Project Title: Predisposing medical conditions for pneumococcal infections among Australians	**Code: CHW8**

Host School / Institute: Children's Hospital at Westmead Clinical School	**Address:** National Centre for Immunisation Research and Surveillance (NCIRS), Kids Research, Sydney Children's Hospitals Network, Cnr Hawkesbury Rd &, Hainsworth St, Westmead

Certificates & Clearances required: Yes   *Working with children clearance

Information on how to obtain certificates, where necessary, will be given to successful applicants.

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Co-Supervisor/team: Dr Sanjay Jayasinghe and Dr Tsitsi Mubaiwa

Project Type: Data Analysis

Project Category: Public Health; Epidemiology

Skills / Attributes of a successful student: 1. A keen interest in epidemiological research and communicable diseases. 2. Basic skills in biostatistics and/or some understanding of the methods used in epidemiology and public health research would be desirable.

Project Keywords: Invasive pneumococcal disease (IPD); Vaccines; Streptoccus pneumoniae; Biostatistics; underlying chronic medical conditions

Project Description: People with some chronic medical conditions, especially those that impair immunity, have an increased risk of contracting infections, such as those caused by the bacterium Streptococcus pneumoniae (pneumococcus). The generally severe form of disease, invasive pneumococcal disease (IPD), results when pneumococcus invades normally sterile body sites such as blood, cerebrospinal fluid or pleural fluid. While there is evidence that individuals with some underlying medical conditions are at increased risk of IPD, information on how commonly (prevalence of) these conditions occur in reported cases of pneumococcal disease in Australia is scanty. There are number of vaccines available to protect against pneumococcal infections. In Australia pneumococcal vaccines are offered free of charge under the national immunisation program to all infants and older adults and those with certain underlying chronic illnesses regardless of age. This project aims to describe the frequency and proportion of case-patients with IPD with underlying medical conditions among several key age and population groups, and compare that with the prevalence of these conditions in the general population.
This project will provide an excellent opportunity for the successful candidate to develop an understanding of the principles of and to acquire skills and experience in analysing and interpreting epidemiological data using cases of IPD reported to the National Notifiable Disease Surveillance System (NNDSS). Additional to key epidemiologically important data fields, specific information on the presence of relevant underlying medical conditions that predispose to pneumococcal disease in reported cases is available in the NNDSS for estimating their prevalence by various age and population groups. Unpublished estimates of the prevalence of similar underlying medical conditions among the general Australian population from the National Health Surveys conducted by the Australian Bureau of Statistics supplied to NCIRS will be used for comparison. Guidance and supervision for the successful summer scholar in undertaking statistical analyses using appropriate techniques and statistical software packages such as SPSS, SAS or STATA and scientific writing will be provided by experienced staff of NCIRS. Results from this study would contribute to considerations for where efforts of national pneumococcal vaccination program would focus, and for formulating recommendations on the most effective ways to use pneumococcal vaccines for people with underlying medical conditions to prevent pneumococcal disease. The anticipated outputs from this project also include preparing a manuscript for submission to a peer-reviewed journal for publication.