PhD projects Greater Manchester Connected Health Cities

PhD studentships available to start from April 2017/September 2017

Greater Manchester Connected Health Cities Programme

Project 1: Evaluating the effectiveness of introducing new interventions in the NHS across different settings and populations using big data

Supervisors: Professor Tjeerd Van Staa, Dr M Belmonte and Dr Matthew Sperrin

Background

Antibiotics are important medicines for treating bacterial infections in both humans and animals and are losing their effectiveness at an increasing rate. Antibiotic resistance is one of the most significant threats to patients' safety. It is driven by overusing antibiotics. To slow down the development of antibiotic resistance it is important to use antibiotics in the right way, to use the right drug, at the right dose, at the right time for the right duration. There is great need for effective and simple interventions that reduce antibiotic prescribing. A recent review concluded that we need to better understand the quality of interventions in this area and what works best when. The NHS faces very different populations and healthcare setting and these may all respond differently to the introduction of new interventions. But the conventional scientific approach is to evaluate single interventions in well-controlled identical circumstances without capturing the real-world complexity of the NHS.

PhD project outline

The objective of this PhD studentship is to develop and test the methods for evaluating in complex settings the changes over time in outcomes after the introduction of new interventions.

The project is aligned within an ongoing project called Building Rapid Interventions to reduce microbial resisTance and over-prescribing of antibiotics (BRIT). The project will have four main areas:

1. review all possible methods for rapid analytics of changes over time of outcome in diverse healthcare settings and populations, including wavelength approaches and cluster analyses classifying longitudinal trajectories.
2. evaluate the metric to be used in the analytics
3. perform simulation studies using realistic scenarios of longitudinal changes and heterogeneity in order to test the robustness of the metric
4. application of these methods to the wider antibiotic resistance project (BRIT)

Student background required: This project requires students with a first class or upper second class honors degree in a Data Science, Mathematics, Statistics,

Epidemiology or other degrees with demonstrated and considerable focus on quantitative research method

CLOSING DEADLINE: FEBRUARY 17th 2017