School of Public Health PhD Student Project

TITLE: Pollen and Air Pollution: Synergistic or Additive?

FIELD OF RESEARCH: Environmental epidemiology

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LINK TO UQ RESEARCHERS PAGE: https://researchers.uq.edu.au/researcher/23923

PREREQUISITE SKILLS REQUIRED FOR THE PROJECT: Critical thinking

PROJECT SYNOPSIS:

Prediction of environmental conditions (pollen, pollution and weather) that lead to patients being hospitalised with asthma is possible from the large amounts of data being collected on a daily basis. Deriving the mathematics to do this is underway but more work needs to be done, especially in the Australian context. Another factor hindering prediction is that grass pollen, known to be the major culprit globally for inducing asthma, is only counted as a single entity, although it consists of hundreds of species. Our research will enable grass pollen to be examined more closely in the future, enabling better predictions to enable asthma patients to better manage their disease.

This research will result in greater knowledge to improve the care of and outcomes for asthma sufferers both in Australia and internationally, using existing big data. It results from a trans-disciplinary approach, including international research partners, that will increase learning in both clinical and non-clinical settings. In the short-term findings will be immediately translatable to clinicians and their patients while in the long-term data produced will enter the evidence base to influence upcoming policy decisions on air pollution and other modifiable risk factors of respiratory disease. The models prepared will have cross cutting application to a range of fields in epidemiology. The potential of environmental DNA to be of interest to industry is high as new monitoring technologies come on line as our understanding of how we interact with our environment increases. The advent of personalised/stratified medicine over the next decade will see demand by clinicians and patient for more information on respirable allergens and this research will initiate a move in that direction using novel DNA metabarcoding. It has potential to achieve funding from both medical, non-medical and industry sectors.

If you are interested in this project, please email the named contact person as listed above