Project Title: Phenotyping exacerbations using home telemonitoring data from children with asthma	**Code: WOOL2**

Host School / Institute: Woolcock Institute of Medical Research	**Address:** Woolcock Institute of Medical Research, 431 Glebe Point Road, Glebe NSW

Certificates & Clearances required: No

Primary Supervisor: A/Prof Cindy Thamrin

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Co-Supervisor/team:
-A/Prof. Paul Robinson, Children's Hospital at Westmead, co-supervisor
-Dr. Jacqueline Huvanandana, Woolcock Institute of Medical Research, postdoctoral research officer
-Dr. Alexander Wong, Children's Hospital at Westmead, research assistant

Project Type: Data Analysis; Clinical

Project Category: Respiratory; Paediatrics/Child Health

Skills / Attributes of a successful student: This project will suit a Bachelor of Science/Advanced Science/Medical Science or Engineering student who is interested in developing and/or applying skills in data and statistical analyses to answer clinical questions. Previous experience in either a programming language such as Matlab, R or Python, and/or using statistical packages such as SPSS, Stata or R, is highly desirable though not essential, most important is that the student is keen to learn. Opportunities to learn about standard and advanced lung function testing will also be available, as well as to gain insight into clinical and scientific research.

Project Keywords: Asthma; Paediatric; lung; telemonitoring; statistics

Project Description: Patients with uncontrolled asthma often experience exacerbations or flare-ups of their disease, where there is a sudden deterioration in their day-to-day symptoms. This can be self-managed by rescue medication, but can also involve a visit to the doctor, emergency department visits, even hospitalisation. It is known that the best predictor for an exacerbation is having had one in the past 12 months, but we still lack good objective and timely measures to detect when an exacerbation is imminent, which would facilitate early intervention. To further complicate the problem, patient perception of their own symptoms often does not match their actual lung function.

We recently collected pilot lung function, symptoms and rescue bronchodilator (puffer) use data in paediatric patients with asthma, over 3 months using home telemonitoring technology. We are now interested in exploring the day-to-day patterns/variations in these data, using standard and advanced statistical techniques. The results of this project will help us better understand the interaction between symptoms, lung function, and medication in the lead up to an asthma exacerbation, and perhaps help us identify when exacerbations are about to occur.