

The history of Public Health Diagnostic Microbiology in Australia: early days until 1990



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The arrival of the First Fleet in Port Jackson in 1788, and the subsequent establishment of the colony of NSW began the history of the Australian public health system. Prior to Federation each state dealt with their own public health issues and much of the microbiological analysis was performed in the early hospitals and medical school departments of universities. Today, as there is no central Laboratory for the Commonwealth of Australia, each Australian state is responsible for the microbiological testing relevant to public health. However, because of various Commonwealth of Australia Department of Health initiatives, the Australian Government Department of Health is responsible for the overall public health of Australians.

Sir Edwin Chadwick, the architect of the UK Public Health Act of 1848, proposed a clean and secure water supply for the population at large, coupled with separate disposal of their sewage and waste. Chadwick secured support for state intervention for public health protection from the major perceived health hazards of the day, in particular the acute infectious diseases. He attributed these insanitary conditions due to poor and sometimes non-existent drainage and disposal of urban waste and sewage¹. The Calman paper, relating to the 1848 Public Health Act, states ‘though health has improved immeasurably since 1848 some problems remain’; the act’s approach remains relevant today².

Department of Health and data collection

The Australian Government Department of Health (DoH) was established in 1921³.

The Communicable Diseases Network Australia (CDNA) was established in 1989 as a joint initiative of the National Health and Medical

Research Council and Australian Health Ministers’ Advisory Council³.

The National Notifiable Diseases Surveillance System (NNDSS) was established in 1990 under the auspices of the CDNA³. The System co-ordinates the national surveillance of more than 50 communicable diseases or groups. Under this scheme, notifications are made to the States or Territory health authority. Computerised, de-identified unit records of notifications are supplied to the Australian DoH on a daily basis, for collation, analysis and publication on the Internet, and in the quarterly journal *Communicable Diseases Intelligence*.

OzFoodNet, a system for enhancing surveillance for foodborne disease in Australia, was launched in 2000 by the Australian Government.

Microbiology laboratory services

Public Health Laboratory Network

The PHLN is a collaborative group of laboratories that have expertise and provide service in public health³.

New South Wales

New South Wales Government Bureau of Microbiology

A government public health laboratory was not established in New South Wales until about 1894. In 1908 a much more comprehensive NSW Government Bureau of Microbiology began. This included an enlarged medical bacteriology service and also dealt with diseases of animals and plants. Later, between 1912 and 1913, the Medical part of the Bureau came under the Department of Public Health and the agricultural side became the biology branch of the Department of Agriculture. Until the 1957 outbreak of Asian influenza, when it was realised that the only laboratory in Sydney capable of growing the virus was at the Prince Alfred Hospital, an advisory committee was set up that recommended the upgrading of the Public Health Laboratory. As a consequence, the Institute of Clinical Pathology and Medical Research was built in the grounds of the Lidcombe Hospital⁴.

The Institute of Clinical Pathology and Medical Research

The Institute had a dual role to provide a diagnostic service for medical practitioners and smaller hospitals, and to act as a public

health laboratory for the NSW Department of Health. Three of its five departments were concerned with microbiology: Departments of Bacteriology, Virology, and Serology. Pneumococcal typing was reintroduced in the late 1960s. The Department of Virology was first concerned with monitoring outbreaks of polio in NSW. In the mid-1960s techniques were developed for the isolation and serology of rubella, and in 1969 the laboratory was designated a WHO Influenza Centre. After the acquisition of an electron microscope in 1971, investigations were commenced on viral gastroenteritis. The Department of Serology was concerned mainly with syphilis serology and in 1972 it was designated the Syphilis Reference for Australia and a WHO Collaborating Centre for Venereal Diseases and Treponematoses Reference and Research, Western Pacific. In 1977 the Institute transferred to Westmead Hospital, and has since expanded considerably to accommodate both general hospital and public health⁴.

Victoria

Microbiological Diagnostic Unit

In 1894 a Bacteriological Laboratory was established in the Pathology Department of The University of Melbourne to cope with diagnostic requirements on a contract basis. The Public Health Laboratory benefitted in 1938 from a further extension of the original building. In 1943 the production of antisera to identify the more common salmonellas and the introduction of *Salmonella* Typhi phage typing occurred. In 1972 The Mycobacterium Laboratory was moved to Fairfield Hospital. In 1962 the name of the Laboratory, still used, became the Microbiological Diagnostic Unit (MDU). The Unit remains closely associated with the Department of Microbiology at the University of Melbourne with funding from the Victorian Health Department. The responsibility for Sexually Transmitted Disease Clinic was added in 1982 and for some of the state's HIV testing in 1985⁴. Initiated, developed and operated by MDU the National Enteric Pathogens Surveillance Scheme (NEPSS) is invaluable to various people working in public health, clinical, veterinary and environmental microbiology and also in industry.

Fairfield Hospital

The Queen's Memorial Hospital for Infectious Diseases (later Fairfield Infectious Diseases Hospital then Fairfield Hospital) was opened in 1904. A bacteriology laboratory was built in 1918. Originally all cases of legally notifiable disease were isolated in Fairfield Hospital. One of the laboratories became a virus laboratory in 1950 and tissue culture began in 1953. In 1954 the Fairfield Epidemiological Research Unit was created with a grant from the National Health and Medical Research Council and cooperation from the Victorian Health Department and the Walter and Eliza Hall

Institute⁴. Subsequently the laboratory functions of Fairfield Hospital were moved to a new facility in Melbourne city and renamed the Victorian Infectious Diseases Reference Laboratories (VIDRL).

Tasmania

Unfortunately there is little historical information available about the development of public health diagnostic microbiology in Australia. The Royal Hobart Hospital began serving the community in 1804 and moved to its current site in 1820. At the turn of the century there was a bacteriological laboratory within the Pathology Department of the Hobart Hospital as well as a State Health Laboratory in the building⁴.

South Australia

Royal Adelaide Hospital

This hospital was established in 1841 and a new bacteriological laboratory was planned for after 1899. In 1910 the South Australian (SA) Government approved the centralisation of all bacteriological and pathology work in the state in one laboratory, the SA Government Laboratory of Bacteriology and Pathology, under the direction of the Board of Management of the Adelaide Hospital. The laboratory provided all public hospital and public health diagnostic facilities as well as a diagnostic service for medical and veterinary practitioners. The Institute of Medical and Veterinary Science (IMVS) was formed in the 1930s. In 1982 the veterinary division was transferred to the SA Government Department of Agriculture⁴.

Institute of Medical and Veterinary Science

The National Salmonella Reference Centre was transferred to the Bacteriology Division in 1960 and was further expanded to a more comprehensive reference service for Australia. Anaerobic culture and identification methods were introduced. The Division provided: a comprehensive diagnostic service in bacteriology, parasitology and serology and a limited mycological service; reference services for the state in syphilis serology and for the diagnosis of mycobacterial, legionella, and leptospiral infections; and a National Salmonella Reference Laboratory and later phage typing services for other salmonellae⁴.

Queensland

The Bacteriological Institute was created in 1899 with activities extended to investigate human as well as stock diseases and placed under the control of the Home Secretary's Department. In 1910 the Bacteriological Institute was transferred to the Department of Public Health and renamed the Laboratory of Microbiology and Pathology. The Laboratory, moved to a new site in 1965, provides the public health bacteriology⁴.

Western Australia

The Central Board of Health in Perth established a Laboratory service in 1903. When the Health Act was passed in 1911 the laboratories moved into the new Public Health Department in Perth until 1948. In 1948 the laboratory staff of the Public Health Department and the Royal Perth Hospital were combined and in 1956 a small diagnostic service was established. The responsibility for the virus section was transferred to the Public Health Department in 1959. The State Health Laboratory Services and a Combined Laboratory Service (State Health Laboratories, Sir Charles Gairdner Hospital and university medical school) was established at the Sir Charles Gairdner Hospital (Queen Elizabeth II Medical Centre since 1977). The State Laboratory Services now provide a public health laboratory service⁴.

Australian Capital Territory

The Federal Government took over public health functions in the Federal Capital territory in 1930. Initially laboratory work was carried out at the School of Public Health and Tropical Medicine in Sydney but by 1937 a special building in Canberra was used. In 1946 the Canberra laboratory was incorporated in the Commonwealth Laboratory Service. In 1968 the public health component of the laboratory service moved to new premises in Fyshwick and in 1981 the clinical diagnostic laboratory, which included a virology

laboratory, joined the public health laboratory again in the new Woden Valley Hospital⁴.

Northern Territory


Darwin's first hospital was opened in 1874 while the first hospital (Adelaide House) in Alice Springs started in 1926. Both the major hospitals in Darwin and Alice Springs (Alice Springs Hospital) are responsible for the microbiological results related to public health issues.

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Biography

Dr Diane Lightfoot is convener of the ASM History SIG, consultant microbiologist, former Section Head of the Enteric Reference Section at the Microbiological Diagnostic Unit, Churchill Fellow, former council member of the Royal Society of Victoria, and contributor to a number of Editions of the AIFST Green Book: *Shigella* Chapter.



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