Introduction

The bacterium *Haemophilus influenzae* has been historically a common cause of infection in human populations. *H. influenzae* infections, while traditionally less common than many viral infections, cause a variety of childhood diseases, a number of which give rise to considerable morbidity and mortality [1]. *H. influenzae* type b (Hib) has in the past been responsible for a large proportion of the most serious forms of *H. influenzae* disease [2]. Hib disease is a significant cause of childhood hospitalisation and, although well known among paediatricians, is generally unfamiliar to the general public [3].

Hib infections are now preventable through vaccination. More than 90 countries world-wide use the vaccine as part of their immunisation schedules, which has led to the near eradication of Hib disease from many developed countries [4]. As more countries implement vaccination programs, non-type b *H. influenzae*, for which no vaccines are yet available, will be responsible for a growing proportion of *H. influenzae* infections.

### Haemophilus influenzae type b

*H. influenzae* type b is a gram-negative bacterium found among the normal flora of the human respiratory tract [5]. Of the six types of *H. influenzae* identified (a to f), Hib is the most virulent [6]. Hib affects mainly young children, with 80% of cases worldwide occurring in children younger than five years of age [2]. Hib is spread by respiratory secretions. Consequently, contact with other children, either in large families or day care centres, has been identified as a principal risk factor for the development of Hib disease [7][8]. The risk posed by crowding is increased for children who are not breastfed [9].
Invasive Hib disease

Hib disease is considered to be 'invasive' when it results in significant morbidity and mortality. The clinical manifestations of Hib include meningitis, epiglottitis, pneumonia, septicaemia, cellulitis, osteomyelitis, pericarditis and septic arthritis [2]. Meningitis and epiglottitis are considered the most serious forms of invasive Hib disease in Australia. Both cause significant morbidity and both are potentially fatal [8]. Meningitis is an infection of the meninges (outer tissue membranes) of the brain and spinal cord [10]. Treatment requires intensive care and antibiotic therapy [11]. Most cases will respond to administration of large doses of antibiotics, but approximately 10% of survivors suffer serious and permanent neurological impairment [12]. If subsequent learning deficits and behavioural problems are included among the sequelae, the proportion of survivors affected may rise as high as 40% [13]. Like meningitis, epiglottitis, an infection of the upper airways that causes obstruction [14], requires hospitalisation and intensive care. It too may be fatal, but mortality is generally rare, recovery is usually complete, and long-term sequelae are uncommon [15].

Before the introduction of Australia's national vaccination program, the various forms of invasive Hib disease represented a significant threat to the health and wellbeing of all Australian children. At that time, it was estimated that there were at least 500 cases of Hib in Australian children under the age of six [5], resulting in 10-15 deaths annually [3]. Approximately 5% of cases resulted in deaths, and up to 40% of the surviving patients had neurological sequelae, including deafness and intellectual impairment [11].

Australia launched its fully-funded infant Hib vaccine program in May 1993, with a catch-up immunization for children up to the age of 5 commencing in July 1993 [2]. Between 1993 and 2000, there were different vaccine schedules for Indigenous and non-Indigenous children.

Vaccination drastically reduced the incidence of Hib in both Indigenous and non-Indigenous children. In the seven year period between 1993 and 2000, notifications of Hib declined by 87%-95% among Australian children aged between 0-4 years of age [2].

Despite vaccinations being available to all children and a dramatic decrease in the overall incidence of Hib, Indigenous people continue to be at greater risk than non-Indigenous people, with rate ratios ranging from 2.7 (1993-1994) to 17.6 (2002-2003) . During 2004-2005, Indigenous people were 7.5 times more likely to be diagnosed with invasive Hib than non-Indigenous people (15 and 35 cases, respectively).

Almost 60% of Hib cases are preventable and are the result of children being either under or unimmunised . The proportion of these preventable cases was the same for Indigenous and non-Indigenous Australians.
The Australian Indigenous HealthInfoNet is an innovative Internet resource that contributes to ‘closing the gap’ in health between Indigenous and other Australians by informing practice and policy in Indigenous health.

Two concepts underpin the HealthInfoNet’s work. The first is evidence-informed decision-making, whereby practitioners and policy-makers have access to the best available research and other information. This concept is linked with that of translational research (TR), which involves making research and other information available in a form that has immediate, practical utility. Implementation of these two concepts involves synthesis, exchange and ethical application of knowledge through ongoing interaction with key stakeholders.

The HealthInfoNet’s work in TR at a population-health level, in which it is at the forefront internationally, addresses the knowledge needs of a wide range of potential users, including policy-makers, health service providers, program managers, clinicians, Indigenous health workers, and other health professionals. The HealthInfoNet also provides easy-to-read and summarised material for students and the general community.

The HealthInfoNet encourages and supports information-sharing among practitioners, policy-makers and others working to improve Indigenous health – its free on line yarning places enable people across the country to share information, knowledge and experience. The HealthInfoNet is funded mainly by the Australian Department of Health and Ageing. Its award-winning web resource (www.healthinfonet.ecu.edu.au) is free and available to everyone.