Australian Medical Workforce Advisory Committee

THE EMERGENCY MEDICINE WORKFORCE IN AUSTRALIA

SUPPLY, REQUIREMENTS AND PROJECTIONS

1997 - 2007

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ABBREVIATIONS

ABS	Australian Bureau of Statistics
ACEM	Australasian College for Emergency Medicine
ACHS	Australian Council on Healthcare Standards
ACT	Australian Capital Territory
AHMAC	Australian Health Ministers' Advisory Council
AIHW	Australian Institute of Health and Welfare
AMWAC	Australian Medical Workforce Advisory Committee
APACHE	Acute Physiology and Chronic Health Evaluation
APHA	Australian Private Hospitals Association
Aust	Australia
DHFS	Department of Health and Family Services (Commonwealth)
ED	Emergency Department
EDIIS	Emergency Department Investment Incentive Scheme (New South Wales)
EM	Emergency Medicine
ESEP	Emergency Service Enhancement Program (Victoria)
FACEM	Fellow of Australasian College for Emergency Medicine
FTE	Full time equivalent
GP	General Practitioner
HMO	Hospital Medical Officer (also known as Career Medical Officer)
MBS	Medicare Benefits Schedule
MI	Myocardial infarction
NSW	New South Wales
NT	Northern Territory

NTS	National Triage Scale
Pop	Population
Qld	Queensland
RACS	Royal Australasian College of Surgeons
RFDS	Royal Flying Doctor Service
RMO	Resident Medical Officer
SA	South Australia
Spec	Specialist
SPR	Specialist:Population ratio
Tas	Tasmania
Terr	Territory
UK	United Kingdom
USA	United States of America
Vic	Victoria
VMO	Visiting Medical Officer
WA	Western Australia

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TERMS OF REFERENCE OF AMWAC AND THE AMWAC EMERGENCY 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 held its first meeting in April 1995.

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 Emergency Medicine Workforce Working Party Terms of Reference

The AMWAC Emergency 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 emergency medicine specialists across Australia, including projections for future requirements.

The Working Party held its first meeting on 13 May 1996 and presented its report to the AMWAC meeting of 6 February 1997. The report was then presented to the February 1997 meeting of AHMAC.

MEMBERSHIP OF AMWAC

Independent Chairman

Professor John Horvath	Physician, Sydney

Members

Ms Meredith Baker	Labour Market Research Branch, Industry Commission
Ms Meredith Carter	Director, Health Issues Centre
Dr William Coote	Secretary General, Australian Medical Association
Mr Michael Gallagher	First Assistant Secretary, Higher Education Division, Commonwealth Department of Employment, Education, Training and Youth Affairs
Dr Susan Griffiths	General Practitioner, Minlaton, South Australia
Professor John Hamilton	Dean, Faculty of Medicine and Health Sciences, University of Newcastle
Professor Ross Kalucy	President, Medical Board of South Australia
Dr John Loy	First Assistant Secretary, Hospitals and Health Financing Division, Commonwealth Department of Health and Family Services
Dr Richard Madden	Director, Australian Institute of Health and Welfare
Mr Ron Parker	Secretary, Tasmanian Department of Community Services and Health
Mr Abul Rizvi	Assistant Secretary, Corporate Reform and Migration Strategy Branch, Commonwealth Department of Immigration and Multicultural Affairs
Dr David Theile	Surgeon, Brisbane (former President, Royal Australasian College of Surgeons)
Mr John Wyn Owen	Chairman, Australian Health Ministers' Advisory Council

MEMBERSHIP OF THE AMWAC EMERGENCY MEDICINE WORKFORCE WORKING PARTY

Chairman

Dr Bill Coote	Secretary General Australian Medical Association

Members

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Mr Paul Gavel	Executive Officer, AMWAC (from December 1996)

The Working Party would also like to acknowledge the helpful comments provided by Professor John Horvath (AMWAC); Mr John Harding, Mr Warwick Conn, Mr Graham Angus (AIHW), Ms Jenny Badham (Australian Private Hospitals Association, APHA), and Ms Jenny Freeman from the Australasian College for Emergency Medicine (ACEM) for assistance with data collection; and Dr Paul Mark, Censor-in-Chief ACEM for assistance with the projection modelling.

INTRODUCTION

Aims and Objectives

In preparing this report the Working Parties aim has been to assist in the development of appropriate emergency medicine services across Australia.

The main objective of the Working Party has been to promote an optimal supply and appropriate distribution of emergency medicine specialists, including projections for future requirements to the year 2007.

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 emergency medicine specialists, appropriately distributed to provide the emergency medicine services it requires;
- the community is best served when emergency medicine specialists have high standards of qualification and work with a high level of ongoing experience;
- the best assurance of standards is a high quality requirement for entry to practice; and
- all Australian citizens must have access to a good standard of emergency medicine care irrespective of geography and economic status. In achieving this, proximity to the patient must be balanced against the quality of the service that can be provided and national and international guidelines for best practice in emergency medical care.

The Working Party defined emergency medicine as a medical specialty based on Athe knowledge and skills required for the prevention, diagnosis, and management of acute and urgent aspects of illness and injury affecting patients of all age groups with a full spectrum of episodic undifferentiated physical and behavioural disorders; it further encompasses an understanding of the development of pre-hospital and in-hospital emergency medical systems and the skills necessary for this development. This is the definition of emergency medicine used by the International Federation for Emergency Medicine, established in 1991.

This definition includes salaried positions and private practice. It does not include other practitioners who, for one reason or another, undertake emergency medicine work as part of their practice; nor does it include the training registrars who hold positions in hospitals or the service registrars who work in emergency medicine but are not recognised as being in training positions.

Methodology

The approach of the Working Party has been to analyse existing data sources and to undertake consultation with relevant persons and organisations, in order to make informed comments on the factors affecting the current and future market for emergency medicine services.

In estimating workforce numbers, establishing a profile of the workforce and assessing its adequacy, the main sources of data were:

1. Australasian College for Emergency Medicine

All emergency medicine specialists in Australia are Fellows of the ACEM (FACEM). The ACEM keeps a variety of data, principally on the number of Fellows, their age and gender, and on training arrangements and trainees. In addition, AMWAC/ACEM surveyed the Fellows of the College. The response rate was 75%.

2. Australian Institute of Health and Welfare (AIHW)

The AIHW annual Medical Labour Force Survey is usually a key source of data on the specialist workforces being examined by AMWAC. Currently, data on the 1994 survey is available. However, due to the rapid growth in the emergency medicine workforce, including in the two years since the 1994 survey data was collected, the Working Party chose not to use this data as widely as previous AMWAC specialist workforce working parties.

In addition, in 1994 the registration board in Victoria used a slightly different survey form to that used by other States and Territories. This did not identify emergency medicine as a separate specialty or recognise specialists in training as a separate category of clinicians. Similarly, because Western Australia did not participate in the 1994 survey the number of specialists in Western Australia had to be estimated from 1993 data and other sources. As a result the Working Party concluded that the figures on the size and distribution of the workforce provided from the AIHW survey would be underestimates of the Australia wide numbers for both emergency medicine specialists and emergency medicine specialists in training.

3. AMWAC State/Territory Health Departments Survey and the AMWAC/ACEM Public Hospital Emergency Department Survey

AMWAC surveyed State/Territory health departments in June 1996, seeking information on the number of current emergency departments; staff establishment by type of hospital and medical staff category; types of performance reports required of emergency departments; and any future plans for distribution, infrastructure and the role of emergency departments.

AMWAC and ACEM also surveyed Directors of Emergency Departments in September 1996 to obtain information on emergency medicine specialist and registrar vacancies and on emergency department waiting times. This survey had an 80% response rate. A vacancy was defined as a position for which funding is available and for which active recruitment is being, or has been, undertaken.

4. Australian Private Hospitals Association

A number of emergency medicine specialists work in the private sector. Data on private hospital emergency departments was provided by APHA, which undertook a survey of member and non member private hospitals on behalf of the Working Party. A total of 203 responses were received, which represented a response rate of 67.2%.

5. 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. Usually, Medicare is a useful source of information, however, Medicare data is of no value in analysing the emergency medicine workforce because Medicare does not keep information on practitioners who work in the public hospital system; where almost all of the emergency medicine workforce is employed.

6. Other sources of data

Wherever possible, distributional data has been interpreted using the rural and remote area classification developed by the Commonwealth Department of Health and Family Services (DHFS 1994).

Key Assumptions

In considering future demand for emergency medicine specialists, certain assumptions were made by the Working Party. These were based principally on the observation of existing trends in Australia and overseas, particularly in the United States of America (USA), Canada and the United Kingdom (UK).

These assumptions include:

- governments will increasingly require improved access, quality and efficiency from public sector emergency medical services and will introduce systems of reward and sanction related to emergency department performance

- health service administrators will respond by undertaking process re-engineering and boundary transformation at the community and hospital interfaces. These changes will be directed at achieving best practice and will emphasise the gatekeeping role, and delivery models such as patient focussed care and integrated care

- international and national best practice is currently achieved in emergency departments with specialist staffing commensurate with their hospital role delineation, that is:

Major tertiary referral	24 hour, seven day specialist cover
Other urban and major provincial	Extended hours specialist cover with on call arrangements supported by sophisticated communication and information systems
Major rural	Routine hours on site with on call thereafter supported by sophisticated communication and information systems, and retrieval systems
Private	Extended hours specialist cover

The Working Party would also like to emphasise that the projections on supply and requirements are based on the assumption that there will be no significant change in existing national health structures.

Overseas experience indicates that significant structural changes to the Australian health system, for example the introduction of formalised coordinated care arrangements (managed care) and greater substitution of care by other health professionals, could substantially change medical workforce requirements in Australia (AMWAC & AIHW 1996a).

SUMMARY OF FINDINGS AND RECOMMENDATIONS

This report describes the current emergency medicine workforce, assesses the adequacy of that workforce, and projects workforce supply and requirements to 2007.

Emergency medicine is a relatively new and a rapidly growing specialty. The report concludes that the size of the specialist workforce needs to increase to match an estimated requirement in 2007 of 1200 emergency medicine specialists. However, once this level is reached the supply of specialists needs to stabilise at around this level. As a result it is recommended that trainee intake remain at the current level of 120 per year for several years and then gradually reduce to an estimated stabilisation level of 25 trainees per year.

Description of the Current Emergency Medicine Workforce

In 1996, the ACEM had 217 non retired, full time, Australian emergency medicine specialist members. Currently, all emergency medicine specialists in Australia are FACEM. Over the past 12 years ACEM has had a growth of (251%) in its membership.

The majority (54.2%) of specialists are in major referral hospitals. 83.4% (166) of specialists are located in a capital city.

The majority of specialists (81.4%) are located in New South Wales (38.2%), Victoria (27.6%) and Queensland (15.6%).

Emergency medicine is a specialty dominated by younger clinicians, with 88.5% of the AMWAC/ACEM respondents being aged under 50 years; within which 54.5% of respondents were aged under 40 years. 7.8% were aged 50 to 59 years.

In 1996, there were 37 practising female emergency specialists, representing 18% of the workforce. Emergency medicine is seen as an attractive career option for women, with the capacity to secure work across the nation, the lack of start up costs in specialist practice and the availability of part time work.

Women represent 29% of the training workforce. This would indicate that the proportion of female specialists should increase in the future.

The AIHW survey shows that, in 1994, the average hours worked by an emergency medicine specialist were 45.6 hours, with an average of 40.6 hours spent on call. The majority of specialists (73.3%) spent between 31 and 50 hours per week in direct patient care.

The AIHW survey found that nearly all (96%) male emergency medicine specialists work full time and 60% of the female specialists work full time. Full time is defined as over 40 hours work per week. Full time male and female specialists work similar average hours per week - 51.5 hours for male specialists and 46.8 hours for female. Female specialist average part time hours per week are considerably less than male part time hours - 22 hours compared with 33.3 hours.

Currently there are 68 approved emergency medicine training departments. The number of departments has increased by 46.7% over the past ten years. There are approved departments in all states and territories. The majority of the departments are in New South Wales (41.2%), Victoria (23.5%) and Queensland (14.7%).

There are currently 467 trainees registered with ACEM for Basic or Advanced Training and a further 34 have completed Advanced Training requirements but not fellowship requirements.

Adequacy of the Current Emergency Medicine Workforce

The AMWAC/ACEM survey of emergency departments found there were an estimated 61 public hospital vacancies for emergency medicine specialists in Australia, with the bulk of these in either major referral hospitals or other metropolitan hospitals.

New South Wales had the most vacancies with 23 (37.7% of total vacancies). South Australia had 12 vacancies (19.7% of vacancies) and Queensland had 11.5 vacant positions (18.8% of vacancies). There was one temporary resident doctor filling a specialist vacancy.

Nationally the vacancy rate was estimated at 23.5%.

The AMWAC/ACEM survey of emergency departments also found there were an estimated 88 emergency medicine registrar vacancies, with the bulk of the vacancies in New South Wales. There were also a significant number of registrar vacancies in South Australia.

The AMWAC/ACEM survey found that average emergency department waiting times were close to National Triage Scale benchmarks, especially for categories 1, 2 and 5; although there were differences between States and Territories.

The majority of respondents to the AMWAC/ACEM survey (72.9%) stated that there were not enough emergency department beds and not enough emergency medicine specialists (66.7%).

The Working Party believes the shortage in emergency medicine specialists is unlikely to improve in the short term; however, in the medium term, the expectation is for a reduction in vacancies as the large cohort of trainees who entered the training program in the early 1990s graduate.

Projections of Requirements

The Working Party feels that the key determinant of future emergency medicine requirements is the need to accommodate the current shortfall in emergency medicine specialists and role delineation and infrastructure.

Emergency medicine is one specialty where the size of the workforce is constrained by the available infrastructure. Whilst other factors need to be considered there is no point in having a workforce greater than the availability of places where the workforce can practise.

Currently, New South Wales and Queensland have formal delineation documents for emergency departments, describing different levels of staff cover and infrastructure. Specific criteria for the staffing of emergency departments have not yet been developed by most States and Territories.

Most State/Territory health departments indicated to the Working Party support for the concept that emergency departments should be staffed by trained emergency medicine specialists or specialists in training.

It is estimated that, in ten years time in 2007, approximately 1200 registered emergency medicine specialists will be required.

To derive this estimate the Working Party has assumed major referral hospital emergency departments will require 11 emergency medicine specialists, other capital city and major provincial hospitals will require six emergency medicine specialists, paediatric hospitals will require three emergency medicine specialists, and major rural hospitals will require two emergency medicine specialists. In small rural and remote hospitals it is expected that emergency services will continue to be provided by the local GP and organised critical care retrieval systems.

The establishment of a benchmark requirement of 1200 does require a commitment from State/Territory health departments to work towards achieving the benchmark. There is some potential for conflict to emerge between staffing emergency departments with trained specialists and just staffing the emergency department so that the work can be done, particularly as employing specialists is likely to increase staffing costs as junior hospital emergency department positions are replaced with trained emergency medicine specialists.

Most States/Territories are currently considering future staffing requirements for emergency departments and doing this in consultation with ACEM. Several have indicated they are likely to adopt similar coverage to that proposed by the Working Party.

Projections of Supply

In projecting supply the Working Party considered four different scenarios, based on varying annual trainee intake up to a maximum intake of 150 trainees per year. Current trainee intake is 120 per year.

All four supply scenarios show that expected supply will meet estimated requirements around 2007, however three scenarios would result in large overshoots in specialist numbers with no to trend to stabilisation, given that supply should not exceed estimated requirements of approximately 1200 specialists.

As a result the Working Party favoured scenario 4, which will mean that estimated supply will not equate with expected requirements in 2007 but rather around 2010/2011. Scenario 4 will, however, provide a trend to stabilisation in the long term. This model proposes to continue the intake of trainees at around current levels for the next three years, then gradually reduce intake to an estimated minimum replacement requirement

of 25 trainees per year from 2003.

Not reducing trainee intake immediately will allow time for ACEM and State/Territory health departments to introduce mechanisms to commence adjustment of trainee intake. It should also help those areas which are poor in specialist and trainee numbers to establish a significant emergency medicine specialist presence.

The recommended projection scenario is sensitive to factors such as female participation, trainee success and specialist attrition, and as a consequence the projections will have to be carefully monitored by AMWAC.

RECOMMENDATIONS

The Working Party recommends:

1. That the number and role delineation of hospital emergency departments in Australia be recognised as the key determinant of the future size of the specialist emergency medicine workforce in Australia.

2. That it be recognised there will be a requirement for a specialist emergency medicine workforce of approximately 1200 by the year 2007.

3. That State/Territory health departments undertake negotiations with ACEM to adjust the number of emergency medicine training positions to meet this requirement; as a guide to this process the following indicators are proposed:

Indicator	2000	2003	2007	2010
Estimated FTE FACEMs	474	684	1063	1176
Estimated ACEM trainees	668	550	223	177

4. That State/Territory based emergency medicine services working groups, comprising ACEM and State/Territory health department representatives, be organised to coordinate the internal realignment of the medical staff mix in emergency departments in order to meet State/Territory and regional needs. Options for achieving this may include some new staff establishment, together with replacement of non specialist staff currently in emergency departments with emergency medicine specialists.

5. That emergency medicine requirements and supply projections be monitored regularly so that they can be amended if new trends emerge.

6. That this monitoring be coordinated by ACEM and AMWAC and the results incorporated into the AMWAC annual report to AHMAC. AMWAC will provide all necessary support.

EMERGENCY MEDICINE

Background

The first full time Director of a casualty department in Australia was appointed in Geelong in 1967. Other hospitals followed and, in 1981, the Australasian Society for Emergency Medicine was established. After three years of discussions with the major Colleges, it was decided that the optimum pathway to improving standards and training in emergency medicine would be via a separate, new college and the ACEM was subsequently incorporated in 1984.

In July 1991, ACEM submitted an application to the National Specialist Qualification Advisory Committee for recognition as a principal specialty. After wide consultation with the profession and health regulatory agencies, the then Commonwealth Minister for Health approved the recognition of emergency medicine as a principal specialty effective 8 August 1993.

Emergency medicine differs from most other medical specialties in that its practice is hospital based and the active workforce is almost entirely employed in the public sector, although the expansion of emergency medicine in the private sector has increased significantly in recent years.

The expansion of specialist emergency medicine services in public hospitals over the past decade has been principally limited by the supply of the specialist workforce. There are still some significant emergency departments in Australia which are not led or staffed by specialist emergency physicians (ACEM 1996).

Distribution and Scope of Emergency Departments

Community expectation is that public hospitals provide care in emergency situations. Emergency department services represent the point of first contact between a significant proportion of patients and the health system. Although essentially intended for the treatment of emergency and other potentially life threatening acute conditions (such as trauma, infarcts, asthma, respiratory failure), emergency department services also have a significant role in providing for all acute unscheduled medical services.

The level and range of services, and role of emergency departments will vary according to the size, location and role of the hospitals within which they are located.

Metropolitan tertiary referral emergency departments manage and provide comprehensive initial care for all emergencies, including trauma, with a wide range of sub-specialties including neurosurgery and cardiothoracic surgery on site. These emergency departments have experienced nursing and medical staff on site 24 hours.

The emergency departments provided in other metropolitan hospitals vary from basic emergency departments with designated nursing staff and on call medical staff, to a full range of services (without facility for major trauma, which is generally transferred to tertiary referral hospitals). The sophistication of other metropolitan hospital emergency departments is usually commensurate with the level and range of services provided in

the hospital of which it is a part.

Base/regional hospitals in rural areas play a role which falls between tertiary referral hospitals and the other metropolitan hospitals. Base hospitals typically provide high level emergency services with trained nurses and medical officers on site (or within ten minutes).

Other rural hospitals provide basic emergency care for resuscitation and limited stabilisation from nursing staff with a medical officer on call. They do not have the capacity to provide definitive care in major trauma. In most cases the medical practitioner providing emergency care is a local general practitioner (GP). There is consequently a much greater focus on primary care services, and considerable overlap between the general practitioners own after hours practice and the hospitals emergency room. In remote areas the local GP and hospital are usually supported by the Royal Flying Doctor Service (RFDS) and organised critical care aeromedical retrieval systems.

In rural and remote areas, public hospitals have a duty to provide appropriate medical attention (within the limits of their capabilities) to patients presenting with emergency conditions. The quantity and range of services provided by provincial and rural hospitals varies from state to state and region to region.

The distribution of public hospital emergency departments is shown in Table 1. The role and distribution of public hospitals, and therefore emergency departments, is the responsibility of State/Territory governments. It was considered to be beyond the terms of reference of the Working Party to comment on the appropriateness of that distribution.

Table 1: Public hospital emergency departments; by State/Territory and geographic location, 1996

State/ Territory	Major referral	Major paediatric	Other capital city	Other urban	Rural major	Total
NSW	9	2	17	4	18	**50**
Victoria	5	1	16	3	12	**37**
Queensland	3	2	4	8	6	**23**
South Australia	2	1	5	na	3	**11**
Western Australia	3	1	4	3	6	**17**
Tasmania	1	na	0	1	2	**4**
ACT	1	na	0	na	na	**1**
Northern Territory	1	na	0	na	2	**3**
Australia	**25**	**7**	**46**	**19**	**49**	**146**

na - not applicable
Source: State/Territory health departments and ACEM

To obtain data on the private hospital sector the APHA undertook a survey of private

hospitals on behalf of the Working Party. Of the 203 respondents to the APHA survey, 32 had emergency departments (15.8%) and another 30 (14.8%) indicated they were planning emergency departments in the next ten years. Table 2 details the size and location of the private hospitals which responded to the APHA survey. Sixteen of the hospitals with emergency departments were hospitals of 100 beds or less, with the majority of these located in rural or remote areas. Generally these hospitals reported a small number of emergency beds, with some only having one emergency bed. As a result of their small size, private hospitals of less than 100 beds have been excluded from the analysis.

The distribution of major private hospital emergency departments is shown in Table 3. The respondent major private hospitals that had emergency facilities reported a range of emergency beds up to a maximum of 18. Of the total of 65 large private hospitals, 52 responded to the survey and 16 (31%) of these indicated that they had an emergency department.

Table 2: Private hospitals; by number of inpatient beds and geographic location, 1996

Location	1 - 50 beds	51 - 100 beds	101 - 200 beds	201 + beds	Total
Capital city	38	40	24	12	114
Other major urban	10	16	9	1	36
Rural	33	11	5	1	50
Remote	1	0	0	0	1
Total	**82**	**67**	**38**	**14**	**201**
Surveys sent	140	97	47	18	302
% response	58.6	69.1	80.1	77.7	66.6

Source: APHA

Table 3: Major private hospitals with emergency departments; by number of inpatient beds and geographic location, 1996

Location	101 - 200 beds	201 + beds	Total
Capital city	6	6	12
Other major urban	1	1	2
Rural	1	1	2
Total	**8**	**8**	**16**

Source: APHA

Emergency Department Roles
Emergency medicine is unusual in that its practice occurs almost exclusively in organised hospital departments. These departments are often large, capital intensive facilities with over 100 medical, nursing and other staff.

The paradigm of emergency service delivery in Australia has changed significantly over the past decade. Until the early 1980s casualty departments were largely staffed by unsupervised junior medical officers. Their role was one of reception, clerking and referral to an impatient unit who would come to the casualty department after a variable period, examine the patient and decide on a management plan. This process often took hours during which time the patients care would often be suboptimal. Inefficiency was rife with prolonged waiting times, frequent adverse events and low levels of customer satisfaction.

However, with shrinking bed numbers, increasing cost pressures, greater consumer awareness and other change forces at play, it became increasingly obvious that the efficiency and effectiveness of the >front end of the hospitals acute care processes needed substantial improvement and that this would not occur with the workforce as it existed then.

As trained specialists in emergency medicine became available, they were immediately employed in hospitals seeking to improve the quality of emergency reception and care and to achieve the performance gains available through enhanced > gatekeeping and >packaging of emergency patients.

The expansion of the specialist workforce in this area has occurred partly through substitution of non specialist positions, and partly through the establishment of new positions. The same is true of training posts in emergency medicine where ACEM advanced trainees have substituted for hospital medical officers (HMOs) or for other doctors marking time while awaiting opportunities elsewhere.

Emergency Medicine Specialists
Emergency physicians are the senior medical grade in emergency departments. They are responsible for the reception, triage, initial assessment, resuscitation, transitional evaluation and monitoring, and the disposition of the acutely ill and injured presenting unscheduled to Australias emergency departments. The broad roles of gatekeeping (in which the need for impatient care is carefully reviewed) and packaging (in which early appropriate investigation, diagnosis and initiation of a treatment plan is emphasised), are supported. These roles are assisted in hospitals by right of admission and the use of short stay units.

Emergency medicine specialists may also have involvement in prehospital care, retrieval medicine, public health and disaster medicine, hyperbaric medicine, clinical toxicology and other niche areas.

Emergency Department Workload and Casemix
Prior to the introduction of Medicare in 1984, attendance rates in emergency departments were determined by the cost and accessibility of GPs and the level of co-

payment in the emergency department. In states where there was zero hospital co-payment, for example Queensland, attendance rates were high, swelled by large numbers of non urgent primary care attendees. Where there was a co-payment, for example New South Wales, attendances were lower and of higher acuity.

Since Medicare was introduced, there has been a dramatic reduction in primary care attendances in zero co-payment states but a steady increase in acuity. Other areas have generally noted an increase in both primary care attendances (principally related to access issues) and acuity.

Nationally, approximately four million patients attend emergency departments each year. All patients are triaged into one of the five urgency categories based on the National Triage Scale (NTS). This scale has a high positive correlation with actual and surrogate indicators of acuity and severity including:

- admission rate
- intensive care unit admission rate
- average length of stay
- injury severity score
- APACHE III score
- mortality rate
- procedures performed
- investigations
- doctor time input
- nurse time input
- total cost

The base workload of an emergency department can be described by:

- total attendances
- attendances by triage category
- admission rate by triage category
- access block (proportion of acute admissions waiting for a bed longer than a prescribed period of time)

Public hospital emergency departments have total attendances ranging from 20,000 to 60,000 people per annum, while private emergency departments attendances range from 10,000-20,000 people per annum.

Major teaching hospitals typically have higher total emergency department attendances with higher acuity as evidenced by a greater proportion of NTS category 1 and category 2 patients, and higher admission rates to both general and intensive care units.

DESCRIPTION OF THE CURRENT EMERGENCY MEDICINE WORKFORCE

As discussed in the Introduction, there are a variety of data sources on the numbers, attributes and distribution of emergency 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 emergency medicine workforce the Working Party examined:

- data on ACEM Fellows, their distribution and ACEM training arrangements;
- age and gender profiles;
- hours worked;
- the services provided and performed by emergency medicine specialists;
- data on public hospital emergency departments; and
- data on private hospital emergency specialists and emergency departments, provided by APHA.

The Number of Practising Emergency Medicine Specialists in Australia

In 1996, the ACEM had 217 non retired, full time, Australian emergency medicine specialist members. Currently, all emergency medicine specialists in Australia are FACEM.

Of the 217 FACEMs, 199 are employed in public hospital emergency departments and 18 list a private hospital as their principal employment address.

Growth in the Emergency Medicine Workforce

Tables 4 and 5 show the growth in the emergency medicine workforce since 1984. Over this period ACEM has had a growth of (251%) in its membership.

Table 4: ACEM members; by State /Territory, 1984-85 and 1995-96

Year	NSW	Vic	Qld	SA	WA	Tas	ACT	NT	Aust
1984-85	23	17	17	3	7	2	2	0	71
1995-96	87	72	39	11	20	5	7	1	249
% increase	278.3	323.5	129.4	266.7	185.7	150.0	250.0	100.0	250.7
% pop. increase	14.0	11.1	31.4	9.1	25.6	9.9	24.5	28.2	16.9

Source: ACEM and ABS

The number of ACEM fellowships granted per year is shown in Table 5. The large number of Fellows admitted in 1984 represent the foundation membership of the College. The number of fellowships granted each year originally varied considerably; however, since 1993 admissions have been more stable, averaging 29 per year. In recent years the proportion of females admitted to ACEM has been around 20% of the

admissions to the College.

Table 5: ACEM Fellows; by year of admission and gender, 1984 to 1996

Year of admission	Male	Female	Total	% Female
1984	63	9	**72**	12.5
1985	4	3	**7**	42.9
1986	10	1	**11**	9.1
1987	10	1	**11**	9.1
1988	9	0	**9**	0.0
1989	11	4	**15**	26.7
1990	20	4	**24**	16.7
1991	14	2	**16**	12.5
1992	8	0	**8**	0.0
1993	19	2	**21**	9.5
1994	28	7	**35**	20.0
1995	17	5	**22**	22.7
1996	33	6	**39**	15.4

Source: ACEM

Distribution of the Emergency Medicine Workforce

Distributional data has been collected for both the public and private hospital sectors.

The distribution of public hospital Fellows of ACEM is shown in Table 6. The majority (54.2%) of specialists are in major referral hospitals. 83.4% of specialists are located in a capital city. Only 2.5% of specialists practise in a rural area.

Whilst it would seem significant that only 2.5% of emergency medicine specialists are located in a rural area, it should be stressed that this does not give a completely accurate picture of the provision of service to rural and remote areas because in the smaller rural communities emergency services are provided from the local hospital by a local GP. In remote areas the service will be provided by the local GP, the local hospital or the RFDS.

The majority of specialists are located in New South Wales (38.2%), Victoria (27.6%) and Queensland (15.6%). Table 7 shows that the State/Territory distribution of specialists is fairly consistent with population distribution. Table 7 also highlights current specialist to population ratios (SPRs). The SPR for Australia is 1:91,498; and ranges from 1:177,100 in Northern Territory, 1:134,845 in South Australia to 1:81,039 in New South Wales. It should be emphasised however that the SPRs are only provided for indicative purposes. The Working Party decided that for emergency medicine SPR is not a reliable workforce characteristic because the specialist workforce is limited by the available public and private hospital infrastructure.

Table 6: Public hospital Fellows of ACEM; by State/Territory and geographic location, 1996

State/ Territory	Major referral (capital city)	Major referral paediatric (capital city)	Other capital city	Other urban	Rural major	Total
NSW	34	3	24	12	3	**76**
Victoria	27	2	17	8	1	**55**
Queensland	14	3	5	8	1	**31**
SA	8	1	2	na	0	**11**
WA	16	0	0	0	0	**16**
Tasmania	4	na	1	0	0	**5**
ACT	4	na	0	na	0	**4**
NT	1	na	0	na	0	**1**
Australia	**108**	**9**	**49**	**28**	**5**	**199**
% of total	54.2	4.5	24.7	14.1	2.5	100.0

Source: ACEM

Table 7: Public hospital Fellows of ACEM and specialist: population ratio; by State/Territory, 1996

	NSW	Vic	Qld	SA	WA	Tas	ACT	NT
% spec.	38.2	27.6	15.6	5.5	8.1	2.5	2.0	0.5
% pop.	33.8	24.9	18.2	8.2	9.6	2.6	1.7	1.0
SPR	81,039	82,360	106,987	134,845	109,181	96,260	78,550	177,100

Source: ACEM and ABS

There were 149 FACEM respondents to the AMWAC/ACEM survey and 44 respondents who identified themselves as other emergency medicine doctors. 55 respondents indicated that they worked in more than one emergency department and 17 worked in three emergency departments.

Ten respondents (5.2%) indicated that they spent a proportion of their working week in hospitals with 0 to 50 beds; 66 respondents (34.6%) indicated that they worked in hospitals with 50 to 200 beds; the largest proportion (51.8%) of respondents (99) worked in hospitals with 200 to 500 beds; and 47 (24.6%) worked in hospitals with more than 500 beds.

Data from the APHA survey shows that the major private hospitals employ between 0.2 to 4.5 FACEM FTEs (average 0.6). Nine hospitals employed emergency medicine trainees, ranging from 0.2 to 1 FTE (average 0.8). Nineteen hospitals employed vocationally registered GPs, ranging from 0.1 to 6 FTEs (average 2). Twenty one hospitals employed other medical staff, ranging from 0.5 to 5.2 FTEs (average 2.6).

Table 8: Private hospital emergency department staff establishments, 1996

Medical practitioner	**Major hospitals**
Number of hospitals	16
Emergency medicine specialists	16.3
Hospitals using emergency specialists	14
Other specialists	2
Emergency medicine trainees	6.8
Vocationally registered GPs	27.7
Other medical practitioners	44.5
Total	**97**
Vacancies	6.25

For hospitals with on-call arrangements, the medical practitioner questions were often ticked rather than numbers supplied. These have been recorded as one full time equivalent in each ticked group.
Source: APHA

Age Profile

Table 9 provides information on the age distribution of ACEM members. The youngest member is 30 years of age. The median age was 38 years. The largest ten year age group was the 30 to 39 year age group (53.9%), followed by the 40 to 49 year age group (33.7%).

Table 10 provides a summary of the age profile of emergency medicine specialists by major age groups. It shows that emergency medicine is a specialty dominated by younger clinicians, with 88.5% of the AMWAC/ACEM respondents being aged under 50 years; within which 54.5% of respondents were aged under 40 years. 7.8% were aged 50 to 59 years.

This trend is similar across States/Territories. For respondents aged under 50 years the range is from 75% of respondents in the Australian Capital Territory to 94.1% in Queensland.

Table 9 Age profile of emergency medicine specialists; by State/Territory and gender, 1996

State/ Terr.	< 30 years	30-39 years	40-49 years	50-59 years	60-69 years	70 + years	Total	% female
NSW	0	36	19	6	0	1	62	13.8
Vic	1	26	13	5	2	0	47	19.1
Qld	1	18	13	1	1	0	34	8.8
SA	0	3	5	1	0	0	9	22.2
WA	0	10	4	1	0	0	15	6.7
Tas	0	2	3	1	0	0	6	0.0
NT	0	0	2	0	0	0	2	50.0
ACT	0	3	0	1	0	0	4	25.0
nk	0	4	5	1	2	0	12	16.6
Aust	**2**	**102**	**65**	**15**	**5**	**1**	**191**	**14.1**
% female	0.0	12.7	13.8	25.0	0.0	0.0	14.1	-

nk - unknown
Source: AMWAC/ACEM

Table 10: Age profile of emergency medicine specialists; by State/Territory and major age group, 1996

Age group	NSW	Vic	Qld	SA	WA	Tas	ACT	Aust
% under 50 years	88.7	85.1	94.1	88.9	93.3	83.3	75.0	88.5
% 50-59 years	9.7	10.6	2.9	11.1	6.7	16.7	25.0	8.4
% over 60 years	1.6	4.3	2.9	0.0	0.0	0.0	0.0	3.1

Source: AMWAC/ACEM

Gender Profile

Emergency medicine is seen as an attractive career option for women, with the capacity to secure work across the nation, the lack of start up costs in specialist practice and the availability of part time work.

ACEM data shows that, in 1996, there were 37 practising female emergency specialists, representing 18% of the workforce. Women represent 29% of the training workforce. This would indicate that the proportion of female specialists should increase over the coming years.

Emergency Medicine Specialists Work

In the AMWAC/ACEM survey, respondents were asked to define a typical working week in terms of hours worked in business hours, Monday to Friday, 8 am to 5 pm and then out of hours. The average hours given for each activity are detailed in Table 11 and show that the bulk of specialists time is clinical time, including supervision of junior staff.

Table 11: Emergency medicine specialists typical working week; by activity and hours worked, 1996

Activity	Average hours per week	
	Mon - Fri, 8 am to 5 pm	Out of hours
Clinical time including supervision of junior staff - public hospitals	21.9	10.2
Clinical time including supervision of junior staff - private hospitals	11.5	7.6
Telephone calls	3.1	3.1
Correspondence (letters, operation reports, medico-legal etc)	3.4	2.6
Quality assurance/improvement activities	2.6	2.1
Teaching	3.6	2.9
Departmental administration/management/research	7.6	3.5
Continuing medical education (clinical meetings, journal readings, audits, etc)	2.5	3.3
Research (including journal articles and oral presentations)	1.9	2.5
Other emergency medicine related activities	9.1	4.8
Rostered on call time	37.3	40.2

Source: AMWAC/ACEM

One hundred and twelve (58.3%) respondents indicated they were engaged in medical activities, other than emergency medicine. These are listed in Table 12.

Table 12: Other medical activities of emergency medicine specialists, 1996

Other medical work	Respondents	Other medical work	Respondents
Medical education/teaching	14	Paediatrics	5
General practice	12	Medico-legal	5
Retrieval	12	Minor surgery	5
Intensive care	10	Forensic medicine	3
Management/administration	8	Radiology/medical imaging	3
Anaesthetics	7	Other	24

Source: AMWAC/ACEM

As discussed earlier, the practice of emergency medicine occurs almost exclusively in organised hospital emergency departments. Fifty respondents (26.2%) to the AMWAC/ACEM survey treated impatients in a hospital ward; 59 respondents (30.9%) treated impatients in a short stay ward; and 31 respondents (16.2%) treated patients in other impatient areas.

From the AMWAC/ACEM survey, 52 (27.1%) respondents worked in a public hospital but also provided services in a private hospital. The average hours spent in the private sector was 12 hours. The main reasons given for servicing private hospitals included better remuneration and better work environment.

From the APHA survey, the number of patients seen by private emergency departments ranged from 1 to 60 patients per day with an average of 19. The percentage of these patients who were classified as >emergency= ranged from 0% to 85% with an average of 39%. The proportion of patients that were admitted ranged from 1% to 80% with an average of 29.1%. The proportion of patients that were transferred ranged from 0% to 50% with an average of 7.1%.

Table 13: Utilisation of private emergency departments, 1996

Utilisation	Major hospitals
Average ED beds	8.8
Average patients per day	29.7
Proportion >emergency= *	46%
Proportion admitted	32%
Proportion transferred	< 1%

* This question concerning proportion of patients who fell in the MBS definition of emergency appeared to generate some confusion, some respondents either did not answer it or used national triage scale categories.
Source: APHA

Hours Worked

Data on the hours worked by emergency medicine specialists was collected from the AMWAC/ACEM survey and the AIHW labour force survey. The AIHW survey showed that the average hours worked by an emergency medicine specialist were 45.6 hours, with an average of 40.6 hours spent on call. Table 14 shows that the majority of specialists (73.3%) spent between 31 and 50 hours per week in direct patient care and that in total the majority of specialists (79%) worked between 31 and 60 hours per week.

Table 14: Emergency medicine specialists, average hours per week spent in direct care of patients, average hours on call and total average hours worked (excluding hours on call not worked), 1994

	% emergency medicine specialists		
Hours per week	**Direct patient care**	**On call**	**Total**
1 - 10	1.2	10.3	0.0
11 - 20	4.7	25.9	2.3
21 - 30	5.8	20.7	3.5
31 - 40	40.7	10.3	22.1
41 - 50	32.6	10.3	36.0
51 - 60	12.8	5.2	20.9
61 - 70	1.2	1.7	7.0
71 - 80	1.2	5.2	4.7
80+	0.0	10.3	3.5
Total	**100.0**	**100.0**	**100.0**

Source: AIHW

Table 15 shows that nearly all (96%) male emergency medicine specialists work full time and 60% of the female specialists work full time. Full time is defined as over 40 hours work per week. Full time male and female specialists work similar average hours per week - 51.5 hours for male specialists and 46.8 hours for female. Female specialist average part time hours per week are considerably less than male part time hours - 22 hours compared with 33.3 hours.

Table 14: Emergency medicine specialists average hours worked per week (excluding hours on call not worked); by gender and full time/part time status, 1994

Full time/part time	**Male**	**Female**
Full time (more than 40 hours per week)	51.5	46.8
Part time (less than 40 hours per week)	33.3	22.0
Total	**50.7**	**36.9**
% full time	95.7	60.0

Source: AIHW

From the AMWAC/ACEM survey, respondents worked between five and 85 hours per

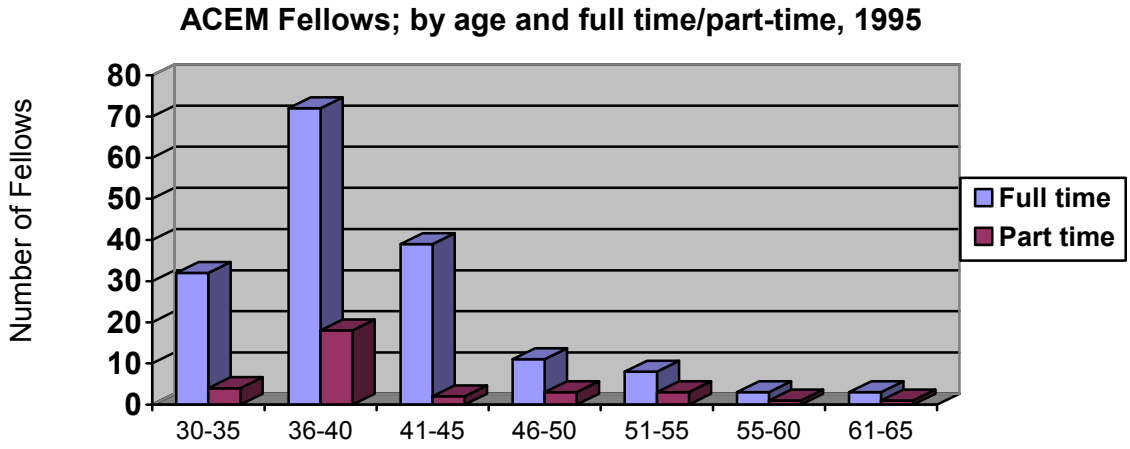
week in their primary employment with an average of 45 hours per week.

The 55 (28.7%) respondents who indicated a second place of employment worked between one and 40 hours, with an average of 9.9 hours per week. The 17 (8.9%) who worked in a third emergency room, worked between two and 24 hours, with an average of 8.7 hours per week.

One hundred and fifty four respondents (80.6%) indicated the number of half day sessions worked each week. These ranged from one to 14, with an average of 9.4 sessions. The majority (56.5%) worked ten sessions per week, followed by eight sessions per week (9.7%).

Figure 1 illustrates that emergency medicine specialists have different work practices in all age groups.

Figure 1: ACEM Fellows; by age and full time/part time, 1996



Source: AMWAC/ACEM

Remuneration Arrangements

From the AMWAC/ACEM survey, 11 respondents (5.8%) were paid on a fee for service arrangement; 15 respondents (7.9%) were employed on a sessional basis; 16 (8.4%) were part time salaried. By far the largest group of 157 (82.2%) were full time salaried. Remuneration arrangements are shown in Table 16.

Table 16: Remuneration arrangements of public hospital emergency medicine specialists; by State/Territory, 1996

Type of pay	NSW	Vic	Qld	SA	WA	Tas	NT	ACT
Fee for service	1	5	3	0	0	0	0	0
Sessional	0	7	1	2	4	0	0	0
Full time salaried	54	37	29	8	13	6	2	4
Part time salaried	7	2	2	2	1	0	0	0

Source: AMWAC/ACEM

In the private sector, emergency physicians are paid in different ways. In the rural hospitals, most of the practitioners are paid entirely through patient charges. This probably reflects the on call nature of the emergency department practice. In the major hospitals, however, almost all practitioners receive some salary with most of them paid entirely on a salary basis.

Table 17: Remuneration arrangements for medical practitioners in private emergency departments (average percentage of practitioners)*, 1996

Arrangement	Major hospitals
Patient charges only	5%
Patient charges plus some retainer	24%
Retainer plus some patient charges	7%
Salary only	62%
Other	2%

* Each hospital proportion is calculated separately then averaged, rather than weighting by the number of medical practitioners in the hospital.
Source: APHA

Training Arrangements

Medical practitioners wishing to obtain specialist registration as an emergency physician in Australasia must complete the ACEMs training and examination requirements which include two years basic training, five years advanced training, two examinations (primary and fellowship) and the presentation of a research project. Practitioners who satisfy these requirements are eligible for election to Fellowship of ACEM.

Basic training comprises two years of hospital experience in hospitals approved by regional medical boards for the training of interns. During this period trainees are expected to obtain broad experience in a range of specialties.

Following the completion of basic training, trainees commence a five year advanced training program which requires a minimum of two years experience in emergency departments approved by the Board of Censors for the compulsory emergency department component of advanced training. Compulsory emergency department training must occur in blocks of at least six months to ensure the trainee becomes totally familiar with the emergency departments operations and has the opportunity to participate in the educational, administrative, research and quality improvement activities of the department.

Trainees must spend at least two years in non emergency department posts gaining experience in a wide range of specialties relevant to the practice of emergency medicine. Rotations in medicine and the specialties of anaesthetics, intensive care, psychiatry, surgery, and its sub-specialties, are highly desirable. Trainees are able to determine their own mix of terms within the regulations.

Training posts are approved if they are undertaken in a hospital approved by the relevant College for advanced training of its own trainees. It is not necessary that the emergency medicine trainee occupy a formal training position in another College. However, they must work in an institution which is accredited by the appropriate College. Terms in a variety of other specialties and general practice are acceptable but limited in duration. Prior approval of the Board of Censors is required for some activities such as overseas posts where a maximum of two years is accreditable.

The fifth year of advanced training may occur in either an approved emergency department or in another appropriate post. During advanced training, at least six months must be spent gaining paediatric experience either in an emergency department or in a paediatric intensive care or general medical term.

ACEM inspects all approved emergency departments and their hospitals at least every five years and determines the maximum period of compulsory emergency department training that the trainees can undertake in each department; the number of trainees the department can adequately train at a given time; and whether the department provides adequate training in paediatrics. ACEM also inspects and accredits retrieval services which are an optional component of non emergency department training.

Currently there are 68 approved emergency medicine training departments (Table 18). The number of departments has increased by 46.7% over the past ten years. There are approved departments in all states and territories. The majority of the departments are in New South Wales (41.2%), Victoria (23.5%) and Queensland (14.7%).

There is a recognised shortage of emergency physicians in rural and regional Australia and ACEM is currently developing a mechanism to allow interested trainees to undertake part of their training in a rural environment as a means of encouraging practitioners who graduate from the program to consider the option of practising in non metropolitan environments.

Table 18: Approved emergency medicine training departments; by State/Territory, 1987 to 1996

Year	NSW	Vic	Qld	SA	WA	Tas	ACT	NT	Total
pre 1987	16	10	10	4	4	1	0	0	**45**
1988	15	11	9	3	4	1	0	0	**43**
1989	18	14	9	3	4	1	0	0	**49**
1990	19	15	10	4	4	1	2	0	**55**
1991	22	15	9	3	4	1	2	0	**56**
1992	24	16	9	4	4	2	2	0	**61**
1993	25	16	10	4	4	2	1	0	**62**
1994	26	15	10	4	4	2	1	0	**62**
1995	26	15	11	4	4	2	1	0	**63**
1996	28	16	10	6	4	2	1	1	**68**
%	41.2	23.5	14.7	8.8	5.9	2.9	1.5	1.5	100.0

Source: ACEM

During the early years of training it is expected that trainees will receive considerable supervision; however, more senior trainees are allowed a degree of professional responsibility within their capabilities.

Trainees are assessed by the Director of Emergency Medicine Training during emergency department terms and by the consultants appointed to other units during non emergency department terms. At the beginning of a term, trainees are encouraged to discuss their previous appraisals with their supervisor and to elucidate areas for improvement. A formal report is required at the completion of all terms and at least every six months for longer rotations. These reports must be discussed with the trainee prior to submission. The Board of Censors reserves the right to deny accreditation on the basis of unsatisfactory progress.

Training terms are accredited if they are undertaken on at least a half time basis, which is defined as 20 hours per week. Terms of more than 20 hours per week are accredited on a pro rata basis. Full time work is not precisely defined, but equates to between 37.5 to 60 hours per week dependent on local practice. No trainee may obtain more than 12 months accredited training in any one calendar year. Trainees may undertake two concurrent half time posts in different units.

The requirement to undertake the two years of compulsory emergency department training in blocks of at least six months requires trainees working half time to spend the whole year in a single emergency department.

Any trainee may apply for a year away from study for any reason. Trainees whose training lapses for five or more years are required to complete a minimum of one year in an emergency department before sitting the Fellowship examination regardless of their previous status.

The primary examination covers basic sciences and must be completed before the trainee can commence the third year of advanced training. It is anticipated that this regulation will change in the next few years so that trainees will need to complete the primary examination prior to entry into the second year of advanced training.

The Fellowship examination is an exit examination and measures both knowledge and clinical performance at the level expected of a consultant. The examination can be taken during the last year of advanced training. In addition, trainees are required to conduct a research project and to either publish or present a paper in a recognised forum. There are currently 197 trainees who have passed the primary examination.

Table 19: ACEM trainees; by State and status, 1996

Status	NSW	Vic	Qld	SA/NT	WA	Tas	Total
Advanced male	112[a]	93[b]	65[c]	20[d]	23[e]	10	**323**
Advanced female	47[f]	29[g]	16	11[h]	11	2	**116**
Basic trainees - male	5[i]	3	3	3	1	0	**15**
Basic trainees - female	4	5	2	1[j]	1	0	**13**
Total	**168**	**130**	**86**	**35**	**36**	**12**	**467**
% female	30.4	26.1	20.9	34.3	33.3	16.7	**27.6**
Completed advanced training - male	10	6	3	1	5	0	**25**
Completed advanced training - female	2	2	4	1[k]	0	0	**9**
Temporarily suspended training - male	6	3	2	0	2	0	**13**
Temporarily suspended training - female	2	2	2	0	1[l]	0	**7**
Total	**188**	**143**	**97**	**37**	**42**	**12**	**519**
% female	29.2	26.5	24.7	35.1	30.9	16.6	**-**

a. includes 9 trainees in ACT and one currently in Hong Kong; b. includes 1 trainee currently in UK; c. includes 3 trainees currently in UK; d. includes 4 trainees in NT; e. includes 1 trainee currently in UK; f. includes 3 trainees in ACT; g. includes 1 trainee currently in UK and 1 trainee currently in USA; h. includes 1 trainee in NT and 1 trainee currently in UK; I. includes 1 trainee in ACT; j. includes 1 trainee in NT; k. includes 1 trainee currently in USA; l. includes 1 trainee currently in USA.
Source: ACEM

The number of training posts in emergency medicine is not currently fixed. The primary examination is not required to commence advanced training and accredited emergency departments can theoretically have any number of trainees, although the ACEM recommended ratio of one consultant to one or two trainees is the normal practice. Since 1995 hospital accreditation by ACEM has involved a specification of training post numbers in each accredited department. There are currently 467 trainees registered with ACEM for basic or advanced training and a further 34 have completed advanced training requirements but not fellowship requirements. Currently, 20 trainees have temporarily suspended training (Table 19).

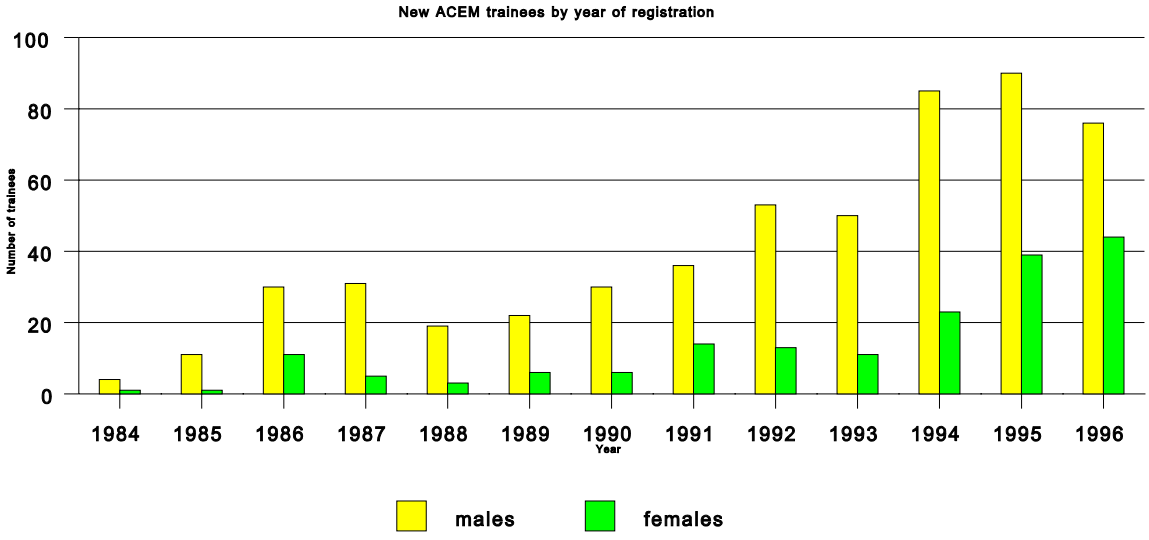
Table 20 and Figure 2 shows that, just as the number of emergency medicine specialists has increased dramatically over the past ten years, so has the number of trainees. Growth in new trainee registrations has been greatest in recent years, with a dramatic increase between 1993 and 1994.

Table 20: Emergency medicine trainee registrations; by State/Territory, 1984 to 1996

Year	NSW	Vic	Qld	SA	WA	Tas	ACT	NT	Total
1984	3	1	1	0	0	0	0	0	**5**
1985	4	3	2	1	2	0	0	0	**12**
1986	17	16	5	0	4	0	0	0	**41**
1987	12	16	3	1	2	2	0	0	**36**
1988	13	6	1	1	0	0	1	0	**22**
1989	10	7	8	2	1	0	0	0	**28**
1990	15	10	2	2	6	0	1	0	**36**
1991	17	16	6	2	5	2	2	0	**50**
1992	17	22	12	3	8	1	3	0	**66**
1993	22	18	14	0	7	0	0	0	**61**
1994	34	33	22	8	5	4	0	2	**108**
1995	48	31	28	2	12	1	7	0	**129**
1996	39	29	20	18	6	2	2	4	**120**
%	32.5	24.2	16.6	15.0	5.0	1.7	1.7	3.3	100.0

Source: ACEM

Figure 2: Emergency medicine trainees; by year of registration and gender, 1984 to 1996



Source: ACEM

Currently 29% of trainees are female (Table 18), although female trainees represent 30% and 36.6% of new trainee registrations in the past two years (Table 21).

Table 21: New emergency medicine trainees; by year of registration and gender, 1984 to 1996

Year	Male	Female	Total	% female
1984	4	1	**5**	20.0
1985	11	1	**12**	8.3
1986	30	11	**41**	26.8
1987	31	5	**36**	13.9
1988	19	3	**22**	13.6
1989	22	6	**28**	21.4
1990	30	6	**36**	16.6
1991	36	14	**50**	28.0
1992	53	13	**66**	19.7
1993	50	11	**61**	18.0
1994	85	23	**108**	21.2
1995	90	39	**129**	30.2
1996	76	44	**120**	36.6

Source: ACEM

ADEQUACY OF THE CURRENT EMERGENCY MEDICINE WORKFORCE

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

- public hospital vacancies;
- emergency department waiting times
- consumer satisfaction; and
- perceptions of the adequacy of the current workforce.

The Working Party decided that SPR was not a good indicator of adequacy because the emergency medicine workforce is limited by the available public and private hospital infrastructure; hence the indicators of adequacy chosen are considered to give a better indication than any SPR benchmarks.

Hospital Vacancies

Table 22 highlights that at the time of the AMWAC/ACEM survey of emergency departments there were at least 61 public hospital vacancies for emergency medicine specialists in Australia, with the bulk of these in either major referral hospitals or other metropolitan hospitals. A vacancy was defined as a position for which funding is available and for which active recruitment is being, or has been, undertaken.

Table 22: Public hospital emergency medicine specialist vacancies; by State/Territory and geographic location, 1996

State/ Territory	Major referral (capital city)	Other capital city	Other major urban/ provincial	Major rural	Total
NSW	7	8	2	6	**23**
Victoria	0	3	0	0	**3**
Queensland	1	2	8	0.5	**11.5**
South Australia	3	9	na	0	**12**
Western Australia	6	0.5	0	0	**6.5**
Tasmania	1	1	0	0	**2**
ACT	1	na	na	0	**1**
Northern Territory	2	na	na	0	**2**
Australia	**21**	**23.5**	**10**	**6.5**	**61**
%	34.4	38.5	16.4	10.7	100.0

na - not applicable
Source: AMWAC/ACEM

There was anecdotal evidence presented to the Working Party that some hospitals had

not established positions and that large tertiary hospitals had difficulty recruiting for unexpected vacancies. Information supplied by APHA indicated that there were six emergency medicine vacancies in private hospitals.

New South Wales had the most vacancies with 23 (37.7% of total vacancies). South Australia had 12 vacancies (19.7% of vacancies) and Queensland had 11.5 vacant positions (18.8% of vacancies). There was one temporary resident doctor filling a vacancy.

Table 23 summaries the public hospital specialist vacancy rate by State and Territory and shows that nationally the vacancy rate is estimated at 23.5%.

Table 23: Public hospital emergency medicine specialist vacancy rate; by State/Territory, 1996

	NSW	Vic	Qld	SA	WA	Tas	ACT	NT	Aust
Specialists	76	55	31	11	16	5	4	1	199
Vacancies	23	3	11.5	12	6.5	2	1	2	61
Vacancy rate %	23.2	5.2	27.0	47.8	28.9	28.6	25.0	66.7	23.5

Source: AMWAC/ACEM

Most States/Territories referred to the inability to attract skilled medical staff at all levels for emergency medicine services, including FACEMs, registrars and other senior doctors. The exception to this was Victoria which did not identify vacancies as a problem.

Some States indicated it was difficult to recruit and retain suitably experienced and qualified medical officers to staff emergency departments in major rural areas. Queensland felt that provincial cities with their helicopter retrievals could prove to be an attraction to emergency medicine specialists.

The Working Party was also informed of difficulties in attracting part time medical officers such as GPs with skills in emergency medicine who are able to work weekends and after hours to relieve the workload of emergency department specialists in major provincial and rural emergency departments. The difficulties were caused by a combination of factors including the nature of the hours and lack of confidence or experience in the use of emergency techniques/technologies.

The AMWAC/ACEM survey of emergency departments also collected information on registrar vacancies. Table 24 shows that, in mid 1996, there were an estimated 88 emergency medicine registrar vacancies, with the bulk of the vacancies in New South Wales. There were also a significant number of registrar vacancies in South Australia.

Table 24: Public hospital emergency medicine registrar vacancies; by State/Territory and geographic location, 1996

State/ Territory	Major referral (capital city)	Other capital city	Major urban/ provincial	Major rural	Total
NSW	19	16	2	6	**43**
Victoria	1	6	2	0	**9**
Queensland	5	1	6	0	**12**
South Australia	8	11	na	0	**19**
Western Australia	0	1	0	0	**1**
Tasmania	0	3	0	0	**3**
ACT	0	na	na	0	**0**
Northern Territory	1	na	na	0	**1**
Australia	**34**	**38**	**10**	**6**	**88**
%	38.6	43.2	11.4	6.8	100.0

Source: AMWAC/ACEM

Hospitals often have internal difficulties in rostering resident medical officers (RMOs) and registrars to the emergency departments of their hospitals because of the demand and constancy of the work involved.

These difficulties relate to a combination of factors:

- the amount of after hours and weekend work involved in emergency departments, particularly in smaller establishments;
- the irregular nature of rosters;
- the constant workload demands that actually occur whilst on duty;
- difficulties in incorporating teaching and training for medical as well as other clinical staff in emergency departments, due mainly to workload; and
- lack of confidence or inexperience of some doctors in the use of emergency techniques, treatments or technologies. In many instances staffing patterns are not compatible with the demanding role of the emergency department in that the proportion of senior medical staff is not as high as in other areas of a hospital. This can lead to high stress levels and burnout rates amongst senior medical staff. The highly demanding environment, competing demands of service provision, administration and training lead to difficulties in the recruitment and retention of senior staff. It may be that a local commitment to workplace reform will be necessary to make emergency department careers an attractive option.

The enhancement of research through the possible establishment of emergency medicine academic positions is expected to contribute to the standing of emergency medicine and the career progression of those who enter the specialty.

Emergency Department Waiting Times

A key measure of both quality and efficiency in an emergency department is waiting time by triage category. This indicator is used by ACEM, the Australian Council on Healthcare Standards (ACHS) and State/Territory governments to measure emergency department performance.

The majority of the larger emergency departments conduct quality assurance activities and meet requirements for ACHS accreditation. The ACHS emergency medicine clinical performance indicators for emergency departments are as follows:

- waiting time by triage code;
- admissions/discharges/transfers by triage code;
- time to thrombolysis; and
- audit of deaths in department.

In most emergency departments these indicators are provided by age and gender of patients. Other data collected on patients includes:

- number of attendances by age, sex and visit type;
- new or old injury which was previously treated by hospital (readmissions);
- type of referral;
- mode of arrival;
- total time in the emergency department;
- discharge destination;
- number of paediatric presentations and transfers; and
- occasions of ambulance bypass.

Most States/Territories are establishing computerised reporting systems for emergency department waiting times.

In Victoria all hospitals participating in the Emergency Services Enhancement Program (ESEP) triage and treat category one patients immediately. Over 60% of category 2 patients are seen within ten minutes and over 60% of category three patients are seen within 30 minutes.

ESEP is an incentive scheme designed to provide additional funding to emergency departments for the achievement of performance targets set by the Victorian Department of Human Services. These targets are focussed on ambulance bypass, triage times of urgency NTS category 1 to 3 patients and total length of stay within the emergency department. Twenty hospitals are participating in this program.

In New South Wales the majority of urban emergency departments have instituted a computerised patient information system which routinely monitors waiting times by triage category in emergency departments. The Emergency Department Investment and Incentive Scheme (EDIIS) was set up in 1994 by the Department of Health to improve key elements of emergency department performance. The EDIIS project is a statewide initiative to upgrade emergency department information systems to agreed minimum standards, as well as supporting the implementation of the NTS throughout New South Wales. The New South Wales Health Department hospital role delineation document describes the type of staff required for each level of service.

The Health Department of Western Australia is currently reviewing Perth metropolitan emergency services with a view to strategic planning. As a result of this review, it is likely that >total time in the emergency department will be required for reporting. A range of other indicators are also under consideration.

Queensland Health is trialing an online emergency medicine database at Royal Brisbane and Mater Childrens Hospitals. The key performance indicator will be waiting by triage category of the NTS.

Average waiting times given in the AMWAC/ACEM survey are shown in Table 25.

Table 25: Average emergency department waiting time; by National Triage Scale, 1996

National Triage Scale	Recommended times	Average waiting time (minutes)
Triage category 1 patient	immediately	0.90
Triage category 2 patient	< 10 minutes	10.61
Triage category 3 patient	< 30 minutes	34.80
Triage category 4 patient	< 60 minutes	66.86
Triage category 5 patient	< 120 minutes	90.97

Source: AMWAC/ACEM

Table 26 shows average waiting times by State and Territory. In all States and Territories, NTS1 patients are seen within three minutes, on average; NTS2 patients are seen within 13 minutes; NTS3 patients are seen within 41 minutes except for the Australian Capital Territory, where the average waiting time was 73.7 minutes; NTS4 patients are seen within one hour in Western Australia and Tasmania and within two hours in the other Stares and Territories; and NTS5 patients are seen within two hours in all States/Territories except the Australian Capital Territory which had an average waiting time of 3 hours 21 minutes.

Table 26: Average emergency medicine waiting times (minutes); by National Triage Scale and by State/Territory, 1996

	NSW	Vic	Qld	SA	WA	Tas	NT	ACT
NTS1	1.4	0.3	0.8	0.6	1.8	0.5	2.5	0.3
NTS2	12.3	9.5	12.0	12.4	8.5	10.3	7.5	10.0
NTS3	40.6	28.9	39.0	40.4	29.1	32.0	20.0	73.7
NTS4	69.9	63.6	71.0	70.7	49.1	51.7	120.0	120.7
NTS5	86.2	88.2	97.2	85.9	82.7	91.7	120.0	200.7

Source: AMWAC/ACEM

Waiting time is a complex issue affected by a number of factors including the overall staff: workload ratio, facility size and efficiency, diagnostic infrastructure, and the effectiveness of organisation and supervision. As in all medical specialties, senior staff are more effective and efficient than junior staff and provide the organisation and supervision which distinguish best practice and benchmark departments, from those of lesser performance. In Australia, those emergency departments recognised as benchmark are characterised by higher levels of senior staffing.

Average waiting time is of course only one indicator. The proportion of patients seen within the recommended NTS waiting time would probably be a better indicator of performance. No respondent to the AMWAC/ACEM survey indicated that their current emergency department waiting time was clinically or socially acceptable.

Other Performance Indicators

There is little systematic collection or reporting on other quality or efficiency indicators, although this will improve following the introduction of ACHS clinical indicators for emergency medicine in 1996.

The Critical Incident Monitoring Study in Emergency Medicine undertaken during 1993 to 1996 found that unsupervised junior medical staff were involved in significantly more critical incidents and adverse events than junior medical staff in specialist supervised emergency departments.

Customer satisfaction issues have been examined by some States - New South Wales in 1994 and Queensland in 1995. These surveys reported that about 15% of attendances at emergency departments were not satisfied with some aspect of their care.

Emergency Medicine Specialists Perceptions of Workload and Workplace Satisfaction

In the AMWAC/ACEM survey, respondents were asked a number of questions relating to workload, and other medical and nursing support. The results are detailed in Table 27.

The majority of respondents (72.9%) stated that there were not enough emergency department beds and not enough emergency medicine specialists (66.7%). A large number of respondents indicated that long waiting times in emergency departments is mainly due to access block to impatient beds and shortage of staff.

Other concerns raised by respondents related mainly to shortage of staff at all levels: junior staff; HMOs; staff specialists; nurses; senior staff; and clerical, administration, educational support, followed by problems servicing after hours and on call commitments. A couple of respondents suggested there was inadequate remuneration for emergency medicine specialists compared to other specialties; and no present career structure or recognition/respect of the specialty by other specialists.

Table 27: Emergency medicine specialists satisfaction with workload and workplace

Response	% Yes	% No	% non respondents
Satisfied with workload	50.5	40.6	8.9
Overworked	53.6	35.4	11.0
Enough EM specialists in area	21.1	78.9	0.0
Enough medical back up in area	60.9	31.2	7.9
Adequate ED infrastructure	44.3	46.9	8.8
Adequate hospital infrastructure	52.1	40.1	7.8
Enough beds	19.8	72.9	7.3
Enough nurses	36.5	56.3	7.2
Enough EM specialists	25.0	66.7	8.3
Other	15.1	84.9	0.0

Source: AMWAC/ACEM

The majority of respondents found they had sufficient emergency medicine work to maintain competence, generally (79.7%). However, only 44.8% of respondents felt that they had sufficient work in certain areas of emergency medicine - particular areas were not identified.

Respondents were asked to indicate if they have sufficient time for education, teaching, clinical care and research. The responses are detailed in Table 28.

Table 28: Emergency medicine specialists perception of time for certain activities

Activity	% Yes	% No	% non respondents
Continuing medical education	28.6	67.7	3.7
Teaching	35.9	59.9	4.2
Direct clinical care - public	59.9	29.7	10.4
Direct clinical care - private	29.2	17.2	54.4
Research	8.3	85.9	5.8

Source: AMWAC/ACEM

Responses suggest that emergency medicine specialists have enough time to provide clinical care but are then restricted in all other activities included teaching and research. Protected time for research and teaching is considered essential by some respondents.

The majority of respondents (80.7%) believe that patients expectations and/or knowledge will increase emergency medicine workforce requirements. Similarly, 68.8% of respondents believe that the expectations of other health professionals will increase workforce requirements.

Conclusions on Adequacy of the Current Emergency Medicine Workforce

In summary, analysis of current emergency medicine specialist vacancies, suggests a marked undersupply of the workforce of 67 funded positions; 61 positions in the public hospital system. This conclusion is supported by data suggesting some room for improvement in emergency department performance as indicated by waiting times, consumer response and the negative perceptions of the current emergency medicine workforce.

The Working Party believes the shortage of specialists is unlikely to improve in the short term. However, in the medium term, the expectation is for a gradual reduction in vacancies. The reason for this is the large number of new specialists expected to enter the workforce in the next few years, for example in 1997 it is estimated that 32 graduates and in 1998 it is estimated that 62 graduates will be seeking positions. This upward trend will continue thereafter, as indicated by the large number of trainees who have entered the training program in the 1990s (Table 21).

PROJECTIONS OF REQUIREMENTS

There are a number of factors which may be used in projecting emergency medicine requirements. The factors examined by the Working Party were:

- likely number of emergency departments in public hospitals in Australia and their role delineation;
- the likely number of private emergency departments in Australia in 2007
- changes in the role of the emergency department including the impact of >gatekeeping and >packaging requirements, short stay units, hospital in the home, etc;
- emergency department workload
- population growth and ageing of the population; and
- changes in utilisation of emergency services.

The Working Party feels that the key determinant of future emergency medicine requirements is the need to accommodate the current shortfall in emergency medicine specialists and role delineation and infrastructure. Emergency medicine is one specialty where the size of the workforce is constrained by the available infrastructure. Whilst other factors need to be considered there is no point in having a workforce greater than the availability of places where the workforce can practise.

At the same time, it should be stressed that the future is difficult to predict for emergency medicine as the field is expanding rapidly. Emergency paediatrics, toxicology, drug and alcohol, hyperbaric medicine, liaison psychiatry and emergency geriatrics are all on the fringe of emergency medicine and boundaries can shift.

Overall, however, there is currently no evidence to suggest that the trend to increased specialist staffing of emergency departments will abate.

Future Plans for the Distribution of Emergency Departments

Certain geographic areas in Australia have a faster growing population than others which will result in an increased workload in their emergency departments in the next five to ten years.

The growth in the population will impact on emergency medical services in an uneven manner across the country. In outer urban areas, where most growth is occurring, new hospitals with emergency departments will create demand for specialists, but it is most likely that the specialist workforce in these hospital will grow incrementally with the caseload over a number of years. Where States and Territories have identified the creation of new acute hospitals in their forward capital works programs, a requirement for emergency medicine specialists has been estimated.

For the private sector, information supplied by APHA shows that 30 private hospitals, including 15 major private hospitals are intending to open an emergency department within the next ten years (Table 29). Based on average staffing levels for existing emergency departments in these types of hospitals, this will require an additional 12 rural medical practitioners (excluding the vacancies in the recently established

emergency departments) and a further 146 medical practitioners in major hospitals. The medium sized private hospitals (101-200 beds departments) are most active in planning emergency departments.

Table 29: Private hospitals planning an emergency department; by number of inpatient beds and geographic location, 1996

Location	1- 50 beds	51 - 100 beds	101 - 200 beds	200 + beds	Total
Capital city	1	4	7	2	14
Other major urban	0	4	4	0	8
Rural	3	3	2	0	8
Remote	0	0	0	0	0
Total	**4**	**11**	**13**	**2**	**30**
Proportion %	4.9	16.4	34.2	14.3	14.9

Source: APHA

Role Delineation of Hospitals Within Emergency Medical Systems

A dominant model of emergency medical systems is developing worldwide. In urban areas, Basic Life Support/Advanced Life Support pre-hospital care providers deliver the acutely ill and injured to hospital based emergency departments which are strategically located at radii of 15-20 kilometres or at distances with transport times of 15-30 minutes. Drainage populations of 200,000-500,000 are typical. These emergency departments are significant facilities equipped and staffed to manage the great majority of emergencies, including trauma. They are supported by substantial hospital infrastructure including beds (general and critical care), and specialists in a range of disciplines and investigative services.

In the UK, a recent Audit Commission report found that the practice of having large numbers of small hospitals, and emergency departments with just one specialist, was clinically and economically inefficient. The Commission recommended the amalgamation of emergency departments and the closure of small hospitals and adoption of the model described above. Similar strategies are being adopted in France, North America, and in some regions of Australia.

Currently, New South Wales and Queensland have formal delineation documents for emergency departments, describing different levels of staff cover and infrastructure. Specific criteria for the staffing of emergency departments have not been developed by most States and Territories. As a starting point, the New South Wales role delineation document describes six levels of acute hospital emergency services.

The Working Party believes that it is the number of hospitals in Australia, and their role delineation, that will principally determine the demand for emergency medicine specialists.

Having regard to existing trends in Australia, and trends overseas, particularly in North America, it is reasonable to assume that by 2007, the highest level emergency departments will have emergency specialists available 24 hours/seven days. Urban and major provincial emergency departments will have extended hours specialist cover, while large rural hospitals (150 or more beds, catchment population of 30,000 or more) will probably require two FTE specialists, although it is possible that these could be multiskilled personnel. These assumptions have been used in estimating future requirements.

Emergency Department Workload

The Working Party believes that the role delineation of hospitals is the prime determinant of the demand for specialists, and that workload is the prime determinant of the infrastructure requirement (total medical staff, nursing staff, capital etc)

However, there are a range of workload factors that could act to increase the need for emergency medicine specialists. These would include:

- Higher acuity casemix

The greater the number of seriously ill patients, the greater the need for emergency medicine specialists.

No specific epidemiological trends were identified by the Working Party which will impact on emergency medicine, in particular the incidence of severe trauma is not predicted to increase, but small rises in the incidence of ischaemic coronary syndromes, stroke and some infectious diseases are likely.

- Changing Demographics

Australia has a growing and an ageing population. The 1995-96 Australian population is estimated at 18.29 million. The ABS estimates that population will reach 19.17 million by 2001 and 20.09 million by 2006 (ABS 1994) (note these projections use series A/B). Between now and 2006 there is a projected 1.2% growth in population per annum.

The ABS estimates that the median age of the total population will rise from 33.1 years in 1993 to between 39.4 and 41.8 years in 2041. As a proportion of the total population, those aged 65 and over represented 11.7% (2.1 million) in 1993, and will increase to around 12.7% (2.56 million) in 2006. (ABS 1994).

The ageing of the population is likely to increase the workload of emergency departments, as the elderly consume significantly more doctor time and other resources in emergency departments than younger patients.

In assessing future emergency medicine requirements, the Working Party has assumed that expected population growth and ageing of the population has been incorporated into State/Territory health department planning for new hospitals and expanded hospital emergency departments.

- Longer Patient Times

During the 1990s, the reduction in bed numbers in Australias public hospitals, and a political focus on elective surgery waiting lists, has meant that some emergency departments have experienced an increase in access block. The initial resource-intensive care of these patients fall to the emergency department. Increasingly complex medical therapy, monitoring and nursing care was required and provided in the emergency department, with an increased need for specialist supervision.

However, many emergency departments did not have the facilities or other resources to cope, and serious access and quality problems resulted. A number of strategies have subsequently developed to ameliorate the problem. Most governments now better understand the need to balance emergency and elective access and some have implemented sanctions where access block is excessive. Hospital administrators have responded by improving their bed management systems, and some centres have reportedly achieved significant gains in performance.

If these strategies develop in sophistication, patient time in the emergency department could reasonably be expected to stabilise.

- Short Stay Units

A number of hospitals have established short stay units in their emergency departments. Typically, these units have a number of objectives, including:

- management of patients with a diverse range of acute conditions where there is high probability of discharge within 24 hours if intensive investigation and treatment are instigated (overdose, renal colic, asthma, minor head injury, etc)
- investigation and initial management of patients in whom the need for admission is uncertain and where the investigation and review processes may take longer than four hours but less than 24 hours
- short term buffering of excess demand for inpatient beds.

There are anecdotal reports of economic gains from this model achieved through significantly shorter lengths of stay. Successful units appear to be characterised by high levels of emergency medicine specialist supervision, ready availability of investigative services, use of clinical pathways and good vertical integration with impatient units. The pressure for efficiency gains in public hospitals may increase the diffusion of this model. A moderate level of diffusion is assumed in this report with major hospitals most likely to take up the model, reserving their inpatient specialty beds departments for higher complexity cases.

- Special Services

Overseas, and increasingly in Australia, emergency medicine specialists are involved in areas such as retrieval medicine, hyperbaric medicine, clinical toxicology, disaster

medicine, and pre-hospital care. It is not possible to predict the workforce requirement in these areas but a small number has been added to allow for some participation in these areas.

Undergraduate training in emergency medicine is rudimentary in most parts of Australia and non existent in some. Most emergency departments therefore concentrate their teaching effort at the postgraduate level. With the recent appointment of a Chair in Emergency Medicine at the University Western Australia, and other universities considering similar developments, there is a high probability of an increase in demand for academic emergency physicians to undertake teaching and research.

- Funding Models

A key assumption of the Working Party was that the national health insurance arrangements would not change. Any co-payment for general practice services not matched by a co-payment in emergency departments is likely to increase emergency department service demand, as would any change negatively impacting on after hours or deputising services. Continued refusal by private health insurers to pay a facility fee for private emergency department attendances limits demand for these services although they are provided at a cost competitive with the public sector, a factor which may be relevant in ambulatory care reform.

Technology

The Working Party is not in a position to predict the impact of medical technology and its impact on emergency medicine. However, there are a number of examples where implementation would be, in part, contingent on an adequate specialist workforce.

Emergency department chest pain centres have developed in the USA in response to new diagnostic tests in nuclear imaging and pathology which permit a significantly earlier diagnosis of myocardial infarction (MI). Previously, >rule out MI' patients were admitted to a Coronary Care Unit for a diagnostic workup over two or more days. Using the new technology, such patients can be investigated in the emergency department in 12 hours with negatives being promptly discharged, with substantial economic savings.

Increasing miniaturisation and automation have increased the opportunities to manage a number of acute conditions in the community rather than in hospital.

For example, many patients are admitted for intravenous therapy who would be suitable to have this therapy initiated in the emergency department and continued in the home via hospital in the home programs. These programs are unlikely to develop appropriately in places with inadequate specialist supervision.

Some new technologies, such as ultrasound; continuous positive airway pressure; real time computer data entry in order to analyse the emergency department process; and the need for prolonged high intensity management of patients, all mandate greater levels of seniority in emergency departments.

New technologies will inevitably improve the service but will probably also demand additional resources and training. 53.1% of respondents to the AMWAC/ACEM survey believe that technology will increase emergency medicine workforce requirements and 94.3% believe that the use of ultrasound in emergency departments will increase requirements.

More sophisticated monitoring technologies and patient management in emergency departments reduces admissions required and decreases length of stay. Shifting investigative technology such as CT scanning units closer in proximity to emergency departments will allow more immediate investigations, which is beneficial to the patient and reduces unnecessary bed stays.

The use of technology in the networking of information within and between hospitals, improvements in work practice and patient management systems, the integration of emergency department information systems with other information systems should increase efficiency in the delivery of emergency services.

Emergency Medicine Specialists Perceptions of Factors That Could Influence Future Requirements

Respondents were asked to indicate the effects of certain issues relating to changing work practices and hospital infrastructure on emergency medicine workforce requirements. The results are shown in Table 30. Generally, only a small percentage of respondents felt that factors would decrease workforce requirements. The general view amongst the profession is for a range of influences to cause a need for an increase in the size of the workforce.

Table 30: Emergency medicine specialists perceptions of factors that could influence future workforce requirements, 1996

Factors that influence future workforce requirements	% increase in workforce requirements	% decrease in workforce requirements	% stay the same
Access to beds departments, nurses, theatres etc.	79.7	2.1	14.1
More defensive medicine	79.2	0.5	16.7
Safer procedural practices	51.0	9.9	35.9
Increased productivity in hospitals	58.8	9.4	27.1
Cardiac care in emergency departments	77.1	3.1	16.1
Patient controlled analgesia	26.6	10.9	57.3
Hospital in the home and the move to more community care	51.6	17.7	26.0
Changes in work practices	44.8	16.7	30.7
Multi-disciplinary team provision	37.0	13.9	41.1
Public hospitals contracting services	43.8	9.9	39.6

Factors that influence future workforce requirements	% increase in workforce requirements	% decrease in workforce requirements	% stay the same
Health outcomes/quality assurance	68.2	4.7	21.9
Public health resource allocation	53.1	8.9	31.3
Increasing emphasis on hospital efficiency	70.3	9.4	15.1
Introduction of managed care	43.8	11.5	31.3

Source: AMWAC/ACEM

Estimating Future Emergency Medicine Specialist Requirements

On the basis of the expected trends in emergency department infrastructure and staffing arrangements it is possible to make an estimate of the expected number of emergency medicine specialists that will be required in the year 2007.

Table 31: Estimated future emergency medicine specialist requirements, public and private hospitals; by hospital role delineation, 2007

Role delineation	Number of hospitals	Specialist requirements per hospital ED	Total number of specialists
Public hospitals			
Major referral	25	11	275
Other capital city	46	6	276
Major provincial	19	6	114
Large rural	49	2	98
Paediatric	7	3	21
TOTAL	146	-	784
Private hospitals			
Current private hospital EDs	14	6	84
Proposed new private hospital EDs	15	6	90
TOTAL	29	-	174
TOTAL - emergency medicine specialists			**958**

Source: AMWAC and ACEM

Based on current estimates an allowance should be made for emergency medicine specialists in other activities (estimated 50 specialists) and emergency medicine specialists attrition (estimated 50 specialists). It is also estimated that 15% of the projected workforce will work on a part time basis. If it is assumed that the part time work will equate to two people sharing the one position, a further 144 specialists will be

required (958 x .15)

On this basis, in ten years time, in 2007, approximately 1200 emergency medicine specialists will be need to be in place/registered. Provision of specialists in public hospitals is outlined in Table 32.

Table 32: Projected public hospital emergency medicine specialist requirements; by hospital role delineation and State/Territory, 2007

Hospital	NSW	Vic	Qld	SA	WA	Tas	ACT	NT	Aust
Major referral	99	55	33	22	33	11	11	11	**275**
Other capital city	102	96	24	30	24	-	-	-	**276**
Major provincial	24	18	48	-	18	6	-	-	**114**
Rural major	36	24	12	6	12	4	-	4	**98**
Paediatric	6	3	6	3	3	-	-	-	**21**
Total	**267**	**196**	**123**	**61**	**90**	**21**	**11**	**15**	**784**

Source: AMWAC and ACEM

Most State/Territory health departments indicated to the Working Party support for the concept that emergency departments should be staffed by trained emergency medicine specialists or specialists in training.

The establishment of a benchmark requirement of 1200 does require a commitment from State/Territory health departments to work towards achieving the benchmark. There is some potential for conflict to emerge between staffing emergency departments with trained specialists and just staffing the emergency department so that the work can be done, particularly as employing specialists is likely to increase staffing costs as junior hospital emergency department positions are replaced with trained emergency medicine specialists.

Most States/Territories are currently considering future staffing requirements for emergency departments and doing this in consultation with ACEM. Several have indicated they are likely to adopt similar coverage to that proposed by the Working Party.

PROJECTIONS OF SUPPLY

Additions to the Emergency Medicine Workforce

Additions to the specialist emergency medicine workforce have varied considerably over the past decade. In recent years additions have averaged 29 new specialists. In 1996 there were 39 new FACEMs. In the future, it is expected that the number of new FACEMs will increase dramatically as the large cohort of current trainees graduates and moves into the workforce.

Additions to the workforce from overseas doctors are expected to be negligible. The total number of applications received from specialists entering the medical workforce through the Australian Medical Council Specialist College Pathway from October 1990 to July 1996 was 889. From these 889 applicants, 171 specialists qualified for registration, only one of whom was an emergency medicine specialist. One other emergency medicine specialist was referred for further training or examination requirements. On the basis of this trend it can be assumed that there will be little or no impact on the emergency medicine workforce from overseas doctors.

Loss to the Emergency Medicine Workforce

Since incorporation of ACEM, 13 Fellows have relinquished their fellowship or died. This represents 5.2% of total admissions to ACEM between 1984 to 1995. 24 Fellows (9.6%) have otherwise retired from emergency medicine practice, and there are currently nine (3.6%) Australian Fellows overseas studying or working in emergency medicine.

From the AMWAC/ACEM survey, 66 respondents intend to reduce their workload over the next ten years (Table 33). Fourteen respondents to the survey were over 55 years of age. Eleven gave an intended age of retirement ranging from 65 to 74 years, with a mode of 65 years (Table 34). 42 respondents (21.9%) intend to leave the workforce for a period of longer than 3 months in the next two years. The main reasons given were maternity leave, sabbaticals and long service leave.

Table 33: Emergency medicine specialists who anticipate they will reduce their workload over the next ten years, 1996

In what way workload will be reduced	Number of respondents
Reduce hours	35
Retire	11
Reduce administration	10
Increase staff establishment	8
Increase hours of teaching/research	2

Source: AMWAC/ACEM

Table 34: Actual year of intended retirement, emergency medicine specialists 55 years of age and over

1996	1997	2001	2002	2003	2006	2008
1	1	1	3	1	3	1

Source: AMWAC/ACEM

Using past experience as a guide the Working Party decided to assume an attrition rate for retirement from active service of 4% per annum. This figure has been applied to the projection analysis. In adopting this figure the Working Party cautions that it will require careful monitoring from year to year. The large increase in entrants to the workforce in recent, and forthcoming, years, coupled with the increasing demands on emergency specialists, could see a higher >burn out= rate than historical experience.

Female Participation in the Workforce

It is expected that the proportion of women in emergency medicine will increase; as is demonstrated by the increase in the number of female trainees. Women represent 18% of the current workforce but 29% of Australian trainees, and 37% of the 1996 trainee intake.

Emergency medicine is considered to be one of the specialties attractive to women and the impact of the increasing female participation will need to be monitored. Generally, female specialists have a lifetime working contribution which is 75% of the male contribution (AMWAC & AIHW 1996b).

In conducting the projection analysis, the expected supply has been adjusted to account for increasing female participation, up to a maximum of 37 % per year, and for the lower workforce contribution of female specialists, based on the AIHW estimates of full time/part time participation.

Provision of Services in Rural and Remote Areas

Traditional emergency medicine services in smaller rural areas will be expected to continue to be provided by GPs, and by general specialists in some areas and nurses in others.

It will remain important to encourage GPs to obtain, maintain and utilise their skills in emergency medicine to provide basic services to smaller rural communities. Appropriate training and retraining opportunities together with appropriate remuneration and indemnity arrangements appear to be barriers to GPs obtaining and using their emergency medicine skills.

Supply Projections
The Working Party conducted several supply projections:

1. No change in new trainee intake, that is maintaining the current level of 120 trainees per year

2. Increasing new trainee numbers to 150 until 2000 and then gradually reducing them to 50 per year from 2005 onwards

3. Reducing new trainee numbers immediately to 80 trainees from 1998

4. Maintaining new trainee numbers at 120 for three years and then reducing trainees each year to 25 new trainees per year from 2003

The results of the supply projections analysis are summarised in Table 35.

Table 35: Emergency medicine specialists, projected supply, 1996 to 2010

Year	FTE FACEMs (scenario 1)	FTE FACEMs (scenario 2)	FTE FACEMs (scenario 3)	FTE FACEMs (scenario 4)
1997	273	273	273	273
1998	334	334	334	334
1999	410	410	410	410
2000	474	474	474	474
2001	540	540	540	540
2002	623	611	589	589
2003	727	728	662	684
2004	835	857	735	787
2005	942	989	808	893
2006	1049	1121	879	988
2007	1156	1241	951	1063
2008	1263	1320	1022	1114
2009	1370	1440	1093	1148
2010	1477	1560	1165	1176

FTE FACEMs is total FACEMs adjusted for expected attrition and estimated female participation.
Source: AMWAC and ACEM

BALANCING SUPPLY AGAINST REQUIREMENTS

Future growth in the emergency medicine workforce will be limited by role delineation and infrastructure and therefore the growth should not be allowed to significantly exceed the estimated requirement of 1200 specialists. Accordingly, the number of doctors taken into training will have to be tailored to levels that match replacement requirements. It is difficult to estimate what this level will be, because the specialty is still in a major growth phase and has a young workforce. The attrition rate and the take up rate of part time work in ten years time may vary from the projections currently made.

It is also apparent (see Table 7) that there are significant regional differences in specialist and trainee numbers. Any solution produced to adjust the number of trainees must take regional differences into account. The organisation and management of trainee intake should reside with ACEM, which has indicated that it will require significant consultation and planning with, and assistance from, State/Territory health departments over the next few years to affect such a change in training in an orderly manner.

All four supply scenarios show that expected supply will meet estimated requirements around 2007, however the first three scenarios would result in large overshoots in specialist numbers with no to trend to stabilisation.

As a result of all these factors the Working Party favours scenario 4, which will mean that estimated supply will not equate with expected requirements in 2007 but rather around 2010/2011. Scenario 4 will, however, provide a trend to stabilisation in the long term. This model will continue the intake of trainees at around current levels for the next three years, then gradually reduce to minimum replacement requirements from 2003. In the initial phase it will allow time for ACEM and State/Territory health departments to introduce mechanisms to commence adjustment of trainee intake, it may also allow those areas which are poor in specialist and trainee numbers to establish a significant emergency medicine specialist presence.

All scenarios assume a 100% success rate for trainees, this may well not be achieved. By avoiding a precipitant, early reduction in trainee intake (as proposed in scenario 3) this assumption can be checked and corrected without significant interference in the supply of emergency medicine specialists. The key factor in favouring scenario 4, however, is that it is the only scenario which achieves a stabilisation in emergency medicine specialist numbers at the level of projected requirement.

It is clear that the recommended projection scenario is sensitive to factors such as female participation, trainee success and specialist attrition, and as a consequence the projections will have to be carefully monitored by AMWAC.

RECOMMENDATIONS

The Working Party recommends:

1. That the number and role delineation of hospital emergency departments in Australia be recognised as the key determinant of the future size of the specialist emergency medicine workforce in Australia.

2. That it be recognised there will be a requirement for a specialist emergency medicine workforce of approximately 1200 by the year 2007.

3. That State/Territory health departments undertake negotiations with ACEM to adjust the number of emergency medicine training positions to meet this requirement; as a guide to this process the following indicators are proposed:

Indicator	**2000**	**2003**	**2007**	**2010**
Estimated FTE FACEMs	474	684	1063	1176
Estimated ACEM trainees	668	550	223	177

4. That State/Territory based emergency medicine services working groups, comprising ACEM and State/Territory health department representatives, be organised to coordinate the internal realignment of the medical staff mix in emergency departments in order to meet State/Territory and regional needs. Options for achieving this may include some new staff establishment, together with replacement of non specialist staff currently in emergency departments with emergency medicine specialists.

5. That emergency medicine requirements and supply projections be monitored regularly so that they can be amended if new trends emerge.

6. That this monitoring be coordinated by ACEM and AMWAC and the results incorporated into the AMWAC annual report to AHMAC. AMWAC will provide all necessary support.

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