

**Host department:**

Southampton

**Title:**

**Developing and feasibility testing a behavioural intervention to support safely reducing the use of antibiotics for respiratory symptoms in people with asthma**

**Proposed supervisory team:**

Professor Nick Francis (clinical and quantitative expertise)

Dr Ingrid Muller (Qualitative and PBA intervention development expertise)

**Project description:****Background**

Asthma is the most common long-term respiratory condition and is a major cause of morbidity, primary care consultations and emergency hospital admissions.

People with asthma commonly develop chesty coughs and other respiratory symptoms which cause them to consult in primary care. Evidence and guidelines suggest that most people with asthma who experience new or worsening respiratory symptoms have an asthma exacerbation triggered by viral infections, allergens, exercise, changes in the weather, pollution or other factors, and that antibiotics should not routinely be given. A Cochrane review of antibiotics for asthma exacerbations identified 6 studies and limited evidence of benefit, with significant heterogeneity. However, antibiotics are commonly prescribed for asthma exacerbations and people with asthma are prescribed many more courses of antibiotics than people who do not have asthma. Factors that may contribute to this include: people with asthma perceive themselves as having a 'chest infection' when they develop a viral infection and new chest symptoms, and perceive their 'chest infection' as needing to be treated with antibiotics; clinicians may perceive them as being at greater risk of adverse outcomes if they are not treated with antibiotics; clinicians may feel that they lack the tools to adequately differentiate bacterial chest infections from asthma exacerbations.

Use of antibiotics promotes the development of antimicrobial resistance, which can result in an individual who has received antibiotics being at greater risk of resistant infections in the future, and also poses a risk to society. Unnecessary use of antibiotics also wastes resources, can cause unpleasant side effects, can be a distraction leading to underuse of evidence-based interventions, and may cause other adverse effects due to changes in an individual's microbiome.

The aims of this PhD will be to: 1) systematically review the evidence for features of asthma exacerbation predictive of bacterial infection, 2) explore the clinician, patient and environmental factors associated with use antibiotics in asthma, 3) develop a behavioural intervention for clinicians and patients to support the more targeted use of antibiotics in asthma, 4) assess the feasibility of conducting a trial to assess the use of this intervention in primary care.

**Methods**

1) qualitative interview studies of patient, clinician and environmental factors associated with antibiotic use; 2) intervention development using the person-based approach with key stakeholders; 5) feasibility study in primary care practices.

**Potential impact**

This programme of research will lead to an evidence-based intervention designed to provide more targeted use of antibiotics for people with asthma. Hopefully, this will lead to an overall reduction in use of antibiotics while ensuring that those most likely to benefit are provided with antibiotics in a timely fashion.

Following this PhD, we would seek funding to evaluate the effects of this intervention in a fully powered RCT.

### **Training plan:**

#### *Formal training:*

The training plan will be informed by an analysis of the academic needs of the PhD candidate carried out in the first month. Training will be directed towards helping the candidate develop as an independent researcher, as well as towards the needs of the PhD project.

The formal taught postgraduate research training programme at the University of Southampton includes epidemiology, statistics, research governance and study design. In addition, transferable skills courses are offered including Good Clinical Practice, time management, leadership, grant writing, and presentation skills. The Fellow will also be able to access free on-line masterclasses on systematic reviews and meta-analysis, research governance, ethics, patient and public involvement and engagement, developed by leaders in the SPCR.

#### *Informal training:*

The Fellow will also be offered mentorship from a senior primary care academic working in an external institution, meeting twice a year. Mentors receive formal training, developed by the Society for Academic Primary Care, to ensure independence and appropriate support. The Fellow will also have access to informal mentoring from senior members of the collaboration at an annual training meeting, and to participate in doctoral exchange programmes.

#### *PPIE:*

We will work with PPI collaborators to ensure that this research is addressing the needs of patients and the public, and is feasible and acceptable to patients.