.7	13.5	10.8	37
Queensland	90.0	10.0	-	30
South Australia	100.0	-	-	13
Western Australia	93.3	-	6.7	15
Tasmania	100.0	-	-	3
Australian Capital Territory	80.0	20.0	-	5
Northern Territory	100.0	-	-	1
Total	**84.9**	**12.2**	**2.9**	**172**

Source: TSANZ/AMWAC survey of thoracic medicine specialists

The general physicians who indicated they had a major interest in thoracic medicine spent, on average, 55.9% of their time in thoracic medicine (minimum 20% maximum 100%). Respondents who indicated their area of thoracic medicine as 'other' spent, on average, 37.1% (minimum 20%, maximum 50%) of their time in thoracic medicine.

Of note is that 62.5% of general physicians with a major interest in thoracic medicine were located in country areas, while only 8.1% of thoracic medicine/sleep specialists were located in country areas.

Work Setting

Respondents were asked to indicate where they practiced thoracic medicine. As table B7 indicates 48.4% of total workforce time was spent in the public sector in a salaried position while 51.6% of total workforce time was spent in private practice. It should be noted that 52.2% of respondents worked in both a public position and in a private position, 38.3% worked solely in a private practice and 19.5% worked entirely in the public sector. Of the respondents who indicated they worked in both the private and public sectors, 55.4% of total time was spent in a salaried position and 44.6% of total time was spent in the private sector. The figures in table B7 represent the average time spent in each work setting across the entire workforce.

Table B7: Work setting in which the thoracic medicine workforce spends its time, 1999

Work Setting	%	Percentage of total hours worked in a typical week		Total
		Public	Private	
Public sector only	19.5	100.0	0.0	100.0
Private practice only	28.3	0.0	100.0	100.0
Public and Private sector	52.2	55.4	44.6	100.0
Total	**100.0**	**48.4**	**51.6**	**100.0**

Source: TSANZ/AMWAC survey of thoracic medicine specialists

Table B8 looks at the main source of salary for all respondents who indicated they worked some time in the public sector. The percentage of time spent working in a salaried position ranged from 5% to 100% of total work time (mean 48.0%, mode 40.0%, standard deviation 40.3). The main source of salary was in a public hospital (77.5%) followed by a position at a University (9.3%) with 9 respondents (7%) indicating that their source of salary was from both a position in a public hospital and a University position.

Table B8: Source of salary of thoracic medicine specialists employed in the public sector in thoracic medicine, 1999

Source of Salary	Number	Percent
Public Hospital	100	77.5
University	12	9.3
Public Hospital & University	9	7.0
Research/Institute	5	3.9
Other	3	2.3
Total	**129**	**100.0**

Source: TSANZ/AMWAC survey of thoracic medicine specialists

The percentage of total time worked by respondents who indicated they worked some time in private practice ranged from 2% to 100% (mean 50.6%, mode 60.0%, standard deviation 40.6). Of the 126 respondents who indicated some or all of their time worked was in private practice, the majority (75.4%) had a paid hospital appointment (Table B9). A further 9.5% indicated they had a private hospital appointment, while 7.1% indicated they had an unpaid public hospital appointment.

Table B9: Appointment in private practice in thoracic medicine, 1999

Appointment in Private Practice	Number	Percent
Public hospital appointment – paid	95	75.4
Private hospital appointment – paid	12	9.5
Public hospital appointment - unpaid	9	7.1
No hospital appointment	2	1.6
Other	8	6.4
Total	**126**	**100.0**

Source: TSANZ/AMWAC survey of thoracic medicine specialists

Hours Worked

On average, respondents worked a total of 49.8 hours per week (minimum 3 hours; maximum 90 hours; mode 60 hours; median 54 hours; standard deviation 22.0) (Table B10). In total, 21.5% of respondents worked less than 35 hours per week and 49.7% worked 55 hours or more.

Table B10: Average hours worked per week by thoracic medicine specialists, by sex and State/Territory, 1999

Hours Worked	NSW	Vic	Qld	SA	WA	Tas	Act	NT	Aus
Male	50.1	48.5	55.6	51.8	52.5	43.0	62.5	*	51.1
Female	40.8	42.6	*	35.5	-	-	-	-	40.5
Total	**48.5**	**47.7**	**55.4**	**46.8**	**52.5**	**43.0**	**62.5**	*	**49.8**

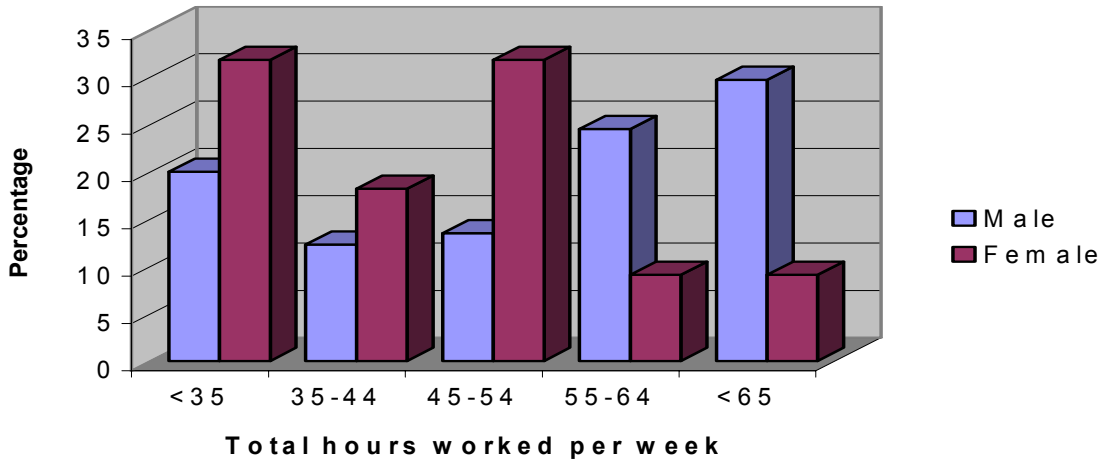
* less than 3 respondents

Source: TSANZ/AMWAC survey of thoracic medicine specialists

Table B10 shows that thoracic medicine practitioners in Queensland (55.4 hours per week), Western Australia (52.5 hours per week) and the Australian Capital Territory (62.5 hours per week) work, on average, more hours per week in thoracic medicine than the national average (49.8 hours per week).

A difference ($p<0.05$) was observed in the hours worked per week between male and female thoracic medicine practitioners with female practitioners working, on average, 10.6 hours less than male practitioners (ie 40.5 hours per week compared to 51.1 hours per week). Figure 2 shows that a greater percentage of female specialists work less than 35 hours per week than their male counterparts. The figures also shows that a relatively higher proportion of women work between 45 – 54 hours per week, while almost 60% of men work more than 55 hours per week.

Figure B2: Total hours worked by thoracic medicine practitioners, by sex, 1999



Source: TSANZ/AMWAC survey of thoracic medicine specialists

Thoracic medicine practitioners in metropolitan areas (52.4 hours per week) worked, on average, almost 6 hours more per week in thoracic medicine than do thoracic medicine practitioners in rural areas (36.7 hours per week) ($p<0.01$). No difference was observed between States/Territories and hours worked per week.

Consultation Waiting Times

Table B11 shows that patients with a clinically urgent condition wait less time (3.6 days) to see a doctor in his/her private rooms than do patients in public outpatient departments (7.9 days) ($p<0.01$). There is some variation between States/Territories for the average waiting time for a patient with a clinically urgent condition presenting to a public sector service. For example, the waiting time in Western Australia was 12.3 days compared with 3.9 days in New South Wales and the Australian Capital Territory.

Similarly, waiting times for patients with a clinically urgent condition presenting to a private sector service vary between States/Territories. Patients in New South Wales and the Australian Capital Territory had an average waiting time of 2.9 days, while private patients in South Australia and the Northern Territory had to wait, on average, 5.8 days.

With respect to a standard first consultation, the average waiting time for a private patient to see a thoracic medicine specialist in his/her private rooms was 25.7 days. States with above average waiting times were Victoria and Tasmania (28.1 days) and New South Wales and the Australian Capital Territory (26.3 days).

The average waiting times for a standard first consultation for a patient presenting to a public sector outpatient service was 35.7 days. The average waiting time for public patients in Queensland was 49.2 days and in South Australia and Tasmania it was 43.0 days. These times were well above the national average at 35.7 days. The average

waiting time for patients in public outpatient departments in New South Wales and the Australian Capital Territory (24.2 days) was significantly less than the national average ($p<0.01$).

Table B11: Average waiting time (days) for a clinically urgent condition and a standard first consultation, by type of service and State/Territory, 1999

State/Territory	Public Outpatient	Private Room
	Clinically urgent condition	
NSW/ACT	3.9 (±3.2)	2.9 (±3.9)
Victoria/Tasmania	9.7 (±13.6)	3.4 (±2.5)
Queensland	9.2 (±8.8)	3.9 (±5.3)
South Australia/Northern Territory	8.5 (±9.3)	5.8 (±4.4)
Western Australia	12.3 (±14.5)	5.2 (±4.1)
Total	**7.9 (±10.2)**	**3.6 (±4.1)**
	Standard first consultation	
NSW/ACT	24.2 (±20.6)	26.3 (±30.6)
Victoria/Tasmania	35.7 (±18.9)	28.1 (±15.5)
Queensland	49.2 (±35.4)	25.5 (±28.7)
South Australia/Northern Territory	43.0 (±22.8)	20.7 (±11.3)
Western Australia	36.4 (±20.4)	20.0 (±16.9)
Total	**35.7 (±25.4)**	**25.7 (±25.3)**

Source: TSANZ/AMWAC survey of thoracic medicine specialists

Provision of Services to Rural Areas

Table B12 indicates that throughout Australia 85.2% of thoracic medicine practitioners had their main practice in a metropolitan area and 14.8% had their main practice in a rural area. States/Territories with an above average percentage of respondents resident in rural areas were Victoria, Queensland and Tasmania, while there were no thoracic medicine practitioners in rural areas in South Australia and the Northern Territory indicated they had no thoracic medicine practitioners in rural areas.

In total, 2.7% of thoracic medicine practitioners whose main practice was located in a metropolitan area indicated they had an additional practice located in a rural area. Four of these respondents were thoracic medicine/sleep specialists and one was a general physician with a major interest in thoracic medicine.

Table B12: Provision of rural services by thoracic medicine specialists, by State/Territory, 1999

Location of service provision	NSW	Vic	Qld	SA	WA	Tas	NT	ACT	Aust.
Metropolitan only	60	31	24	14	15	2	1	4	151
Metropolitan providing rural services	3	-	1	-	1	-	-	-	5
Resident rural	11	8	7	-	-	1	-	-	27
Total	**74**	**39**	**32**	**14**	**16**	**3**	**1**	**4**	**183**
				Percentages					
Metropolitan only	81.1	79.5	75	100	93.8	66.7	100	100	82.5
Metropolitan providing rural services	4.1	-	3.1	-	6.2	-	-	-	2.7
Resident rural	14.8	20.5	21.9	-	-	33.3	-	-	14.8
Total	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**

Source: TSANZ/AMWAC survey of thoracic medicine specialists

Plans to Change Hours Worked

In total, 48.1% of thoracic medicine practitioners indicated that they planned to change the hours they work with 28.2% anticipating their work hours to decrease, 19.9% expected their work hours to increase and 51.9% expected their hours to remain the same (Table B13). Of note is that among thoracic medicine practitioners in Queensland, 43.8% expected their work hours to decrease over the next three years, while 40.0% of thoracic medicine practitioners in South Australia and the Northern Territory expected to reduce their work hours over the next 3 years. The average expected reduction in hours worked in these States/Territories is 28.6% and 24.2% of total hours worked, respectively (Table B12).

Table B13: Plans to change hours worked by State/Territory, 1999

State/Territory	Reduce hours	Increase hours	Remain the same	Total
NSW/ACT	24.7	23.4	51.9	100.0
Vic/Tas	22.0	19.5	58.5	100.0
Qld	43.8	12.5	43.8	100.0
SA/NT	40.0	20.0	40.0	100.0
WA	18.8	18.8	62.5	100.0
Total	**28.2**	**19.9**	**51.9**	**100.0**

Source: TSANZ/AMWAC survey of thoracic medicine specialists

Of the 57 thoracic medicine practitioners who expected their work hours to decrease over the next three years, 29.4% were over 55 years of age. As was expected, a difference was observed between the age of the respondent and plans to change work hours, with more younger respondents planning to increase hours worked and older respondents planning to decrease hours worked ($p<0.05$). No difference was observed between gender and plans to reduce work hours, or with respect to hours worked and plans to change the hours worked.

Table B14: Plans to change hours worked by age and sex, 1999

	Reduce hours	Increase hours	Remain the same	Total
		Male		
<35 years	-	100.0	-	100.0
35 - 44 years	17.9	20.9	61.2	100.0
45 - 54 years	28.6	21.4	50.0	100.0
55 - 64 years	39.3	10.7	50.0	100.0
65 - 74 years	80.0	-	20.0	100.0
Total	**27.0**	**20.1**	**52.8**	**100.0**
		Female		
<35 years	40.0	20.0	40.0	100.0
35 - 44 years	33.3	22.2	44.4	100.0
45 - 54 years	42.9	14.3	42.9	100.0
55 - 64 years	-	-	100.0	100.0
65 - 74 years	-	-	-	-
Total	**34.8**	**17.4**	**47.8**	**100.0**

Source: TSANZ/AMWAC survey of thoracic medicine specialists

Reasons given by thoracic medicine practitioners who expect to decrease their work hours over the next three years in order of frequency, were:

- lifestyle preferences
- family considerations
- personal health considerations
- retirement

Reasons given by thoracic medicine practitioners who expect to increase their work hours over the next three years in order of frequency, were:

- impact of clinical practice changes
- changed patient numbers
- to build practice/income

Table B15 shows by how much, on average, respondents expect to change the hours they worked. Respondents who anticipated their work hours to increase expected an increase, on average, of 19.5% of total hours they worked, while respondents who anticipated their work hours to decrease expected a change, on average, of 29.1% of total hours worked. Respondents in Victoria and Tasmania who anticipated a reduction in hours worked expected a reduction, on average, of 47.2% of total hours worked.

Similarly, respondents in Western Australia who anticipated a reduction in hours worked in the next 3 years expected to reduce their total hours worked, on average, by 45.0%.

Table B15: Average expected percentage change in hours worked, 1999

State/Territory	Reduce Hours	Increase Hours
NSW/ACT	17.7	17.9
Vic/Tas	47.2	21.4
Qld	28.6	15.0
SA/NT	24.2	30.0
WA	45.0	18.3
Total	**29.1**	**19.5**

Source: TSANZ/AMWAC survey of thoracic medicine specialists

Retirement

In total, 127 (68%) respondents provided details of their retirement intentions. The expected age of retirement ranged from 50 years to 80 years with an average age of retirement of 64.7 years.

Table B16, indicates that 6.3% (8) of thoracic medicine practitioners intended to retire in the next three years and a further 11.8% (15) within nine years. Of practitioners aged 55 years and over, 37.5% (9) plan retiring in the next five years and a further 58.3% (14) in the next 10 years.

Table B16: Actual number of thoracic medicine practitioners who intend to retire in selected years

To 2002	2003-5	2006-8	2009-11	2012-14	2015-17	2018-20	2021-23	2024-26
8	3	12	10	12	15	21	19	13

Source: TSANZ/AMWAC survey of thoracic medicine specialists

Adjustments to Trainee Numbers

Thoracic medicine practitioners were asked to provide their views on whether the number of trainees should be increased or decreased. Table B17 indicates that 24.7% considered that there should be an increase in trainees in metropolitan areas, while 30.7% thought the number should stay the same and 44.6% thought there should be a decrease in the number of trainees in metropolitan areas. Of note is that 88.8% of respondents thought that the number of trainees should be increased in rural areas, while only 9.3% thought that there should be an decrease and 1.9% considered the number of trainees in rural areas should remain the same.

Table B17: Thoracic medicine practitioner's views as to whether the number of trainees in thoracic medicine should be increased or decreased, 1999

Location	Increase	Remain the same	Decrease	Total
Metropolitan	24.7	30.7	44.6	100
Rural	88.8	1.9	9.3	100

Source: TSANZ/AMWAC survey of thoracic medicine specialists

APPENDIX C: DEFINITION OF AN OPTIMUM THORACIC MEDICINE SERVICE

This is a summary of information provided by the Thoracic Society of Australia and New Zealand.

Thoracic Medicine
An acceptable specialist service in thoracic medicine requires competence in the diagnosis, investigation and management of common thoracic diseases including bronchogenic carcinoma and pulmonary infections including pulmonary tuberculosis; competence in fiberoptic bronchoscopy and transbronchial biopsy, pleural biopsy and tube thoracostomy; interpretation of complex lung function tests; and desirably, expertise in sleep disorders medicine and pulmonary intensive care medicine.

Resident rural thoracic medicine service
Surgery/office facilities
- a basic medical office plus spirometry and flow volume loop facilities
- desirable facilities include detailed lung functioning testing facility and sleep laboratory facilities are useful but not essential

Hospital facilities and equipment
- bronchospocy facility
- ICU service
- CAT scanner
- desirable facilities include respiratory high dependency unit, nuclear medicine and medical library

Skilled nursing/allied health and ancillary services
- nursing services with staff trained in respiratory nursing (desirable but not essential)
- physiotherapy services (essential)
- dietetic services (desirable but not essential)

Other services required in close proximity
- resident pathology services
- access (possibly by visiting outreach service) to pulmonary, interventional radiology and thoracic surgery
- access to a comprehensive sleep disorders service (possibly by telemedicine)

Other services desirable in close proximity
- lung transplant service (located in a major teaching hospital)
- cystic fibrosis service (located in a major teaching hospital)

The above level of service provision is consistent with a Level 5 and above specialist thoracic medicine service as defined by the NSW (1992) Guide to Role Delineation. Support services associated with this level of service are Level 3 nuclear medicine service and Level 3 operating suite service, Level 4 anaesthetics service and Level 4

CCU services and Level 5 pathology services, Level 5 pharmacy services, a Level 5 x-ray service and a Level 5 ICU service. A Level 5 thoracic medicine service requires access to a Level 5 cardiothoracic surgery service and a Level 5 thoracic medicine service. This level health facility is expected to have a teaching and research role, a registrar on call 24 hours and an appointed respiratory medicine specialist.

Regular outreach thoracic medicine service

- surgery/office facility requirements are spirometry and flow volume loop facility
- required hospital facilities are those which enable the performance of bronchoscopy and transbronchial biopsy, pleural biopsy and tube thoracostomy
- required support services are intensive care and CT scanning (nuclear medicine services are desirable)
- essential nursing and allied health services are ICU nursing support and physiotherapy
- other essential providers are a full time hospital based physician and a fulltime hospital based intensive care specialist (Table B55).

The TSANZ also advised that it would be desirable to have visiting thoracic services based in large urban teaching hospitals with different teaching hospitals responsible for respiratory services to defined sectors/towns/areas of the State/Territory. Programs should allow rural specialists time in urban teaching hospitals, with relief provided by either advanced trainees or other thoracic specialists based in the teaching hospitals.

The TSANZ felt it would be desirable to work with Divisions of General Practice to identify potential funding sources at government level (Federal and State) for the development of health outcome monitoring and best practice guidelines, shared care etc. Potential funding for infrastructure to improve standards of clinical practice should also be identified (ie., funding for information technology, funding for nursing education etc.).

Table C1: Population catchment required for a viable specialist service in thoracic resident service

• urban practice:	75,000-85,000
• rural practice close to an urban centre:	75,000-85,000
• major rural centre remote from urban centre	50,000-75,000
Regular outreach service	
• close to an urban centre	40,000-50,000
• remote from an urban centre	25,000-35,000
• rural area remote from an urban centre	15,000-25,000
Factors increasing population requirements	
• large numbers of general practitioners	
• secondary or tertiary referral hospital in close proximity	
Factors decreasing population requirements	
• elderly population	
• large seasonal influx of tourists	
• remoteness of practice from major urban centre	
• absence of regular consultative service from major urban centre	
• greater proportion of Aborigines	
fewer general practitioners in catchment area	

Source: TSANZ and AMWAC

Table C2: Infrastructure requirements for a sustainable resident specialist service in thoracic medicine

Hospital facilities and equipment - essential in urban and rural practice
- bronchoscopy facility
- ICU
- CAT scanner

Hospital facilities and equipment - essential in urban practice
- nuclear medicine
- thoracic surgery
- medical library
- respiratory high dependency unit

Hospital facilities and equipment - desirable in rural practice
- respiratory high dependency unit
- nuclear medicine
- medical library

Skilled nursing/allied health and ancillary staff requirements - urban and rural practice
- physiotherapy
- dietitian
- nursing staff trained in respiratory nursing/education

contd.

Table C2: **Infrastructure requirements for a sustainable resident specialist service in thoracic medicine, continued**

Other services essential to have access
- pathology (resident)
- pulmonary/interventional radiology (visiting)
- thoracic surgery (visiting)
- comprehensive sleep disorders (telemedicine)

Other services desirable in close proximity
- lung transplant service (in major teaching hospital)
- cystic fibrosis service (in major teaching hospital)

Surgery/office facilities and equipment - essential in urban and rural practice
- spirometry and flow volume loop facility

Surgery/office facilities and equipment - desirable in urban and rural practice
- diagnostic lung functioning testing facility
- sleep laboratory

Source: TSANZ and AMWAC

Table C3: Infrastructure requirements for a sustainable outreach service in thoracic medicine

Hospital facilities and equipment
- ability to perform bronchoscopy and transbronchial biopsy
- ability to perform pleural biopsy and tube thoracostomy
- ICU
- CAT scanner
- Nuclear medicine is desirable

Skilled nursing/allied health and ancillary staff requirements
- ICU nursing support
- Physiotherapy
- Full time hospital based general physician
- Full time hospital based intensive care specialist

Surgery/office facilities and equipment
- Spirometry and flow volume loop facility

Personnel Requirements
- A trained dermatologist with adequate back up and after hours services
- A trainee registrar
- A thoracic medicine nurse and nursing sister
- Clerical services
- Cleaning services

Other specialist services required in close proximity
- Pathology services (histology and general pathology)
- Availability of specialist physician and specialist surgeon for cross referral and consultation

Infrastructure Required

- Offices with good, natural lighting;
- Adequate office area including, reception areas, triage areas, treatment areas (cubicles for curette, dressings etc.,);
- Minor operations theatre and associated instruments for minor procedures;
- Minor lab facilities and microscope;
- An active outpatient department;
- Facilities for phototherapy (total body and hand foot);
- Facilities for laser and associated equipment;
- Facilities for superficial x-ray therapy;
- Computer facilities;
- Library with associated thoracic medicine text and journals;
- Sterilisation equipment;
- Combined clinics with other specialties (eg., plastic, radiotherapy, oncology, paediatrics);
- Inpatient facilities

Source: TSANZ and AMWAC

APPENDIX D: BURDEN OF DISEASE AND INJURY

The burden of disease was calculated from the AIHWs first national burden of disease study for Australia (AIHW, 1999). It uses the common metric called the Disability-Adjusted Life Year (DALY) to measure mortality, disability, impairment, illness and injury. The report states that one DALY is one year of healthy life lost due to a combination of the years lost due to premature mortality in the population and equivalent years of life lost due to disability. The report provides estimates of the burden of disease and injury measured in DALYs. As this is the first report of its type in Australia a time series of trends cannot be provided, rather the data in the report provides a snap shot for 1996 only.

Table D1 shows that in 1996 acute respiratory disease accounted for 1.2% of the total burden of disease and injury. They accounted for 3.5% of the total burden in 0-14 year olds, 0.9% of the total burden in 15 to 34 year olds, 0.9% in 35 to 54 year olds, 0.8% in 55 to 74 year olds and 1.3% of the total burden of disease and injury in people aged 75 years and over. Chronic respiratory disease accounted for 7.1% of the total burden of disease and injury in 1996. They accounted for 20.2% of the total burden of disease and injury in 0 to 14 year olds and dropped off to around 6.0% of the total burden in people aged 75 years or older. Asthma dominates at ages under 15 and reduces with age, while the rate for chronic obstructive pulmonary disease (COPD) increases with age to peak in the 55 to 74 year age group for men and the 75 years and over group for women.

Asthma was a leading cause of disability in children with most cases of asthma being diagnosed before the age of 15. In the 1995 ABS national health survey, 11% of Australians reported asthma as a recent long term condition. Asthma accounted for 36% of the burden of chronic respiratory disease while chronic obstructive pulmonary disease accounted for 52% of the burden of chronic respiratory diseases.

Table D1: Percentage of total burden of disease and injury by age, 1996

Age	0-14	15-34	35-54	55-74	75+	Total
			Acute respiratory infections			
Lower respiratory tract infections	1.0	0.4	0.6	0.7	1.3	0.8
Upper respiratory tract infections	0.8	0.4	0.2	0.05	0.03	0.2
Otitis media	1.7	0.1	0.04	0.01	0.004	0.2
Total	**3.5**	**0.9**	**0.9**	**0.8**	**1.3**	**1.2**
			Chronic respiratory disease			
COPD	0.1	1.5	3.5	5.5	4.3	3.7
Asthma	18.2	2.8	1.2	0.7	0.5	2.6
Other chronic respiratory diseases	1.9	0.3	0.4	0.8	1.2	0.8
Total	**20.2**	**4.6**	**5.1**	**7.0**	**6.0**	**7.1**

Source: AIHW, 1999

COPD was the third cause of disease and injury burden in 1996 accounting for 3.7% of total DALYs, while Asthma was the ninth leading cause of disease and injury burden accounting for 2.6% of total DALYs in 1996. In men COPD accounted for 4.2% of the total burden of disease and injury, which was the fourth leading cause of disease and injury burden for males. Asthma was the 14th leading cause of disease and injury burden in males and accounted for 2.1% of the total burden in males. In females COPD was the 6th leading cause of disease and injury burden in 1996, accounting for 3.2% of the total burden in females, while asthma was the 7th leading cause of disease and injury burden in females accounting for 3.1% of the total burden.

Table D2 shows the incidence and prevalence of disease and injury in 1996. There were 47,897,890 new cases of acute respiratory infections reported during 1996, including 43,399,250 upper respiratory tract infections and 3,480,150 lower respiratory tract infections. During 1996, 82,732 new cases of chronic respiratory disease were reported. At any one point in time in 1996 there were, on average, 296,590 people with chronic obstructive pulmonary disease and 1,206,140 people with asthma in Australia.

Table D2: Incidence and Prevalence of disease and injury by sex and cause, 1996

	Incidence per 1,000		Prevalence per 1000		Total	
	Male	Female	Male	Female	Incidence	Prevalence
			Acute respiratory infections			
Lower respiratory tract infections	174.5	205.5	-	-	3,480,150	-
Upper respiratory tract infections	2,283.1	2,456.3	-	-	43,399,250	-
Otitis media	52.5	58.7	2.3	2.3	1,018,490	41,420
			Chronic respiratory disease			
COPD	1.3	0.9	19.4	13.0	20,162	296,590
Asthma	3.5	4.1	58.6	73.0	69,434	1,206,140
Other chronic respiratory diseases	0.7	0.5	2.9	2.8	11,136	51,870

Source: AIHW, 1999

The mortality rate of disease and infections during 1996 by age is shown in table D3. The picture is one of an increasing mortality rate with age for acute respiratory infections and chronic respiratory disease. COPD was the leading cause of mortality for acute respiratory infections and chronic respiratory disease accounting for 6,163 deaths, while lower respiratory tract infections accounted for 1,873 deaths and asthma was the cause of 733 deaths in 1996. In the 15 years from 1981 to 1996 the per capita mortality burden for chronic obstructive pulmonary disease decreased by 16% for males but increased by 70% for females.

Table D3: Deaths by age, sex and cause, 1996

	0-14	15-34	35-54	55-74	75+	Total
			Acute respiratory infections			
Lower respiratory tract infections	38	22	93	378	1342	1873
Upper respiratory tract infections	3	-	3	3	18	27
Otitis media	4	1	-	1	3	9
			Chronic respiratory disease			
COPD	8	6	111	2353	3685	6163
Asthma	13	35	82	253	350	733
Other chronic respiratory diseases	8	8	43	369	1144	1572

Source: AIHW, 1999

Summary

Acute respiratory disease accounted for 1.2% of the total burden of disease and injury in 1996 while chronic respiratory disease accounted for 7.1% of the total burden of disease and injury. Asthma and COPD accounted for the majority of the burden of chronic respiratory diseases (88%) with women having a higher proportion of asthma DALYs than men, while men had a higher proportion of COPD DALYs. However, from 1981 to 1996 the per capita mortality burden for chronic obstructive pulmonary disease decreased by 16% for males and increased by 70% for females. Asthma dominated at the ages under 15 and reduced with age, while the rate for COPD increased with age to peak for men in the 55 to 74 year age group and for women in the 75 and over age group. Mortalities due to acute respiratory disease and chronic respiratory disease increased exponentially with age to peak in the over 75 age group.

APPENDIX E: AMWAC SURVEY OF DIVISIONS OF GENERAL PRACTICE

METHODOLOGY

To obtain information about the adequacy of the supply of specialist thoracic medicine services throughout Australia, AMWAC administered a mailed survey of all Divisions of General Practice. Of a possible 125 Divisions, 50 responded (40.0%) with 48 Divisions supplying completed questionnaires. The major reason Divisions gave for not being able to supply the information requested by AMWAC was resource constraints.

RESULTS

Distribution of Respondents

Table E1 shows the distribution of responding Divisions to the AMWAC survey by State/Territory and by location. In total, 34.8% of responding Divisions were located in a capital city, 17.4% in an other metropolitan area and 47.8% in a rural area.

Table E1: Distribution of responding Divisions of General Practice, by State/Territory and geographic location, 1999

State/Terr.	Total Number	Capital City %	Other metro-politan %	Rural %	Total %
NSW	14	28.6	21.4	50.0	100.0
Vic	7	28.6	28.6	42.8	100.0
Qld	8	37.5	25.0	37.5	100.0
SA	8	25.0	12.5	62.5	100.0
WA	7	71.4	-	28.6	100.0
Tas	1	-	-	100	100.0
NT	1	-	-	100	100.0
Australia	**46**	**34.8**	**17.4**	**47.8**	**100.0**

Source: AMWAC survey of Divisions of General Practice

Triggers for General Practitioner Referral to a Thoracic Medicine Specialist

General practitioners were asked to indicate the importance of seven "triggers" for referral to a thoracic medicine specialist and to identify any further important triggers. Table E2 indicates that the most important triggers for referral by a general practitioner to a thoracic medicine specialist are the severity of the condition followed by condition

unresponsive to treatment, rarity of diagnosis and lack of experience within the practice. The majority (97.6%) of respondents thought that severity of condition and condition unresponsive to condition were important triggers for general practitioner referral to a thoracic medicine specialist.

Table E2: Rated importance of seven "triggers" for general practitioner referral to a thoracic medicine specialist

Trigger	Not important				Very important
	1	**2**	**3**	**4**	**5**
Severity of condition	-	2.4	-	33.3	64.3
Condition unresponsive to treatment	-	-	2.4	42.9	54.8
Rarity of diagnosis	-	4.8	26.2	33.3	35.7
Lack of experience within the practice re: condition/treatment	-	9.5	23.8	45.2	21.4
Request of patient to be referred	7.1	16.7	38.1	28.6	9.5
Age of patient	12.2	22.0	43.9	19.5	2.4
Social circumstances of patient	24.4	41.5	22.0	9.8	2.4

Source: AMWAC survey of Divisions of General Practice

Supply of Resident Thoracic Medicine Specialists

Table E3 indicates that 60.5% of Divisions of General Practice reported that there were no resident thoracic medicine specialists providing services in the area covered by their Division and 20.9% reported that there was one resident thoracic medicine specialist in their area.

Table E3: Number of resident thoracic medicine specialists providing services in divisional area (percentage of Divisions), by State/Territory, 1999

State/Terr.	Number of DGP*	Number of resident thoracic medicine specialists						
		None	One	Two	Three	Four	Fourteen	Total
		Percentage of Divisions						
NSW	14	50.0	42.9	-	-	7.1	-	100.0
Vic	8	37.5	12.5	25.0	12.5	12.5	-	100.0
Qld	9	66.7	11.1	-	11.1	-	11.1	100.0
SA	5	100.0	-	-	-	-	-	100.0
WA	5	60.0	20.0	-	-	20.0	-	100.0
Tas	1	100.0	-	-	-	-	-	100.0
NT	1	100.0	-	-	-	-	-	100.0
Total	**43**	**60.5**	**20.9**	**4.7**	**4.7**	**7.0**	**2.3**	**100.0**

* Number of Divisions of General Practice
Source: AMWAC survey of Divisions of General Practice

Supply of Visiting Thoracic Medicine Specialists

Table E4 shows that 51.2% of Divisions reported that there were no visiting thoracic medicine specialists providing services in the area covered by their Division while a further 32.6% reported that they had one thoracic medicine specialist visiting their area.

Table E4: Number of visiting thoracic medicine specialists providing services in divisional area (percentage of Divisions), by State/Territory, 1999

State/Terr.	Number of DGP*	Number of visiting thoracic medicine specialists: None	One	Two	Four	Six	Total
		Percentage of Divisions					
NSW	14	57.1	42.9	-	-	-	100.0
Vic	8	75.0	12.5	12.5	-	-	100.0
Qld	8	50.0	12.5	25.0	-	12.5	100.0
SA	6	33.3	50.0	-	16.7	-	100.0
WA	5	20.0	40.0	20.0	20.0	-	100.0
Tas	1	100.0	-	-	-	-	100.0
NT	1	-	100.0	-	-	-	100.0
Total	**43**	**51.2**	**32.6**	**9.3**	**4.7**	**2.3**	**100.0**

* Number of Divisions of General Practice
Source: AMWAC Survey of Divisions of General Practice

Adequacy of Access to Thoracic Medicine Specialists

In total, 15.6% of Divisions of General Practice considered that current access to thoracic medicine 'consultant' services was totally inadequate, 57.7% thought access was in short supply and the remaining 26.7% indicated that the access was about right. No differences were observed with respect to metropolitan or rural location and adequacy of access to thoracic medicine consultant services.

In total, 14.0% of responding divisions considered that current access to thoracic medicine 'specialist treatment' services was totally inadequate, 53.4% thought access was in short supply while the remaining 32.6% of division thought the adequacy of access to these services was about right. Once again, no differences were observed with respect to the adequacy of access to specialist treatment service and metropolitan/rural location of the division suggesting that the provision of thoracic medicine services to areas covered by responding divisions is inadequate. Futhermore, many respondents provided comments about problems with access and ways that services could be improved.

Requirement for Additional Resident Thoracic Medicine Specialists
In total, 64.6% of responding Divisions gave answers to questions about requirements for additional thoracic medicine specialists (resident and visiting).

Table E5 shows that 12 (25.0%) Divisions of General Practice perceived a need for 15 additional resident consultant thoracic medicine specialists, 10 Divisions perceived a need for one additional resident consultant thoracic medicine specialist and one Division required an addition of two resident consultant thoracic medicine specialists, while one Division had a need for three. In total, 19 Divisions indicated that they did not require any additional resident consultant thoracic medicine specialists.

Among responding divisions, there was a perceived need for 10 additional resident 'treatment' services in thoracic medicine, with 10 (20.8%) Divisions each perceiving a need for one specialist. Divisions in New South Wales required an additional 4 resident treatment services while the Divisions in Victoria and Queensland required an additional two resident treatment services each.

Table E5: Estimated number of resident consultant and resident treatment services required in thoracic medicine in Divisional area (number of Divisions), by State/Territory, 1999

State/Terr.	Total number of Divisions of GP[a]	Number of Divisions of General Practice			
		None	One	Two	Three
Number of resident consultant thoracic medicine specialists required					
NSW	9	6	3	-	-
Vic	5	2	2	1	-
Qld	7	5	2	-	-
SA	5	4	-	-	1
WA	4	2	2	-	-
Tas	1	-	1	-	-
Total	**31**	**19**	**10**	**1**	**1**
Number of resident treatment services required in thoracic medicine					
NSW	9	5	4	-	-
Vic	5	3	2	-	-
Qld	7	5	2	-	-
SA	5	5	-	-	-
WA	4	3	1	-	-
Tas	1	-	1	-	-
Total	**31**	**20**	**10**	**-**	**-**

a - Number of Divisions of General Practice responding to this question
Source: AMWAC survey of Divisions of General Practice

Requirement for Additional Visiting Thoracic Medicine Specialists

Divisions from all States/Territories, except Tasmania and the Australian Capital Territory, reported a requirement for additional visiting 'consultant' thoracic medicine specialists with an overall requirement of 28 (Table E6). In total, 12 (25.0%) Divisions required one additional visiting thoracic medicine specialist and 7 required two or more visiting thoracic medicine specialists. Overall, 12 Divisions perceived no requirement for

additional visiting thoracic medicine specialists.

Four Divisions from South Australia indicated that there was a need for 7 additional visiting treatment services, while three Divisions from Queensland reported a need for six additional visiting treatment services. Throughout Australia there was a reported need for 19 additional visiting treatment services in thoracic medicine by 15 (31.3%) of responding Divisions of General Practice.

Table E6: Estimated number of resident and visiting treatment services in thoracic medicine required in Divisional area (number of Divisions), by State/Territory, 1999

		Number of Divisions of General Practice			
State/Terr.	**Total number of Divisions of GP[a]**	**None**	**One**	**Two**	**Three**
	Number of visiting consultant services required in thoracic medicine				
NSW	9	4	3	2	-
Vic	5	2	2	1	-
Qld	7	3	2	1	1
SA	5	1	2	1	1
WA	4	2	2	-	-
Tas	1	-	1	-	-
Total	**31**	**12**	**12**	**5**	**2**
	Number of visiting treatment services in thoracic medicine required				
NSW	9	5	3	1	-
Vic	5	3	2	-	-
Qld	7	4	1	1	1
SA	5	1	2	1	1
WA	4	3	1	-	-
Tas	1	-	1	-	-
Total	**31**	**16**	**10**	**3**	**2**

a - Number of Divisions of General Practice responding to this question
Source: AMWAC survey of Divisions of General Practice

Summary

In brief, the findings arising from this survey of Divisions of General Practice indicate that the supply of thoracic medicine specialists (consultant and treatment) are inadequate in some locations. In total, 25.0% of responding divisions perceived a need for between 10 and 15 additional resident specialists in thoracic medicine and 31.1% of responding Divisions perceived a need for between 19 and 28 visiting specialists.

The comments written by respondents to the survey reinforce the quantitative data. Of note was the number of divisions reporting that general thoracic medicine problems were addressed by resident general physicians and general practitioners, while more advanced problems were referred to larger city areas.

REFERENCES

Australian Bureau of Statistics (1999), Projections of the Populations of Australia, States and Territories: 1993 to 2051. 3222.0, Canberra

Australian Bureau of Statistics (1998), Population Projections 1997 to 2051, Catalogue 3222.0, Series II, Canberra

Australian Institute of Health and Welfare (1998), Australia's Health 1998, Canberra

Australian Institute of Health and Welfare (1999), Medical Labour Force Survey 1997, Canberra

Australian Institute of Health and Welfare (1999), Burden of Disease and Injury, Canberra

Australian Institute of Health and Welfare (1997), A statistical profile of the Thoracic Medicine Medical Specialist Workforce, unpublished data collection

Australian Medical Workforce Advisory Committee (1998), Sustainable Specialist Services - A Compendium of Requirements, AMWAC report 1998.7, Sydney

Australian Medical Workforce Advisory Committee and Australian Institute of Health and Welfare (1996), Female Participation In The Australian Medical Workforce, AMWAC Report 1996.7, Sydney

Commonwealth Department of Primary Industries and Energy and Department of Human Services and Health (1994), Rural, Remote and Metropolitan Areas Classification, Canberra

Cystic Fibrosis Victoria (1999), Cystic Fibrosis Care - Quality of Care Guidelines, Melbourne