CHAPTER NINE

HEALTH

This chapter is primarily concerned with the activities of the Commonwealth relating to health. There is, however, government responsibility for health at the State and local levels. There are constitutional limits on the Commonwealth Government's role in the health care field, and the primary responsibility for planning and provision of health services is with the State and Territory governments.

At the national level, health services in Australia are administered by the Commonwealth Government. The government appoints a Minister who exercises political control over the Commonwealth Department of Community Services and Health. The Commonwealth Government is primarily concerned with the formation of broad national policies, and influences policy making in health services through its financial arrangements with the State and Territory governments, through the provision of benefits and grants to organisations and individuals, and through the regulation of health insurance.

The direct provision of health services, broadly speaking, is the responsibility of the State governments. Each of the States and the Northern Territory has a Minister who is responsible to the government of his particular State or Territory for the administration of its health authorities. In some States, the responsibility for health services is shared by several authorities whilst in others, one authority is responsible for all these functions.

Health care is also delivered by local government, semi-voluntary agencies, and profit making non-governmental organisations.

A.C.T. Health Authority

In addition to its national responsibilities, the Commonwealth Government, through the A.C.T. Health Authority, has special responsibility for health services in the Australian Capital Territory. The Authority, which is primarily funded through Commonwealth appropriations, has the statutory role of providing and monitoring health services in the A.C.T.

Health services provided by the Authority include:

- Hospital services—the Authority operates Royal Canberra and Woden Valley Hospitals within the A.C.T. public hospital system. These hospitals offer an extensive range of general and speciality medical services. Calvary Hospital and the Queen Elizabeth II Home for Mothers and Babies are funded through the Authority's grant-in-aid program, and function within the public hospital system.
- Community services—the Authority is responsible for health care delivery in the community, including health centres (twelve as at 30 June 1987), child health clinics and home nursing services. Other community health services provided by the Authority include ambulance services, health education, school dental and speech therapy services, and health and pharmaceutical inspection services. The Authority also provides a range of programs to service the mental health needs of the community, and the special health needs of other groups in the community such as the elderly, the physically handicapped, the intellectually handicapped and those with alcohol or drug dependence.

At 30 June 1987, the Authority had a staff of 3,516 full-time and 1,158 part-time employees.

Further information about the operations of the Authority and the services it provides is contained in Authority annual reports.

Commonwealth health benefits and assistance

In previous issues, information on Commonwealth Nursing Home and related benefits was contained in this chapter. Such information is now provided in Chapter 8, Social Security and Welfare.

Medicare

Details of the health financing arrangements under the Medicare program introduced by the Commonwealth Government in February 1984 are available in *Year Book* No. 68.

Since the introduction of the Medicare program the income thresholds on which the levy is payable have been revised. From 1 December 1986 no levy was payable by single people earning $8,030 per annum or less, or by married couples and sole parents with a combined income of $13,370 per annum or less, with a further $1,660 per annum allowed for each dependent child.

'Shading-in' arrangements apply in respect of persons with taxable incomes marginally above the threshold.

The levy was increased from 1 per cent to 1.25 per cent of taxable income on 1 December 1986.

Medicare benefits

The Health Insurance Act provides for a Medicare Benefits Schedule which lists medical services and the Schedule (standard) fee applicable in respect of each medical service. The Schedule covers services attracting Medicare benefits rendered by legally qualified medical practitioners, certain prescribed services rendered by approved dentists and optometrical consultations by participating optometrists. Schedule fees are set and updated by an independent fees tribunal which is appointed by the government. The fees so determined are to apply for Medicare benefits purposes. Medical services in Australia are generally delivered by either private medical practitioners on a fee-for-service basis, or medical practitioners employed in hospitals.

Where a medical service is provided by a private medical practitioner on a fee-for-service basis, Medicare refunds at least 85 per cent of the Schedule fee applicable to that service. From 1 November 1986, the 'gap' between Medicare benefits and the Schedule fee was increased from a maximum of $10 per service to a maximum of $20 per service.

For medical services rendered to an insured person in a hospital or a day hospital facility, the gap is covered by benefits under the basic insurance table operated by health benefits organisations. Gap benefits are not payable for out-of-hospital medical services. However, where accumulated gap payments for these services exceed $150 in a year, further services attract Medicare benefits equal to 100 per cent of the Schedule fee.

Under Medicare, medical practitioners are able to direct bill for any patient. In such cases, they receive the Medicare benefit as full payment.

Hospital care

From 1 February 1984, basic public hospital services have been provided free of charge. Under Medicare, out-patient treatment and in-patient accommodation and care in a shared ward by a doctor employed by a hospital are provided free of charge. The scheme does not cover hospital charges for private accommodation in a public hospital, private hospital treatment, nor care in a public hospital by a doctor of the patient's choice. It is possible however for persons to take out insurance with registered health benefits organisations to cover these situations and medical benefits are available for private medical practitioners charges.

Patients who are accommodated in either private or public hospitals for continuous periods in excess of 35 days and who are, in essence, nursing home type patients, are required to make a statutory non-insurable patient contribution in the same way that a patient in a nursing home does. For a private patient in a public hospital, health benefits paid by registered benefits organisations are reduced to the level of the standard nursing home benefit. However, because of the reduced fees charged by public hospitals, such patients are only liable for the amount of the statutory non-insurable patient contribution. In a private hospital, the benefits are reduced to $100 a day, less the amount of the patient contribution. Any charges by private hospitals in excess of available benefits plus the statutory patient contribution become the responsibility of the patient.

Where a patient's doctor considers that a patient has continuing need for acute hospital care, the doctor may issue a certificate under section 3B of the Health Insurance Act to that effect, and the nursing home type patient arrangements do not apply. The new arrangements provide for a review mechanism in the form of the Acute Care Advisory Committee which, when requested (e.g. by a private health fund) to do so, may review such certificates and recommend that they be varied or revoked.

Private hospitals

Coinciding with the introduction of Medicare on 1 February 1984, Commonwealth bed day subsidies and health insurance benefits were paid according to a system of classifying private hospitals into three categories. The three categories of private hospitals were determined on the basis of the services and facilities provided. Those hospitals with more sophisticated services and facilities attracted higher levels of health insurance benefits and Commonwealth bed day subsidies.

The States have always had primary responsibility for the planning and provision of health services and facilities within their respective boundaries. However, associated with private hospital categorisation, the Commonwealth also had a responsibility, in consultation with the States, for the approval and categorisation of private hospital facilities. Because of this overlap of responsibilities, the Commonwealth decided to discontinue its regulatory controls in the private hospital sector from 1 October 1986, leaving the States with the sole authority over such matters. Also, in the context of budgetary considerations, Commonwealth subsidisation of the private hospital sector through bed day subsidies ceased from 1 October 1986.

Acting on the recommendations of the private hospital and health insurance industries, the Commonwealth approved a system of classifying patients in private hospitals for health insurance benefits purposes. The patient classification system was introduced on 1 March 1987 and replaced the private hospital categorisation arrangements. Patient classification more appropriately relates health insurance benefits to the actual costs of providing hospital services necessary to the treatment of patients' conditions.

From 1 March 1987, three classes of private hospital patients were declared for health insurance benefits purposes. These are advanced surgical, surgical/obstetrical and 'other' patients. Differential levels of benefits are payable in relation to a patient's classification and step down periods (i.e., lengths of stay in hospitals) also apply to each classification. Advanced surgical patients, and surgical/obstetrical patients, are defined according to specified medical procedures as contained in the Medicare Benefits Schedule.

Pharmaceutical Benefits Scheme

The Pharmaceutical Benefits Scheme, established under the provisions of the National Health Act, provides a comprehensive range of drugs and medicinal preparations which may be prescribed by medical practitioners for persons receiving medical treatment in Australia. In addition, there is a limited range of antibiotic, antibacterial, analgesic and antifungal preparations which may be prescribed by dental practitioners for the treatment of patients. The drugs and medicines are supplied by an approved chemist upon presentation of a prescription from the patient's medical or dental practitioner, or by an approved hospital to patients receiving treatment at the hospital.

From 1 November 1986 patient contribution arrangements were as follows:

- *free of charge*—the holders of a Pensioner Health Benefits Card, Health Benefits Card, Dependant Treatment Entitlement Card or Service Pension Benefits Card and their dependants receive benefit items free of charge;
- *$2.50 per benefit item*—people in special need who hold a Health Care Card and their dependants, and those Social Security pensioners and Veterans' Affairs service pensioners who do not hold a PHB card and their dependants, pay a contribution of $2.50 per benefit item;
- *$10 per benefit item*—all other people pay a contribution of $10 per benefit item.

At the same time, a scheme was introduced to provide protection for the chronically ill high drug user by placing a ceiling on the amount which could be paid by an individual or family for pharmaceutical benefits in a calendar year. Under the new arrangements, a person or family group who uses more than 25 pharmaceutical benefit prescriptions in a calendar year qualifies for an entitlement to free pharmaceutical benefits for the remainder of that year.

In order to qualify for free pharmaceutical benefits under the 'safety net' arrangements, general or concessional patients may record each pharmaceutical benefit supplied on a prescription record form, obtainable from any pharmacy. After the supply of 25 prescriptions has been recorded, the form or forms may be presented to a pharmacy or any office of the Commonwealth Department of Community Services and Health for issue of a Pharmaceutical Benefits Entitlement Card conveying entitlement to free pharmaceutical benefits for the remainder of the year.

The first entitlement period ran from 1 November 1986 to 31 December 1987. Thereafter, the entitlement period will run from 1 January to 31 December.

Under the Pharmaceutical Benefit Scheme the total cost, including patient contribution of prescriptions processed for payment was $903.7 million in 1986–87. This figure does not include the cost of drugs supplied in certain psychiatric centres and geriatric centres or the cost of pharmaceutical benefits supplied through special arrangements, such as Royal Flying Doctor Service (RFDS), Bush Nursing Centres and hormone treatment programs.

BENEFIT PRESCRIPTIONS AND COST OF MORE FREQUENTLY PRESCRIBED DRUG GROUPS, AUSTRALIA, 1986–87

	Benefit prescriptions		*Total cost of benefit prescriptions(a)*	
Drug group	*Number*	*Percentage of total*	*Amount*	*Percentage of total*
	'000	%	$'000	%
Analgesics	14,161	13.8	109,383	12.1
Heart—drugs acting on	9,126	8.9	101,187	11.2
Diuretics	8,012	7.8	46,232	5.1
Bronchial spasms—preparations for	7,738	7.5	70,349	7.8
Blood vessels—drugs acting on	6,225	6.1	107,349	11.9
Penicillins	5,635	5.5	41,528	4.6
Anovulants	4,542	4.4	33,798	3.7
Tranquillisers	3,962	3.9	20,554	2.3
Antidepressants	3,333	3.2	19,816	2.2
Tetracyclines	3,078	3.0	22,387	2.5
Sulphonamides	3,062	3.0	21,056	2.3
Hypnotics and sedatives	3,016	2.9	12,796	1.4
Eye drops	3,006	2.9	20,765	2.3
Antacids	2,547	2.5	13,202	1.5
Water and electrolyte replacement	2,402	2.3	15,643	1.7
Skin sedative applications	2,309	2.2	11,564	1.3
Other drug groups	20,608	20.1	236,115	26.1
Total	**102,762**	**100.0**	**903,724**	**100.0**

(*a*) Includes patients' contributions. Excludes Government expenditure on pharmaceutical benefits provided through miscellaneous services.

Source: Commonwealth Department of Community Services and Health.

Summary of personal benefit payments

For an analysis by purpose and economic type of expenditure by all Commonwealth Government authorities *see* Chapter 24, Public Finance.

Most Commonwealth Government health benefits are financed through the National Welfare Fund and the Health Insurance Commission. The following table shows personal benefit payments by Commonwealth Authorities for 1984–85 and 1985–86.

COMMONWEALTH AUTHORITIES: PERSONAL BENEFIT PAYMENTS—HEALTH ($ million)

	N.S.W.(a)	*Vic.*	*Qld*	*S.A.(a)*	*W.A.*	*Tas.*	*Total*
			1984–85				
Hospital and other institutional services and benefits	252.3	214.2	83.9	63.3	51.7	13.1	678.5
Nursing homes	244.6	207.9	81.4	61.2	49.7	12.5	657.3
Hospital benefits	7.7	6.3	2.5	2.1	2.0	0.6	21.2
Clinic and other non-institutional services and benefits	981.3	571.0	351.2	207.2	179.5	56.1	2,346.4
Clinic and other non-institutional services n.e.c.	10.6	7.7	4.8	1.8	2.6	1.3	28.8
Medical benefits	970.7	563.3	346.4	205.4	176.9	54.8	2,317.6
Public health	3.5	0.6	3.9	3.0	2.6	0.5	14.1
Pharmaceuticals, medical aids and appliances	227.0	138.0	88.7	48.6	43.3	14.2	559.8
Total	**1,464.2**	**923.8**	**527.7**	**322.1**	**277.1**	**83.9**	**3,598.8**

COMMONWEALTH AUTHORITIES: PERSONAL BENEFIT PAYMENTS—HEALTH—*continued*
($ million)

	N.S.W.(a)	*Vic.*	*Qld*	*S.A.(a)*	*W.A.*	*Tas.*	*Total*
			1985–86				
Hospital and other institutional services and benefits	273.3	216.5	91.0	66.7	60.6	13.7	721.8
Nursing homes	265.0	210.5	89.0	65.4	60.0	13.5	703.4
Hospital benefits	8.3	6.0	2.0	1.3	0.6	0.2	18.4
Clinic and other non-institutional services and benefits	1,133.1	650.4	411.8	238.5	203.6	61.8	2,699.2
Clinic and other non-institutional services n.e.c.	10.9	6.8	4.7	1.7	2.8	1.2	28.1
Medical benefits	1,122.2	643.6	407.1	236.8	200.8	60.6	2,671.1
Public health	3.4	0.7	5.1	3.4	4.0	0.7	17.3
Pharmaceuticals, medical aids and appliances	247.8	153.5	96.7	53.6	47.2	17.0	615.8
Total	**1,657.6**	**1,021.1**	**604.6**	**362.2**	**315.4**	**93.2**	**4,054.1**

(*a*) State totals for New South Wales and South Australia include expenditure on personal benefit payments to residents in the Australian Capital Territory and the Northern Territory respectively.

Commonwealth Government subsidies and grants to States

General revenue grants

The Commonwealth provides untied identifiable health grants within general financial assistance grants to the States and the Northern Territory as a contribution towards the cost of health programs. These arrangements, which are authorised by the *States Grants (General Revenue) Act, 1985*, are designed to replace previous specific purpose health payments for public hospital operating costs (under expired Hospital Cost Sharing Agreements), community health and school dental service programs and apply fully to all States.

Medicare grants to the States

Under the Medicare program, all States, the Northern Territory and the Australian Capital Territory, have been compensated by Medicare grants outside the identified health grants and financial assistance arrangements for:

- revenue losses and additional medical costs directly attributable to the provision of free public hospital accommodation and treatment; and
- a reduction to $50 per day in the fee charged for those persons who seek 'doctor of choice' or private ward accommodation in public hospitals.

The Medicare grants also include an additional community health component to restore the level of Community Health Grants to 1975–76 levels in real terms and capital assistance for specified diagnostic and other high technology equipment.

Paramedical services

Commonwealth funding to participating States under the *States Grants (Paramedical Services) Act 1969* is to be incorporated in the Home and Community Care Program: see Chapter 8, Social Security and Welfare.

Commonwealth Government subsidies and grants to organisations

Health program grants

Health program grants are authorised under Part IV of the Health Insurance Act. The scheme involves payments to approved organisations in respect of the costs incurred by those organisations in providing approved health services or an approved health service development project. The grants were first introduced in 1975 with the intention of establishing a scheme for funding a wide range of health services on other than a fee-for-service basis. The scheme underwent several modifications in later years to allow for the provision of charges to be imposed, where appropriate, for services rendered to privately insured patients.

Since 1 February 1984, there has been a return to the original concept of health program grants in that they now cover the net costs incurred by the organisations in respect of the approved health services, and no charges are raised for those services.

Funds appropriated for these grants amounted to $7.162m in 1984–85, $8.086m in 1985–86 and $11.951m in 1986–87.

National Community Health Program

Under the National Community Health Program, the Commonwealth provides funding to organisations in respect of specific activity which has been approved for the purpose of the Program.

The largest of these projects is the Family Medicine Program (FMP) of the Royal Australian College of General Practitioners, which provides vocational training for young doctors who intend to enter general practice. The trainees receive their training through attachments to participating private general practitioner practices and by attendance at educational events organised by the FMP.

The other national projects are either national co-ordinating secretariats of voluntary non-profit organisations operating in more than one State or specific health-related projects which have national application.

Funds appropriated for this program amounted to $11.0m in 1984–85, $11.835m in 1985–86 and $12.5m in 1986–87.

Medicare grants for community health

The Commonwealth Government has a renewed interest in community health services. The Medicare agreements, which commenced on 1 February 1984, were used as vehicles for delivering additional Commonwealth funds to the States and Territories in block grants for new or expanded services within their borders. These grants amounted to $17.968m in 1984–85, $19.263m in 1985–86 and $20.071m in 1986–87.

National Health Promotion Program

Under the National Health Promotion Program (NHPP), the Commonwealth provides funding for projects that focus on promotion of health or illness prevention. The Better Health Commission (BHC) Report 'Looking Forward to Better Health', which was released in October 1986, made recommendations for National Strategies for better health and identified important areas of priority.

Projects funded under the NHPP must be national in application and focus, and be constant with the BHC priority areas. These include cancer, nutrition, injury, cardio-vascular disease, mental health and communicable diseases.

The allocation of funds for this program was $2.5m in 1986–87. Projects funded included the 'Healthy Cities' Project which is being co-ordinated by the Australian Community Health Association, the 'Health Education and Lifestyle Program', being developed by the Australian Council for Physical Education and Recreation and a program designed to increase the awareness levels of railway workers, regarding their cholesterol levels and eating patterns, which is being conducted by the Department of Public Health, University of Sydney.

Bicentennial Public Health Program

Under the Bicentennial Public Health Program, the Government is providing $26m over three years to strengthen public health and tropical health teaching and research in Australia.

The program has three components:

- grants to eight universities and one research institute (these grants have been extended to cover seven years and now total approximately $41.5m);
- the expansion of the Australian Institute of Health;
- the creation of the National Health and Medical Research Council (NH&MRC) Public Health Research and Development Committee which allocates funds for research and awards fellowships.

Other grants and subsidies

The Commonwealth Government gives financial assistance to certain organisations concerned with public health. Examples of organisations included in this category are outlined below.

The Royal Flying Doctor Service

A non-profit organisation providing medical services in remote areas of Australia. It is distinct from, but co-ordinates with, the Aerial Medical Service which, while formerly operated by the Commonwealth Department of Community Services and Health, has been operated by the Northern Territory Government since 1 January 1979. The Royal Flying Doctor Service is financed mostly from donations and government contributions. For the year ended 30 June 1987 the Commonwealth Government paid grants totalling $6.5m towards operational costs and assistance of $3.0m towards an approved program of capital expenditure.

The Red Cross Blood Transfusion Service

This service is conducted by the Australian Red Cross Society throughout Australia. The operating costs of the Service in the States and the Northern Territory are met by the State governments and the Northern Territory government paying 60 per cent, the Society 5 per cent of net operating cost or 10 per cent of donations, whichever is the lesser, and the Commonwealth Government meeting the balance. Approved capital expenditure by the Service is shared on a dollar for dollar basis with the States and the Northern Territory government. Commonwealth Government expenditure for each State and the Northern Territory during 1986–87 was $16.498m, made up as follows: New South Wales, $4.183m; Victoria, $5.265m; Queensland, $2.230m; South Australia, $1.818m; Western Australia, $2.064m; Tasmania, $0.438m; and Northern Territory, $0.219m. In the Australian Capital Territory, the Red Cross Society meets 5 per cent of the operating costs or 10 per cent of donations and the Commonwealth meets the balance. Commonwealth Government expenditure in 1986–87 was $0.282m.

The National Heart Foundation of Australia

A voluntary organisation, supported almost entirely by public donations, established with the objective of reducing the toll of heart disease in Australia. It approaches this objective by programs sponsoring research in cardiovascular disease, community and professional education directed to prevention, treatment and rehabilitation of heart disease and community service programs including rehabilitation of heart patients, risk assessment clinics and surveys and documentation of various aspects of heart disease and treatment of heart disease in Australia. The Foundation's income in 1986 was $11.493m of which $9.535m was from public donations and bequests. Commonwealth, State and semi-government authorities made grants of $0.099m for specific projects conducted by the Foundation. Since the inception of the Foundation, research has been a major function and a total of $2.621m has been expended in grants to university departments, hospitals and research institutes and for fellowships tenable in Australia and overseas. It is notable however that with increasing opportunities for prevention and control of heart disease, the Foundation's education and community service activities are increasing significantly. In 1986 the expenditure on research, education and community service totalled $6.120m.

The World Health Organization—WHO

The WHO is a specialised agency of the United Nations having as the objective the attainment by all peoples of the highest level of health. Australia is assigned to the Western Pacific Region, the headquarters of which is at Manila, and is represented annually at both the World Health Assembly in Geneva and the Regional Committee Meeting in Manila. Australia's contribution to WHO for 1986 was $6.130m.

The International Agency for Research on Cancer—IARC

The IARC was established in 1965 within the framework of the World Health Organization. The headquarters of the Agency are located in Lyon, France. The objectives and functions of the Agency are to provide for planning, promoting and developing research in all phases of the causation, treatment and prevention of cancer. Australia's contribution to the IARC for 1986 was $0.602m.

National health services and advisory organisations

Australian Health Ministers' Conference and the Australian Health Ministers' Advisory Council

The Australian Health Ministers' Conference (AHMC) and its advisory body, the Australian Health Ministers' Advisory Council (AHMAC) provide a mechanism for Commonwealth, State and Territory Governments to discuss matters of mutual interest concerning health policy, services and programs. Neither the Conference nor the Council has statutory powers, and decisions are reached on the basis of consensus. Their constitution rests on the formal agreement by the Commonwealth, State and Territory Governments of the membership and functions.

The AHMC comprises the Commonwealth, State and Territory Health Ministers, and the Commonwealth Minister responsible for Health in the A.C.T. Other Commonwealth Ministers may be invited to speak on items relevant to their portfolio. The New Zealand Health Minister may attend meetings as an observer.

AHMAC comprises the head and one other senior officer from the Commonwealth, State and Territory health authorities and the Department of Veterans' Affairs. AHMAC was established by the April 1986 AHMC to replace the Standing Committee of Health Ministers (SCOHM) and the Australian Health Services Council (AHSC).

AHMAC may establish standing committees to serve ongoing matters of concern to the Council and the Australian Health Ministers' Conference and ad hoc working parties or subcommittees to investigate and report on specific issues or aspects. The standing committees include the AIDS Task Force, the Commonwealth/State Advisory Committee on Nursing Issues, the Health Targets and Implementation Committee, the Subcommittee on Breast and Cervical Cancers and the Task Force on National Hospital Statistics.

Health services organisations

The Commonwealth Department of Health Pathology Laboratory Service

This service provides clinical diagnostic and investigational facilities at laboratories situated in Albury, Bendigo, Cairns, Lismore, Rockhampton, Tamworth, Toowoomba and Townsville. Their primary role is to assist medical practitioners in the diagnosis of illness and disease and to provide facilities for investigations into public health and aspects of preventive medicine. During 1986–87, these laboratories carried out approximately 7.5 million examinations, tests and investigations in respect of 0.7 million patient requests.

The Commonwealth Serum Laboratories Commission—CSL

CSL produces pharmaceutical products for human and veterinary use and is one of Australia's foremost scientific institutes. The Commission's main function is to produce and sell prescribed pharmaceutical products used for therapeutic purposes and to ensure the supply of essential pharmaceutical products in accordance with national health needs. The Commission's functions also include research and development relating to many kinds of human and veterinary diseases covering the fields of bacteriology, biochemistry, immunology and virology. The Commission's laboratories and central administration are located at Parkville, Victoria, with storage and distribution facilities in all States.

For over sixty years, CSL has been Australia's chief supplier of biological medicines, insulins, vaccines, human blood fractions, Bacillus Calmette-Guerin (BCG) and an increasing range of veterinary pharmaceutical products needed by Australia's sheep, cattle, pig and poultry industries. The CSL Act now allows CSL to produce, buy, import, supply, sell or export prescribed pharmaceutical products (either of a biological or non-biological nature).

The Australian Radiation Laboratory

The Laboratory is concerned with the development of national policy relating to radiation health and:

- undertakes research and development in the fields of ionising and non-ionising radiations which have implications for public and occupational health;
- formulates policy by developing codes of practice and by undertaking other regulatory, compliance, surveillance and advisory responsibilities at the national level with respect to public and occupational health aspects of radiation;

- maintains national standards of radiation exposure and radioactivity;
- undertakes research and provides advice in relation to the quality and use of radiopharmaceutical substances.

The National Acoustic Laboratories

The Laboratories undertake scientific investigations into hearing and problems associated with noise as it affects individuals, and advise Commonwealth Government departments and instrumentalities on hearing conservation and the reduction of noise. A free audiological service is provided for pensioners with medical benefit entitlements and their dependants, persons under 21, war widows, Social Security rehabilitees and Veterans' Affairs patients. During 1986–87 the number of appointments provided was 195,536 and the number of hearing aids fitted was 69,908.

The National Biological Standards Laboratory—NBSL

The NBSL comprises the Pharmaceuticals, Biologicals and Medical Devices Dental Products Branches of the Commonwealth Department of Community Services and Health. NBSL is responsible for the development of standards for therapeutic goods and for testing such products for compliance with standards to ensure that they are safe, pure, potent and efficacious. Other responsibilities include the investigation of complaints, development of analytical methods, the training of analysts and provision of advice regarding the adequacy of data submitted by manufacturers in support of marketing and clinical trial applications for specific products.

The British Pharmacopoeia is the primary source of standards applicable to goods under the Therapeutic Goods Act. In addition, the Act provides that the Minister may make Orders specifying standards for general classes of goods and specific goods which are imported, the subject of interstate trade or supplied to the Commonwealth Government. Such Orders are developed on the advice of a statutory committee, the Therapeutical Goods Committee, with implementation of the standards being undertaken by NBSL. Individual sections of NBSL are organised along disciplinary lines which include virology, microbiology, pharmacology, analytical chemistry, materials testing, biomedical engineering and biocompatibility testing. NBSL staff work in close liaison with the Good Manufacturing Practice (GMP) inspectors who are responsible for the preparation, revision and administration of the Code of Good Manufacturing Practice applicable to the manufacturers of therapeutic goods.

The Ultrasonic Institute

The Institute conducts research and provides advisory services on the use of ultrasonic radiation in the diagnosis and treatment of disease. The Institute is recognised as a world leader in its field.

Commonwealth Government health advisory organisations

The National Health and Medical Research Council—NH & MRC

The NH & MRC advises the Commonwealth Government and State governments on matters of public health administration and the development of standards for food, pesticides, agricultural chemicals, water and air for consideration by the States for inclusion in their legislation. It also advises the Commonwealth Government and State governments on matters concerning the health of the public and on the merits of reputed cures or methods of treatment which are from time to time brought forward for recognition. The Council advises the Commonwealth Minister for Community Services and Health on medical research and on the application of funds from the Medical Research Endowment Fund which provides assistance to Commonwealth Government departments, State departments, universities, institutions and persons for the purposes of medical research and for the training of persons in medical research. The Commonwealth Government makes annual appropriations to the fund. Expenditure for 1986–87 was $58.952 million. The secretariat for the Council and its Committees is provided by the Commonwealth Department of Community Services and Health and is located in Canberra.

The Australian Institute of Health—AIH

AIH was established by Federal Cabinet in August 1984 and was made an independent statutory body in July 1987. It is the health research and statistics arm of the Commonwealth Community Services and Health portfolio, and also provides research and statistical support

to the States and Territories through the Australian Health Ministers' Advisory Council (AHMAC). The Institute aims to contribute to improvements in the nation's health by:

- collecting and providing assistance in the production of health related statistics;
- conducting and promoting research into the health of the people of Australia;
- undertaking studies into the provision and effectiveness of health services and health technology;
- providing advice to the Minister on strategies for improving the health of the Australian people.

It is required to report to the Minister and Parliament every two years accordingly.

The AIH has given priority to the improvement of the national health data base. This includes developing a National Death Index, a National Cancer Statistics Clearing House, a National Nosology Reference Centre and national Aboriginal health statistics. It has undertaken a major study of differences in health in different sub-groups of the population, and, in co-operation with the States and Territories, has established a National Injury Surveillance and Prevention system. Research studies are being undertaken into the provision and use of health services. These include investigations into hospital usage and costs, storage and wastage of medicines in households, medical workforce supply and demand, discretionary surgery usage and quality assurance. The Institute publishes information on national health expenditure, analyses of the major health workforce groups, and statistics on hospital and other health care facilities.

The Institute incorporates the Secretariat of the National Health Technology Advisory Panel (NHTAP) which is undertaking a major evaluation of magnetic resonance imaging, and is involved in the work of the mammography screening sub-committee of AHMAC. The Institute also supports the National Perinatal Statistics Unit at the University of Sydney and the Dental Statistics and Research Unit at the University of Adelaide.

The National Occupational Health and Safety Commission—NOHSC

The NOHSC is a statutory authority established by the Commonwealth Government to develop, facilitate and implement a national occupational health and safety strategy, covering issues such as standards, research, training, the collection and dissemination of information, and the development of common approaches to occupational health and safety legislation.

The Commission, which adopted the working title of *Worksafe Australia* from April 1986, is a tripartite body comprising representatives of Commonwealth, State and Territory governments, and peak employee and employer bodies. Persons and groups with specialist knowledge or requirements in the field of occupational health and safety assist in the work of the Commission through their participation in the various committees and working parties established by NOHSC.

The Australian Drug Evaluation Committee

The Committee makes medical and scientific evaluations both of such goods for therapeutic use as the Minister for Community Services and Health refers to it for evaluation and of other goods for therapeutic use which, in the opinion of the Committee, should be so evaluated. It advises the Minister for Community Services and Health as it considers necessary on matters relating to the importation into, and the distribution within, Australia of goods for therapeutic use that have been the subject of evaluation by the Committee. It has the powers to co-opt and seek advice from specialist medical colleges and associations and from the medical and allied professions, drug manufacturers and other sources.

The Committee met on eight occasions throughout 1986–87. Ninety-four applications for approval for general marketing of new drugs were considered, resulting in forty-six recommendations for approval, thirty-eight for rejection and ten for deferral. There were a further twenty-five approvals for extensions of therapeutic indications or amended dosage regimens for drugs already on the market.

The Therapeutic Goods Committee

The Committee provides advice to the Minister regarding the standards applicable to goods for therapeutic use including the requirement for packaging and labelling of such goods. Members of the committee are selected for their individual expertise in pharmaceutics, pharmaceutical chemistry, pharmacology, microbiology, virology, veterinary science, medical devices and the manufacture of pharmaceuticals and therapeutic devices. The Committee replaces the Therapeutic Goods Standards Committee and the Therapeutic Goods Advisory Committee both of which have been abolished.

National Campaign Against Drug Abuse—NCADA

Australia's NCADA, which was launched in April 1985, is a comprehensive, integrated and ongoing campaign, combining the resources of all Australian governments and the community in addressing the problems of drug abuse. A Ministerial Council on Drug Strategy has been formed by the Commonwealth, State and Territory governments to establish, fund, maintain and evaluate the Campaign.

The Commonwealth contributes $20 million each year, of which $12 million is allocated to the States and Territories who match it on a dollar for dollar basis, and $8 million to national programs and to locally based pilot and demonstration initiatives in the areas of prevention, treatment, early intervention, data management and research. During 1986–87, over 350 separate projects were funded under the Commonwealth/State cost-sharing arrangements. These projects, which are mainly managed at the local or State and Territory level, cover such areas as education, training, residential and non-residential treatment, community development and consultancy, research, evaluation and monitoring.

The range of projects involved reflects the diversity of the drug abuse problem in Australia, and the recognition by NCADA of the special needs of groups within the community such as youth, prisoners, Aboriginal people and women.

Information, research and evaluation are central parts of the NCADA and activities have included:

- a national media/information campaign, 'The Drug Offensive';
- research under the Research into Drug Abuse Program. By 30 June 1987, over 50 grants totalling $2 million had been provided;
- the establishment of two national Centres of Excellence in drug research. The Commonwealth allocates $1 million per annum for the development of these centres. The Sydney-based centre is concentrating its work in the areas of drug treatment and rehabilitation. The Perth-based centre is concentrating on research into the prevention of drug abuse;
- the establishment of a National Drug Abuse Data System based on a network of State and Territory data collection agencies;
- continuing evaluation of the Campaign from the community-based and national perspectives.

Another aspect of the NCADA strategy is aimed at reducing the supply of drugs. A considerable effort has been made in recent years to strengthen the capabilities of Australian federal law enforcement agencies (i.e. the Australian Federal Police (AFP), National Crime Authority (NCA) and the relevant areas of the Australian Customs Service (ACS)). High priority is placed on the investigation of drug trafficking and organised crime. Additional funds have been invested in improved equipment (e.g. computers) and trained manpower.

In addition, the Commonwealth Government has recently enacted a package of legislation which provides a range of new powers to law enforcement agencies which will assist in the investigation and recovery of the proceeds of organised crime, including drug trafficking.

The international aspects of drug trafficking are also being addressed. The experience to date with tracing assets has highlighted the problems that arise where assets are transferred overseas or change hands before a suspect is convicted, thus making it very difficult for law enforcement agencies to recover the profits of criminal activity. Amongst the new measures introduced is an Act which allows the negotiation of Treaties of Mutual Assistance with other countries. These treaties will enhance the ability of law enforcement agencies to conduct investigations overseas and will, in most cases, allow for the recovery of confiscated assets.

Communicable diseases

Quarantine

The *Quarantine Act 1908* is administered jointly by the Commonwealth Departments of Community Services and Health and Primary Industries and Energy and provides for the taking of measures to prevent the introduction or spread of diseases affecting humans, animals and plants. A special article on the history of human quarantine, contributed by the Department of Community Services and Health, is included on page 404.

Human quarantine

The masters of all ships and aircraft arriving in Australia from overseas are required to notify medical officers acting on behalf of the Commonwealth Department of Community Services and Health of all cases of illness on board at the time of arrival. Passengers or crew members who are believed to be suffering from a quarantine illness may be examined by Quarantine Medical Officers located at all ports of entry.

The main concern of examining officers is the detection of quarantinable diseases including cholera, yellow fever, plague, typhus fever and viral haemorrhagic fevers. These diseases are not endemic to Australia and it is of great importance to prevent their entry. Sufferers or suspected sufferers may be isolated to prevent the possible spread of the disease.

A valid International Certificate of Vaccination is required of travellers to Australia over one year of age who have been in *yellow fever* infected areas within the past 6 days.

All passengers, whether they arrive by sea or air, are required to give their intended place of residence in Australia so that they may be traced if a case of disease occurs among the passengers on the ship or aircraft by which they travelled to Australia.

Isolation. Under the Quarantine Act, airline and shipping operators are responsible for the expenses of isolation of all travellers who disembark from their aircraft or ship and who fail to meet Australia's vaccination requirements.

Animal quarantine

The Department of Primary Industries and Energy, in consultation with the States and Australia's agricultural and livestock groups, seeks to satisfy the need for animal derived goods and to provide improved genetic material for Australia's livestock industries, while ensuring the maximum practical protection against the entry of exotic livestock diseases.

Importation of animals is restricted to certain species from designated overseas countries whose diseases status and pre-entry quarantine facilities meet Australia's stringent requirements. With few exceptions all imported animals are required to serve a period in quarantine on arrival.

Animal quarantine stations are located at most capital cities. A high security animal quarantine station on the Cocos (Keeling) Islands provides the means whereby the safe importation of a wide range of commercial livestock is facilitated.

Measures to prevent the entry of exotic diseases are also applied through the Northern Surveillance program and the rigorous screening of applications to import biological materials and animal products and through inspection and treatment procedures on arrival.

Plant quarantine

Australia is free of numerous plant pests and diseases that occur elsewhere in the world. The importation into Australia of plant material is therefore subject to strict quarantine control.

The Department of Primary Industries and Energy has responsibility, in consultation with the States and agricultural and plant groups, for administering these controls. Some materials are admitted only under certain conditions while others are prohibited altogether. However, the facilitation of safe importation is considered to be the best available means of reducing pest and disease risk involved in illegal importation.

The general objective is to keep out of the country any pest or disease which could cause serious economic losses to Australia's agriculture, horticulture or forests. Measures to prevent the entry of unwanted exotic plant pests and diseases involve careful screening of applications to import plant material and inspection and treatment procedures on arrival.

Notifiable diseases

Although State and Territory health authorities are responsible for the prevention and control of infectious diseases within their areas of jurisdiction, certain powers and responsibility may be delegated to local authorities within each State. These usually involve such activities as personal health services, environmental sanitation and local communicable disease control.

The Commonwealth Department of Community Services and Health receives notification figures from the States and Territories on a monthly basis which are published in *Communicable Diseases Intelligence.* The national totals for the year are published in the annual report of the Department.

The following table shows, by State and Territory, the number of cases notified in 1986, for those diseases which are notifiable in all States and Territories. The table does not include diseases which are notifiable only in certain States or Territories. Factors such as the availability of medical and diagnostic services, varying degrees of attention to disease notification, and the enforcement and follow-up of notifications by health authorities, affect both the completeness and the comparability of the figures between States and from year to year.

NOTIFIABLE DISEASES(*a*), NUMBER OF CASES NOTIFIED 1986

Disease	*N.S.W.*	*Vic.*	*Qld*	*S.A.*	*W.A.*	*Tas.*	*N.T.*	*A.C.T.*	*Aust.*
Acquired immune deficiency syndrome (AIDS)	153	36	9	4	11	—	—	2	215
Amoebiasis	9	10	10	14	7	—	1	3	54
Ankylostomiasis	—	—	6	26	6	—	2	—	40
Arbovirus infection	231	158	995	1	28	—	1	—	1,414
Brucellosis	1	1	10	—	—	—	—	—	12
Diphtheria	—	—	—	—	-	—	44	—	44
Gonorrhoea	1,399	1,085	1,158	680	1,572	40	579	72	6,585
Hepatitis A (infectious)	280	124	188	510	504	7	64	8	1,685
Hepatitis B (serum)	529	243	443	122	328	8	38	55	1,766
Hydatid disease	2	1	1	4	2	1	—	2	13
Leprosy	13	4	2	—	5	—	3	—	27
Leptospirosis	23	27	98	5	4	22	—	—	179
Malaria	179	93	283	33	43	10	20	35	696
Ornithosis	2	7	2	25	4	1	—	2	43
Poliomyelitis	—	—	—	—	—	1	—	—	1
Q. Fever	95	2	217	49	3	1	—	—	367
Salmonella infections	831	189	511	361	214	54	311	23	2,494
Shigella infections	154	32	133	71	134	2	307	—	833
Syphilis	1,450	62	564	141	252	1	1,113	11	3,594
Tetanus	—	1	2	1	1	—	—	—	5
Tuberculosis (all forms)	360	255	169	78	118	19	26	16	1,041
Typhoid fever	26	10	3	1	3	—	—	2	45
Typhus (all forms)	—	—	11	—	—	—	—	—	11

(*a*) There were no cases of anthrax, cholera, plague, smallpox or yellow fever.

NOTIFIABLE DISEASES, NUMBER OF CASES NOTIFIED: AUSTRALIA, 1982 TO 1986

Disease	*1982*	*1983*	*1984*	*1985*	*1986*
Acquired immune deficiency syndrome (AIDS)	1	6	41	112	215
Amoebiasis	33	57	46	87	54
Ankylostomiasis	110	88	75	43	40
Anthrax	—	—	—	1	—
Arbovirus infection	221	33	1,577	660	1,414
Brucellosis	28	16	15	22	12
Cholera	1	4	—	2	—
Diphtheria	2	1	—	17	44
Gonorrhoea	12,805	10,646	8,894	7,605	6,585
Hepatitis A (infectious)	1,046	985	674	848	1,685
Hepatitis B (serum)	725	944	1,559	1,645	1,766
Hydatid disease	12	10	9	14	13
Leprosy	46	62	28	38	27
Leptospirosis	135	242	227	185	179
Malaria	548	571	640	421	696
Ornithosis	14	19	42	17	43
Poliomyelitis	—	—	—	—	1
Q. Fever	(*a*)	(*a*)	(*a*)	(*a*)	367
Salmonella infections	1,866	2,989	2,092	2,668	2,494
Shigella infections	437	567	420	734	833
Syphilis	3,211	3,556	3,323	3,523	3,594
Tetanus	12	10	7	11	5
Tuberculosis (all forms)	1,363	1,219	1,299	1,088	1,041
Typhoid fever	15	22	50	31	45
Typhus (all forms)	11	21	8	10	11

(*a*) Not notifiable in all States and Territories until 1986.
Source: Commonwealth Department of Community Services and Health.

Immunisation campaigns

Immunisation is recommended for all Australian children as a protection against childhood diseases such as poliomyelitis, diphtheria, measles, mumps, tetanus and whooping cough. Immunisation programs are implemented in all States and Territories of Australia.

Rubella immunisation is routinely offered to all females between their 10th and 15th birthdays through the School Girl Rubella Immunisation Program. Rubella immunisation is also recommended for all non-immune females of child bearing age.

Measles immunisation is currently promoted through the National Campaign Against Measles. This campaign aims to increase community awareness of the potential seriousness of the disease and to encourage measles vaccination with the ultimate goal of eradicating measles in Australia.

The childhood immunisation schedule, as recommended by the National Health and Medicine Research Council, is available from the Commonwealth Department of Community Services and Health.

Acquired Immune Deficiency Syndrome—AIDS

In recognition of the potentially disastrous effects of AIDS, Australian governments have put in place a range of education, research and prevention strategies directed at all groups in the community.

These strategies are co-ordinated by the Commonwealth Department of Community Services and Health which established a special AIDS Co-ordinating Unit. This Unit provides high level co-ordination of national activities in regard to AIDS. It has responsibility for co-ordinating and evaluating all State and community AIDS projects, assessing the funding necessary for these initiatives, and undertaking liaison with a wide range of Australian and overseas agencies. In addition, the Unit closely monitors medical and scientific developments in relation to the disease. It also provides executive support for the various national AIDS Committees and other bodies which have been established to facilitate the discussion and dissemination of information about AIDS.

These committees include:

- the AIDS Task Force, established in 1984 to advise Health Ministers on medical and scientific aspects of AIDS;
- the National Advisory Committee on AIDS, established to advise the Commonwealth Minister for Community Services and Health on preventive education, social and legal implications of the disease;
- a Parliamentary Liaison Group on AIDS, established to bring together federal parliamentarians to enable them to keep abreast of AIDS issues and to provide a further input into community attitudes on the disease;
- an Interdepartmental Committee on AIDS, established to facilitate discussion on AIDS policy and implications outside the Health portfolio; and
- an Intergovernmental Committee on AIDS, established to bring together the States and the Commonwealth to discuss AIDS policy and financial matters.

Since 1984, about $50 million has been spent by all Australian governments on the provision of preventive measures and research. Initially, Australian governments funded information directed at groups thought to be at greatest risk—male homosexuals and bisexuals, haemophiliacs and recipients of blood products, intravenous drug users and their sexual partners, and male and female prostitutes. Increased funding also underwrote medical treatment and scientific research, particularly epidemiological research. Because of the co-operative links established between doctors, researchers and the homosexual communities in Sydney and Melbourne, it has been possible to observe and accurately report the spread of the disease in these two cities.

Since 1984, the Commonwealth Government has made available $24 million for initiatives to combat the spread of AIDS. These initiatives include a national education campaign, medical research, support for blood screening, the development and production of blood screening kits by the Commonwealth Serum Laboratories, and contributions to programs operated by the States and Territories.

In November 1984, it was agreed that AIDS programs would initially be funded on a 100 per cent basis by the Commonwealth but that, in the longer term, the States and the Northern Territory should accept their share of responsibility and funding. In May 1985, the Australian Health Ministers' Conference reached agreement for cost-sharing on a dollar for dollar basis of State/Territory programs, including funding of community groups. There is, however, direct funding by the Commonwealth for AIDS research, a National AIDS Education Campaign and some national non-government organisations.

Summary statistics of cases of AIDS reported in Australia to 30 July 1987 are shown below.

REPORTED AIDS CASES TO 30 JULY 1987

	N.S.W.	*Vic.*	*Qld*	*S.A.*	*W.A.*	*Tas.*	*N.T.*	*A.C.T.*	*Aust.*
Number of cases—									
Males	369	90	39	26	8	1	2	4	539
Females	15	1	3	2	1	1	—	—	23
Persons	384	91	42	28	9	2	2	4	562
Known deaths—									
Number	220	39	30	12	3	1	1	2	308
Per cent of cases	57	43	71	43	33	50	50	50	55

Source: Commonwealth Department of Community Services and Health

REPORTED AIDS CASES TO 30 JULY 1987 BY TRANSMISSION CATEGORY

	Cases	
Transmission category	*Number*	*Per cent*
Homo/Bi-sexual men	486	86
Intra-venous drug user	3	—
Homo/Bi-sexual drug user	17	3
Blood transfusion recipient	38	7
Persons with haemophilia	6	1
Heterosexual transmission	9	2
Others	3	1
Total	**562**	**100**

Source: Commonwealth Department of Community Services and Health

Hospitals

Repatriation hospitals

The Department of Veterans' Affairs administers the only national hospital system in Australia, consisting of six acute-care Repatriation hospitals (one in each State), three auxiliary hospitals, and the Anzac Hostel in Brighton, Victoria.

A broad range of in-patient and out-patient services is available for the care and treatment of eligible veterans and their dependants. Patients from the general community may also receive treatment at Repatriation hospitals provided bed capacity is available after the needs of entitled veterans have been met and the hospital facilities are appropriate to the treatment required.

The Department of Veterans' Affairs has fostered the development of rationalised treatment arrangements with State health authorities to avoid the unnecessary duplication of hospital facilities and services. Repatriation General Hospitals (RGHs) are affiliated with a university and learned colleges for the education of medical and allied health professional staff.

Veterans may also receive treatment in non-departmental public and private hospitals and nursing homes at the Department's expense in certain circumstances. Entitled patients with

psychiatric conditions requiring custodial care are, by agreement with the State governments, accommodated at the expense of the Department in mental hospitals administered by State authorities.

Details of patients, staff and expenditure on Repatriation institutions and other medical services are given in Chapter 8, Social Security and Welfare.

Mental health institutions

The presentation of meaningful statistics of mental health services has become increasingly difficult because of changes in recent years in the institutions and services for the care of mental patients. The emphasis has shifted from institutions for care of patients certified insane to a range of mental health services provided for in-patients and out-patients at psychiatric hospitals, admission and reception centres, day hospitals, out-patient clinics, training centres, homes for the mentally retarded and geriatric patients, psychiatric units in general hospitals, and the like. Statistics relating to mental health institutions are available from relevant agencies in most States.

Hospital statistics

A major factor in the cost of health care in Australia is hospital treatment of patients. Attempts to measure the number of in-patients treated and bed-days involved for each disease or injury have been going on for some years, but as coverage is incomplete it is not possible to present national statistics. Figures for New South Wales, Victoria and Queensland however, are published in the ABS publications *Hospital and Nursing Home Inpatients* (4306.1), *Public Hospital Morbidity* (4301.2) and *Hospital Morbidity* (4303.3) respectively. Statistics for South Australia, Western Australia and the Northern and Australian Capital Territories are available from the relevant State and Territory health authority.

The number of hospitals and beds in each State and Territory is provided in the table below.

HOSPITALS AND BEDS, STATES AND TERRITORIES, 30 JUNE 1987

	N.S.W.	*Vic.*	*Qld*	*S.A.*	*W.A.*	*Tas.*	*N.T.*	*A.C.T.*	*Aust.*
Number of hospitals—									
Public/Recognised	220	155	142	82	91	21	5	4	720
Private	100	119	48	36	22	6	—	2	333
Total hospitals	**320**	**274**	**190**	**118**	**113**	**27**	**5**	**6**	**1,053**
Beds in—									
Public/Recognised	23,230	14,846	12,571	5,891	6,012	2,004	660	945	66,159
Private	6,322	6,132	4,157	2,173	1,916	516	—	211	21,427
Total hospital beds	**29,552**	**20,978**	**16,728**	**8,064**	**7,928**	**2,520**	**660**	**1,156**	**87,586**
Beds per 1,000 population	*5.3*	*5.0*	*6.4*	*5.8*	*5.4*	*5.6*	*4.4*	*4.3*	*5.4*

Source: Commonwealth Department of Community Services and Health.

Deaths

Information relating to crude death rates and life expectancy is contained in Chapter 6, Demography (Vital Statistics).

Causes of death and perinatal deaths

Causes of death in Australia are classified according to the Ninth Revision of the International Classification of Diseases (ICD) produced by the World Health Organization (WHO). The statistics in the table below show the number of deaths registered during 1985, classified to broad groupings of causes of death. More detailed statistics are contained in *Causes of Death, Australia* (3303.0).

The major causes of death in the community in 1985 were diseases of the circulatory system (accounting for 48.4 per cent), neoplasms (23.5 per cent), diseases of the respiratory system (7.7 per cent) and accidents, poisonings and violence (6.6 per cent). Infectious diseases have caused few deaths in Australia in recent years, largely as a result of quarantine activities, immunisation campaigns and similar measures. In 1985, only 0.5 per cent of all deaths were due to such diseases.

The relative importance of groups of causes of death varies with age. Diseases of the circulatory system and neoplasms are predominant in middle and old age. Accidents, particularly those involving motor vehicles, are the primary cause of death in childhood and early adulthood. The majority of infant deaths (57.7 per cent in 1985) occur within 28 days after birth (see table on perinatal deaths, page 402). Nearly all of these neonatal deaths are due to congenital anomalies, birth injury or other conditions present from birth.

CAUSES OF DEATH IN EACH AGE GROUP, AUSTRALIA, 1985

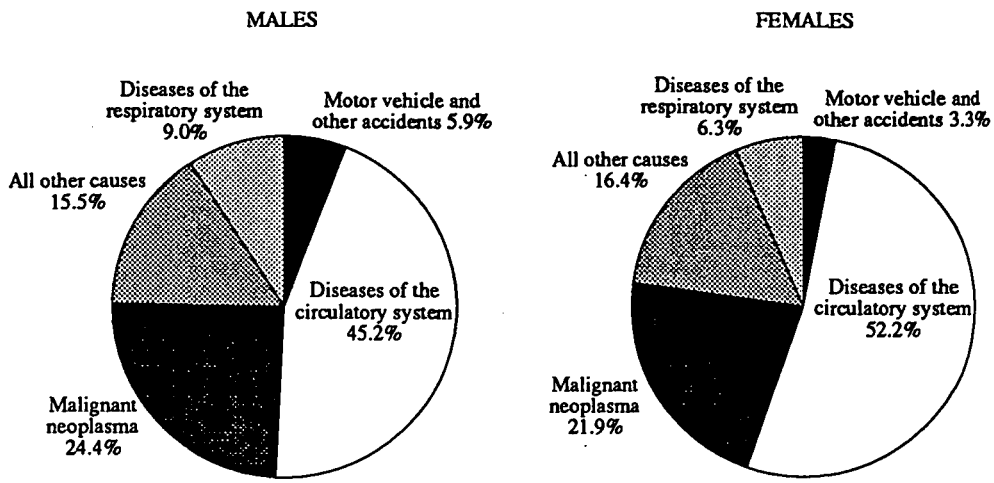
Causes of death	Age group (years) Under one	1–14	15–24	25–34	35–44	45–54	55–64	65–74	75 and over	Total (a)
					NUMBER					
Infectious and parasitic diseases	25	29	20	21	17	30	80	135	266	623
Neoplasms	25	165	190	356	914	2,496	6,226	8,441	9,133	27,948
Endocrine, nutritional and metabolic diseases and immunity disorders	18	34	35	40	63	99	368	633	1,222	2,513
Diseases of the nervous system and sense organs	38	81	67	66	73	87	219	403	827	1,861
Diseases of the circulatory system	25	40	85	229	729	2,163	6,709	14,087	33,446	57,528
Diseases of the respiratory system	62	50	61	79	115	292	1,100	2,444	4,960	9,164
Diseases of the digestive system	11	11	13	60	156	338	670	874	1,863	3,998
Congenital anomalies	691	110	39	35	14	24	23	26	20	982
All other diseases(b)	982	27	111	181	91	135	345	815	2,864	5,552
Signs, symptoms and ill-defined conditions	524	35	14	12	18	17	23	24	152	820
Accidents, poisonings and violence	51	500	1,818	1,334	913	709	794	660	1,035	7,819
All causes	**2,452**	**1,082**	**2,453**	**2,413**	**3,103**	**6,390**	**16,557**	**28,542**	**55,788**	**118,808**
					RATE (c)					
Infectious and parasitic diseases	10	1	1	1	1	2	5	13	44	4
Neoplasms	10	5	7	14	42	161	428	837	1,517	177
Endocrine, nutritional and metabolic diseases and immunity disorders	7	1	1	2	3	6	25	63	203	16
Diseases of the nervous system and sense organs	15	2	3	3	3	6	15	40	137	12
Diseases of the circulatory system	10	1	3	9	33	140	461	1,396	5,557	365
Diseases of the respiratory system	25	1	2	3	5	19	76	242	824	58
Diseases of the digestive system	4	—	—	2	7	22	46	87	310	25
Congenital anomalies	279	3	1	1	1	2	2	3	3	6
All other diseases (b)	397	1	4	7	4	9	23	81	476	35
Signs, symptoms and ill-defined conditions	212	1	1	—	1	1	2	2	25	5
Accidents, poisonings and violence	21	14	68	52	42	46	55	65	172	50
All causes	**991**	**31**	**92**	**94**	**141**	**413**	**1,138**	**2,829**	**9,268**	**754**
					PERCENTAGE (d)					
Infectious and parasitic diseases	1.0	2.7	0.8	0.9	0.5	0.5	0.5	0.5	0.5	0.5
Neoplasms	1.0	15.2	7.7	14.8	29.5	39.1	37.6	29.6	16.4	23.5
Endocrine, nutritional and metabolic diseases and immunity disorders	0.7	3.1	1.4	1.7	2.0	1.5	2.2	2.2	2.2	2.1
Diseases of the nervous system and sense organs	1.5	7.5	2.7	2.7	2.4	1.4	1.3	1.4	1.5	1.6
Diseases of the circulatory system	1.0	3.7	3.5	9.5	23.5	33.8	40.5	49.4	60.0	48.4
Diseases of the respiratory system	2.5	4.6	2.5	3.3	3.7	4.6	6.6	8.6	8.9	7.7
Diseases of the digestive system	0.4	1.0	0.5	2.5	5.0	5.3	4.0	3.1	3.3	3.4
Congenital anomalies	28.2	10.2	1.6	1.5	0.5	0.4	0.1	0.1	—	0.8
All other diseases (b)	40.0	2.5	4.5	7.5	2.9	2.1	2.1	2.9	5.1	4.7
Signs, symptoms and ill-defined conditions	21.4	3.2	0.6	0.5	0.6	0.3	0.1	0.1	0.3	0.7
Accidents, poisonings and violence	2.1	46.2	74.1	55.3	29.4	11.1	4.8	2.3	1.9	6.6
All causes	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**

(a) Total includes 28 deaths where age is not known. (b) Includes 991 deaths from conditions originating in the perinatal period and 1,860 deaths from diseases of the genito-urinary system. (c) Rates are per 100,000 of population at risk, except for children under one year of age which are per 100,000 live births registered. (d) Percentage of all deaths within each age group.

Note: The number of deaths registered in 1985 includes some 2,000 deaths that occurred in New South Wales that normally would have been registered in 1984. For further information see ABS publication *Deaths, Australia, 1985* (3302.0).

As well as differing by age, the relative significance of certain causes of death also varies by sex, as illustrated below.

ALL DEATHS: PERCENTAGE DISTRIBUTION BY CAUSE, AUSTRALIA, 1985



Suicides

A range of statistics relating to deaths by suicide (as determined by coroners' inquests) in Australia was published by the ABS in *Suicides, Australia, 1961–1981 (Including historical series 1881–1981)* (3309.0). Statistics for later years are available on request.

Perinatal deaths

Since deaths within the first 28 days of life (neonatal deaths) are mainly due to conditions originating before or during birth, and the same conditions can cause fetal death (stillbirth), special tabulations are prepared combining the two. These are termed 'perinatal deaths'. The statistical definition of perinatal deaths in Australia was amended in 1979 from that previously used, in accordance with a recommendation of the Ninth Revision Conference (1975) of the World Health Organization 'that national perinatal statistics should include all fetuses and infants delivered weighing at least 500 grams (or, when birthweight is unavailable, the corresponding gestational age (22 weeks) or body length (25 cm crown-heel)), whether alive or dead'. The table below incorporates a further recommendation of the Conference in that it shows the number of fetal, neonatal and total perinatal deaths in Australia classified by both the main condition in the fetus/infant and the main condition in the mother.

The perinatal death rate for Australia fell slightly in 1985, to 11.79 per 1,000 total births compared with 11.87 in 1984.

Of the conditions in the child, the two main groups responsible for perinatal deaths were *Hypoxia, birth asphyxia and other respiratory conditions* (36.3 per cent of the total) and *Congenital anomalies* (25.4 per cent). Thirty-eight per cent of all perinatal deaths did not mention any condition in the mother as contributing to the death. Of those deaths where maternal conditions were reported, 42.8 per cent were reported as being due to *Complications of placenta, cord and membranes.*

PERINATAL DEATHS BY CAUSE, AUSTRALIA, 1985

Cause of death	Number of deaths			Rate		
	Fetal	Neonatal	Perinatal	Fetal(a)	Neonatal (b)	Perinatal (a)
Conditions in fetus/infant—						
Slow fetal growth, fetal malnutrition and immaturity	114	116	230	0.46	0.47	0.92
Birth trauma	7	42	49	0.03	0.17	0.20
Hypoxia, birth asphyxia and other respiratory conditions	634	431	1,065	2.55	1.74	4.28
Fetal and neonatal haemorrhage	26	95	121	0.10	0.38	0.49
Haemolytic disease of fetus and newborn	18	9	27	0.07	0.04	0.11
Other conditions originating in the perinatal period	488	109	597	1.96	0.48	2.40
Congenital anomalies	217	529	746	0.87	2.14	3.00
Infectious and parasitic diseases	6	4	10	0.02	0.02	0.04
All other causes	8	81	89	0.03	0.33	0.36
Conditions in mother—						
Maternal conditions which may be unrelated to present pregnancy	213	123	336	0.86	0.50	1.35
Maternal complications of pregnancy	159	414	573	0.64	1.67	2.30
Complications of placenta, cord and membranes	616	168	784	2.48	0.68	3.15
Other complications of labour and delivery	25	115	140	0.10	0.47	0.56
No maternal condition reported	505	596	1,101	2.03	2.41	4.43
All causes—1985	**1,518**	**1,416**	**2,934**	**6.10**	**5.73**	**11.79**
1984	1,593	1,204	2,797	6.76	5.15	11.87
1983	1,619	1,349	2,968	6.63	5.56	12.20
1982	1,705	1,529	3,234	7.06	6.38	13.39
1981	1,706	1,440	3,146	7.18	6.11	13.25
1980	1,708	1,503	3,211	7.52	6.67	14.14

(a) Per, 1,000 births registered (live births and stillbirths) weighing 500 grams or more at birth. (b) Per, 1,000 live births registered weighing 500 grams or more at birth.

Cremations

CREMATIONS, AUSTRALIA

State/Territory	1983		1984		1985		
	Number of cremations (a)	Number of deaths	Number of cremations (a)	Numbers of deaths	Number of crematoria (b)	Number of cremations (a)	Number of deaths
N.S.W.	21,443	40,323	23,322	39,114	18	23,045	44,044
Vic.	11,865	29,320	11,954	29,493	5	12,747	31,257
Qld	8,073	17,200	8,523	17,522	9	8,849	18,760
S.A.	4,514	9,882	4,565	10,128	2	4,879	10,543
W.A.	4,496	8,359	4,831	8,514	3	4,876	8,863
Tas.	1,489	3,311	1,548	3,549	2	1,634	3,659
N.T.	—	738	—	550	—	—	651
A.C.T.	661	951	716	1,044	1	722	1,031
Australia	**52,541**	**110,084**	**55,459**	**109,914**	**40**	**56,752**	**118,808**

(a) Cremations are not necessarily carried out in the State or Territory where the death was registered. (b) At 31 December.
Source: Services and Investment Ltd.

Health-related surveys conducted by the ABS

Australian Health Surveys

The last Australian Health Survey was conducted throughout the twelve month period February 1983 to January 1984. The main objective of the survey was to obtain information about the health of Australians and their use of and need for various health-related services and facilities. It is the second national survey of its kind to be conducted by the ABS. The first was conducted during 1977–78.

The approach adopted to collect health information was to ascertain whether any of a range of health-related actions was taken during the reference period and to record the various reasons for which each action was taken. The actions covered included episodes in hospital; consultations with doctors; dental consultations; consultations with other health professionals; consumption or use of medications; days of reduced activity; and, days away from school or work.

The survey aimed to identify wherever possible the specific illness or injury for which the action was taken. However, some persons may have taken a health-related action for which no specific illness or injury could be identified or for reasons other than illness or injury, such as pregnancy supervision, immunisation, contraception etc. Therefore reasons identified as leading to a health-related action were classified into two broad groups: illness conditions and 'other reasons for action'.

In addition to the reasons for taking a health-related action, further information was obtained about the actions themselves e.g. whether surgery undergone in hospital, type of treatment received during a consultation with doctor or a dental consultation, number of times a particular action was taken during the reference period, whether actions such as use of medication or reduced activity were advised by a doctor etc. Information was also collected on illnesses and injuries experienced for which no action was taken. Summary results of the survey are published in *Australian Health Survey 1983* (4311.0); more detailed results are published in *Use of Health Services* (4325.0); *Illness Conditions Experienced* (4356.0); *Consequences of Illness* (4357.0); and *Health Related Actions taken by Australians* (4358.0). A sample file on magnetic tape containing unit record data from the survey is also available. For further information see *Information Paper—Australian Health Survey, 1983—Sample File on Magnetic Tape* (4324.0).

Health Insurance Surveys

These surveys have been conducted for the years 1979–84 and 1986. The 1984 survey covered employed wage and salary earners in capital cities only.

The 1986 survey sought information on levels of private health insurance cover in the Australian community. Results are published in *Health Insurance Survey, Australia, March 1986* (4335.0). An excerpt is shown below.

It is planned to conduct another Health Insurance Survey in June 1988.

NUMBER OF PERSONS IN CONTRIBUTOR UNITS: TYPE OF HEALTH INSURANCE BY STATE AND TERRITORY, MARCH 1986
('000)

Type of health insurance	*N.S.W.*	*Vic.*	*Qld*	*S.A.*	*W.A.*	*Tas.*	*N.T.*	*A.C.T.*	*Australia*
With private health insurance—									
Hospital and ancillary	2,193.5	1,330.6	716.3	635.9	659.6	195.0	56.7	88.2	5,875.8
Hospital only	667.5	724.7	229.0	83.9	56.8	33.4	5.5	27.3	1,828.3
Ancillary only	108.3	93.7	63.6	78.4	62.6	16.2	4.8	10.4	437.9
Type of insurance not known	22.9	18.9	6.6	4.6	7.4	3.0	*	*	66.1
Total	*2,992.3*	*2,167.9*	*1,015.5*	*802.8*	*786.5*	*247.5*	*68.0*	*127.7*	*8,208.1*
Without private health insurance	2,370.0	1,850.6	1,462.3	533.7	586.3	201.5	63.0	102.7	7,170.0
Total	**5,362.3**	**4,018.5**	**2,477.8**	**1,336.4**	**1,372.7**	**449.1**	**131.0**	**230.3**	*(a)***15,457.2**

(a) Includes 79,100 persons about whom no health insurance details were known. These 79,100 persons were the dependent members of 68,100 contributor units reporting only single rate insurance and were therefore not covered by that insurance. They are not included elsewhere in this table.

HUMAN QUARANTINE

The Australian approach to a world problem

(This special article has been contributed by the Commonwealth Department of Community Services and Health)

Quarantine in Australia began with the arrival of the First Fleet at Sydney Cove and has since remained a major public health pre-occupation.

However it was not until 1909 that a federal quarantine service was created as a unit of the Department of Trade and Customs.

The federal Constitution had provided for quarantine as the only specific health power of the new Commonwealth Parliament but it was not until 1921 that federal Cabinet approved the creation of a Ministry of Health. The Director of Quarantine became the Director-General of Health and the quarantine services were transferred from the control of the Minister for Trade and Customs to the Minister for Health.

Administration of the Quarantine Act also involved responsibility for quarantine with respect to animals and plants moving into Australia. However in 1984 the functions relating to animal and plant quarantine were transferred to the Commonwealth Department of Primary Industry, the responsibility for human quarantine remaining with the Department of Health.

Early problems

When the First Fleet arrived, Sydney Cove was regarded as a healthy place. But the convicts and soldiers were not free from the epidemic scourges common in the more civilised parts of the world. Diseases recorded in the struggling days of the first settlement included cholera, dysentery, smallpox, typhoid fever and venereal diseases.

In 1789, one year after the arrival of the First Fleet, there was an outbreak of smallpox amongst the Aboriginals, causing deaths over a wide region. However, Governor Phillip did not believe that the epidemic was linked with the arrival of the First Fleet as the first cases of the disease were observed some 15 months after the arrival of the Europeans. It was doubted that the smallpox virus was capable of sustaining over such a long period of time.

To combat smallpox, supplies of vaccine were sought from England and by 1806, 1,000 of the population of 7,000 had been vaccinated.

The first line of defence against the importation of disease was also established in this period. In 1804, vessels from New York were ordered into quarantine for fourteen days on arrival at Port Jackson because of an 'infectious distemper'[1] raging in their home-port. In the following year the ship *Richard and Mary* was quarantined 'till further orders' in Sydney Harbour as the crew was 'infected with a dangerous fever'.[2]

As the Australian colonies developed, each used quarantine as a primary safeguard of the community's health. Medicine was just beginning to establish the basis of a scientific approach while public health techniques were generally confined to establishing and maintaining clean water supply and sewerage systems, and enforcing standards for food handling and quarantine. The practice of separating travellers suspected of being disease carriers was well established, dating back to Venice in the fourteenth century.

First quarantine measures[3]

The fragmented nature of the Australian colonies and their differing quarantine measures in the days of sail were not then of great public concern. The time taken on the voyage from Europe, England or America ensured that any infectious disease incubating among passengers or crew would have broken out by the time the ship arrived at its Australian destination and could be detected and dealt with. Quarantine measures were generally able to prevent the diseases penetrating the port population.

With the increasing speed of sea transport in the latter half of the last century, the opening of the Suez Canal and the growing practice of ships calling at a number of Australian ports instead of the earlier practice of only one, the picture began to change. Ships using the

Suez route were not only reaching Australia more quickly, but were touching at Middle Eastern and Asian ports where serious diseases were endemic.

In 1884 the Government of New South Wales convened a conference of representatives from each colonial government, known as 'The Australasian Sanitary Conference of Sydney, NSW, 1884'. It called for a co-ordinated scheme of quarantine for both Australia and the nearby Pacific Islands. The delegates were insistent that a co-ordinated quarantine system be accompanied by effective internal sanitation measures. Their report said:

> Quarantine can be, and is, of value commensurate with its costs only to countries whose internal sanitation is good; it cannot be considered, therefore, except as a part of the general subject of State Medicine.[4]

As part of an Australia-wide quarantine system the conference sought the establishment of two quarantine stations—one at Albany in Western Australia and the other at Cooktown in Queensland, the two main shipping approaches to Australian ports. Nothing came of the recommendations, but the need to protect the people of Australia from imported disease was not lost sight of altogether. When the Constitution of the Commonwealth of Australia was finally established, quarantine measures were included in the legislative powers of the Commonwealth. Health measures as such, however, were to remain a province of the States.

The newly-formed Commonwealth Government found very early in its life that it had to become involved in a practical way with health measures when, one year after it came into being, it had to deal with the plague which had reached Australia in 1900. Though not the first time that the disease had appeared in Australian ports, it was the first time since the Commonwealth had assumed responsibility for quarantine measures. The outbreak lasted ten years in a sporadic pattern affecting all States except Tasmania. Although it did not reach alarming proportions the occurrence prompted co-ordinated action by the States.

Plague and national quarantine

It had been established by then that infected fleas from rats spread plague, and Commonwealth action to prevent the entry of the disease was sought. In 1904 health authorities from each State and the Commonwealth met and recommended the creation of a Federal Quarantine Service, to be controlled by the central government but operated by the Chief Health Officers in each State, to whom authority would be delegated by the Commonwealth. Finally in 1906, the six State Premiers agreed to hand over quarantine administration to the Commonwealth, and on 1 July 1909 the Federal Quarantine Service began operations, within the Department of Trade and Customs.

However, this somewhat loose method of Commonwealth-State co-operation soon ran into difficulties. In 1910 Victoria withdrew from the system, with the State Government claiming that the performance of quarantine duties by its senior officer interfered with State health duties. The Commonwealth was urged to appoint its own staff and in August 1911 this was done with the appointment of a Chief Quarantine Officer for Victoria.

With the exception of Tasmania, all the States found problems which interfered with the smooth working of the original proposal and by 1916 a Commonwealth Medical Chief Quarantine Officer had been appointed to each of the mainland States. In Tasmania the original system continued until July 1929.

The main problems of this exercise in State–Commonwealth co-operation revolved around the Commonwealth being called upon to administer a public service with part-time staff. The States found difficulty in carrying out their ordinary health duties because of the arrangement. The situation was further complicated by the fact that the Commonwealth was legally responsible for a service which was administered by officers who were not responsible to the Commonwealth.

The powers of the Commonwealth were seen as complementary to those of the States and not dominant. The States, on the other hand, could prescribe measures but did not have the facilities to carry them out. The Quarantine Act was amended by the Commonwealth on a number of occasions in the next few years as new problems arose. The amendments expanded the Commonwealth's authority in quarantine matters to cover internal epidemics, as well as improving overall quarantine methods for diseases from outside the country.

Influenza epidemic

Among the influences leading to the establishment of the Commonwealth Department of Health in 1921 was the international influenza epidemic at the end of World War I. The Commonwealth and the States were unable to co-ordinate quarantine and health measures. Added to this, it was feared that troops returning home would introduce many of the diseases prevalent in the areas in which they had served. Newspaper columns were filled with conflicting statements from the various governments.

The epidemic was well under way in Australia by 1919 and had a drastic effect on community life. Because of the infectious nature of the disease, gatherings were discouraged, theatres and hotels closed, masks were worn in public and antiseptic fumes regularly inhaled. People became fearful as, one after the other, Australia's cities reported deaths by pneumonic influenza.

But if the citizens at home found the restrictions introduced to fight the disease irksome, what of the troops returning from the trenches of Europe and the deserts of the Middle East after four years of war? Many instances were reported of unruly reactions by troops who, expecting a heroes' welcome, were met by quarantine officials instead.

Returned men object to treatment

One outstanding incident was the 'mutiny' of the troops returning on the *Argyleshire*, with Sydney the final port of call. At their first Australian port, the troops had to coal their own ship because of quarantine restrictions which were imposed again in Melbourne. In Sydney a case of influenza was diagnosed and the men were put into a makeshift camp at the North Head Quarantine Station. The men said the camp was unsuitable, being infested with snakes—sixty snakes were killed the first night.

The following day about nine hundred of the troops marched out of the Quarantine Station and down the hill to Manly wharves. There they boarded a ferry for the city.

They were met by the Army's State Commandant, Major-General Lee, who heard their complaints about the North Head camp. He castigated them for their 'unsoldierly' conduct and ordered them to Sydney Cricket Ground to continue their quarantine. In good order the men marched to the Sydney Cricket Ground but halted outside, refusing to enter until they were told of the conditions of their quarantine and the length of time it would take.

Major-General Lee refused to give any assurances, but the men entered after conferring with State Cabinet Ministers and being told exactly what was required of them. The release of the men began two days later after medical examination.

The confinement was hard on all the troops but particularly for those who lived in the suburbs surrounding the Sydney Cricket Ground. There were many anguished comments reported from the men (some of whom could see their homes across the park), their wives and parents. Emergency food supplies were organised by volunteers to feed the men before they entered the Sydney Cricket Ground and during their quarantine period, although they were also fed by the Army. Small boys provided a messenger service to and from local stores. Messages and money were dropped over the fences and parcels hauled up on ropes, while many an emotional re-union was carried on over the distance separating the crowd outside and the men at the walls and windows of the Cricket Ground.

Hookworm campaign

In 1918 hookworm infestations of serious proportions were discovered in north Queensland and a joint campaign was carried out involving the Commonwealth Government, the States and the International Health Board of New York. They joined in a five year campaign to survey and treat the disease in Australia. This exercise provided a final impetus to the pressures which pushed the hesitant Commonwealth into a sphere which had until then been the responsibility of State and local authorities.

Changing patterns of world disease, increasing travel, developments in public health, increasing emphasis on individual freedom, advances in technology, and more enlightened and better-informed bureaucracies have led to major changes in the philosophies and strategies of human quarantine in recent times, and especially in the last decade.

The comforting isolation of our island position and the natural barriers of time and distance became less and less relevant as transport became speedier and more flexible, and trade and travel increased.

National responsibility and development

The Department of Community Services and Health has had overall national responsibility for human quarantine since the creation of the Department in 1921. The responsibility has been a heavy one as the health of every Australian has been dependent on effective quarantine management and operation. Notwithstanding dramatic recent world advances with the eradication and control of many human diseases, others continue to pose serious problems in many countries and new, highly dangerous diseases have emerged on the world scene. This emphasises the need for continuing vigilance.

The establishment of a high security human quarantine treatment unit at the Fairfield Infectious Diseases Hospital in Melbourne as a national reference centre for the treatment of quarantine disease was an important development in new arrangements designed to meet present day needs.

The decision was a direct response to changing world disease patterns. With the elimination of smallpox worldwide—a public health triumph achieved under the sponsorship of the World Health Organisation—Australia no longer has a need for the large scale isolation capability which our capital city human quarantine stations currently provided. These stations are being progessively closed.

Emergence of other diseases

There are, of course, a number of other quarantine diseases to which Australia remains susceptible. These diseases continue to pose serious problems overseas and the health authorities remain alert to any adverse trends. The occasional imported case of typhoid and cholera, and the disturbing and relatively frequent cases of other food and water borne diseases on international aircraft arriving in this country, further attest to the continuing need for vigilance by a quarantine service ready to react to any exotic disease emergency.

In recent years the world has also seen the emergence in Africa of new, highly dangerous viral haemorrhagic fevers, the best known of which are Lassa fever and Marburg virus disease. These and other quarantine diseases, have long incubation periods which exceed the travel time from any part of the world. Disease symptoms in the traveller may not emerge until some days after his arrival in Australia.

There is general agreement among Commonwealth and State health authorities that the best approach to these developments is to integrate selected quarantine functions into the health care framework in each State. By arrangement, treatment, care and investigation of individual cases are undertaken by the States.

With the high standards of health care and sanitation in Australia, the possibility of a major outbreak of Lassa fever, Marburg virus and similar diseases following an imported case, is reduced significantly.

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