BSC CLINICAL PROJECT OUTLINE, 2011-12

**Academic Supervisor: Prof. Azeem Majeed / Mr Andrew Dalton**

**Project Title:** The NHS Health Check Programme in London: Is it addressing the needs of ethnic minority groups?

**Your grant code to which you would like the project funds (£550) to be transferred if your project is selected:** To be supplied

**Background to Project:**

NHS Health Checks was implemented by the Department of Health in April 2009. This new national scheme aims to prevent the onset of cardiovascular disease, diabetes and chronic kidney disease. Everyone between the ages of 40 and 74 years who has not been diagnosed with the conditions mentioned will be invited for a check at their GP practice once every five years. The check involves recording height, weight, age, sex and ethnicity and measuring blood pressure and cholesterol. Based on this information, GPs and practice nurses will provide personalised advice on how patients can lower their risk of cardiovascular disease, diabetes and kidney disease and maintain a healthy lifestyle.

**Research question or hypothesis student will investigate:**

Examine how PCTs in London are ensuring that ethnic minority groups have full access to the programme and subsequent clinical care pathways.

## Rationale for research plan:

Analysis of data and documents held by PCTs.

**Sample and methods (techniques) student will use:**

Carry out a PCT-level survey of the NHS Health Check programme to examine how PCTs in London are implementing the scheme.

## Proposed scheme of analysis:

Students will gain knowledge and experience in:

1) Implementation of preventive health programmes

2) Survey methods and analysis

3) Health care evaluation

## Will the research involve?\*

## (Please select the relevant answer)

## Work with Patients No

## Access to confidential patient information No

## Handling of Human blood, serum or unfixed tissue No

## Deliberate work with a Group 2 or 3 Human Pathogen No

## (<http://www.hse.gov.uk/pubns/misc208.pdf>)

* **Deliberate work with a Class 2 or higher Genetically Modified Organism**

## (<http://www3.imperial.ac.uk/safety/guidanceandadvice/biosafety/gmprocedures>)

**No**

## If YES to any of the above:

* **Has ethical approval been obtained?** **Yes/No**

**Please give date and reference number:**

*N.B. For all projects involving human subjects, use of post-operative material or access to confidential patient information ethical approval* ***MUST*** *be in place before the student begins work.*

*Ethical approval* ***MUST*** *be in place before the student begins work.*

*\*****This information will be used to identify the Year 3 Biomedical Science students who require health clearance and possibly immunisation(s) before they can commence their BSc Project.***

*Signed: Prof. Azeem Majeed…………………….*

*Supervisor*

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BSC CLINICAL PROJECT OUTLINE, 2011-12

**Academic Supervisor:** Professor A Lalvani, Dr K Pollock, Dr M Pareek

**Project Title:** Preventing tuberculosis in patients with HIV: from epidemiology to policy

**Your grant code to which you would like the project funds (£550) to be transferred if your project is selected:** F26001

**Background to Project:** Co-infection with *Mycobacterium tuberculosis* (MTB) is one of the leading causes of morbidity and mortality in HIV-infected patients globally. Despite this, little is known about the epidemiology and natural history of MTB and HIV co-infection in the UK resulting in a deficit in effective public health strategy.

**Research question or hypothesis student will investigate:**

Active tuberculosis (TB) in HIV-infected patients in resource-rich settings *e.g.* the UK could be prevented by co-ordinated public health policy aimed at either identification of latent TB infection (LTBI) in HIV patients, early diagnosis of HIV in those at risk of MTB co-infection or both.

## Rationale for research plan:

## The student will investigate the hypothesis by completing three defined aims of research.

1. To define the epidemiology of HIV and active TB in the UK, using a questionnaire-based approach to collect data from all major UK clinical HIV centers.
2. To identify and describe national and international policies on screening for LTBI in HIV patients with reference to the current evidence base.
3. The results of 1 and 2 above will inform policy development on
   1. Screening for LTBI in known HIV-infected patients
   2. Screening for HIV in new entrants from areas with high TB incidence rates
   3. Screening for HIV in those who are newly diagnosed with LTBI.

**Sample and methods (techniques) student will use:**

1. Aim 1 will require a questionnaire to be designed, dispatched and collected by the student. Support will be provided by the *Tuberculosis Research Unit*, which has recently published the findings of similar questionnaire-based research (Pareek *et al* *Eur Respir J.* 2011 May;37(5):1175-82). The questionnaire will capture data on demographics of the HIV population served by each clinic, incidence of MTB and HIV co-infection and demographics of this subset, dates of diagnoses, methods of diagnosis, CD4 count and HIV viral load, treatment regimens and outcomes.
2. Aim 2 will involve firstly a review of the literature pertaining to the epidemiology and natural history of MTB and HIV co-infection in resource-rich settings and secondly to collate and compare the current national and international guidance on LTBI screening in HIV-infected patients.
3. Aim 3 will draw together results from Aims 1 and 2 to write a policy proposal aimed at preventing cases of active TB in HIV-infected patients in resource-rich settings. This will provide the basis for publication in a peer-reviewed journal.

**NB:** This project will require the student to have completed the design of the research questionnaire before the start date of 27/02/2012 to ensure that responses from UK HIV clinical centers arrive in time for analysis during the 11-week project period

## Proposed scheme of analysis:

1. a) The data captured from the questionnaire will be recorded in an unlinked, anonymised excel database which the student will design with support from the supervisors.

b) Statistical analysis will be performed with support from the supervisors using SPSS version 19.0 (IBM) and Stata version 12SE (Collared Station Texas). A Fischer’s exact test will be used to compare proportions. Multivariate analysis will be performed using logistic regression.

c) The student will apply the principles of cost-effectiveness analysis to evaluation of the data although a full cost-effectiveness analysis is outside the scope of this project.

2. The student will be supervised in using on-line databases to read and collect relevant data and policy publications.

3. The student will be supported in scientific writing technique and data presentation to prepare a report and policy proposal suitable for publication.

## Will the research involve?\*

## (Please select the relevant answer)

## Work with Patients No

## Access to confidential patient information Yes (anonymous unlinked data)

## Handling of Human blood, serum or unfixed tissue No

## Deliberate work with a Group 2 or 3 Human Pathogen No

## (<http://www.hse.gov.uk/pubns/misc208.pdf>)

* **Deliberate work with a Class 2 or higher Genetically Modified Organism**

## (<http://www3.imperial.ac.uk/safety/guidanceandadvice/biosafety/gmprocedures>)

**No**

## If YES to any of the above:

* **Has ethical approval been obtained?** **Yes**

**Please give date and reference number:** National Research Ethics Service approval (07/H0712/85) 14th September 2007.

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**Tom Lissauer**

Project title: Kangaroo Mother Care (KMC) - what are its limitations?

KMC, where premature babies are nursed by their mothers 24 hrs a day, is widely advocated as an alternative to incubator care in developing countries. There is some evidence that it lowers mortality of preterm infants.

We are involved in a project to improve neonatal care which includes the promotion of KMC.

However, it is clear that keeping mothers constantly in hospital for several weeks poses serious problems for families.

This project comprises a systemic review to update the literature on KMC and neonatal mortality but also to look at the other consequences of KMC.

The aim of the project would be review the literature and to design a study to assess the impact of KMC in several hospitals in Rwanda on the mothers and their families.

**John Marshall**

**Title:** The effect of urbanization on malaria transmission in sub-Saharan Africa

**Description of the project:** Sub-Saharan Africa is currently undergoing a profound demographic change – in 1950, less than 15% of the population was considered urban; today, more than 40% of the population is urban; and African cities continue to grow at an unhindered rate. This has significant implications for malaria transmission and control programs. The goal of this project is to decipher the effects of urbanization on malaria transmission in two sub-Saharan African cities of the student’s choice, and to discuss the implications for malaria control. We are currently developing a mathematical model of malaria transmission in the School of Public Health, and are interested in incorporating these factors to gain a quantitative understanding of the effects of urbanization. Research skills and an interest in Africa are required.

**Nathan Ford**

**Title:**  Clofazimine for the treatment of DR-TB   
Background: Improving access to treatment for patients with drug-resistant tuberculosis is an urgent global health priority. New medicines are urgently needed to improve treatment outcomes. Clofazimine has shown strong in vitro activity against multidrug-resistant strains of Mycobacterium tuberculosis, and but clinical evidence has not been systematically assessed.   
Objective: To systematically review the existing evidence of safety and efficacy of clofazimine for the treatment of DR-TB

Supervisors: Grania Brigden + Nathan Ford (MSF); Graham Cooke (Imperial)   
  
  
  
  
**Title:** Treatment Outcomes of patients co-infected with HIV + HCV   
Background: the global burden of hepatitis C infection is receiving increasing attention. There is substantial crossover between HIV and HCV disease. However, the overall effectiveness of treatment of HCV in HIV-infected patients, and the determinants of treatment success, are poorly documented.   
Objective: to systematically review the existing evidence for treatment success within cohorts of HIV/HCV co-infected patients

Supervisors Nathan Ford and Philipp DuCros (MSF); Graham Cooke (Imperial)

nathan.ford@london.msf.org

**Beate Kampmann**

**Title:**

Why don’t we immunise women against childhood infections in pregnancy?

**Background:**

Despite progress in achieving improved survival of children under the age of 5 in resource-poor settings, the mortality of infants (<1 year of age) has not significantly decreased. The major cause of morbidity and mortality in this age group is infection in the first few months of life, when the developing immune system is unable to respond efficiently enough and the protection by maternal antibody might be incomplete. A possible intervention strategy targeting this vulnerable age group would be to enhance protection to the infant by immunising the expecting mother against diseases such as pneumococcal infection or pertussis during pregnancy to guarantee highly protective antibody to be passed on to the infant transplacentally prior to birth. However, vaccinating pregnant women is a controversial and largely emotional issue.

The scope of this literature review would be to address the following issues/questions:

1. to assess what vaccines are currently given/recommended to women in pregnancy in different countries and how this has evolved historically
2. to assess the evidence that vaccines in pregnancy might be harmful to the pregnant women or the developing fetus
3. to assess the evidence that vaccines given to pregnant women will interfere with development of protective antibody titres in their babies, when these receive their EPI vaccines
4. to summarise literature relating to feasibility and acceptability of vaccination of pregnant women in resource-poor and resource-rich settings.

**For Use by the Faculty Education Office: 2011/12 BSc Projects**

BSC SYSTEMATIC REVIEW PROJECT OUTLINE, 2011-12

**Academic Supervisor:** Dr John Marshall

**Project Title:** The effect of urbanization on malaria transmission in sub-Saharan Africa

**Your grant code to which you would like the project funds (£150) to be transferred if your project is selected:** MRC malaria extension - DFOC\_DFOC\_P07082 P25603

**Background to Project:** Sub-Saharan Africa is currently undergoing a profound demographic change – in 1950, less than 15% of the population was considered urban; today, more than 40% of the population is urban; and African cities continue to grow at an unhindered rate. This has significant implications for malaria transmission and control programs.

We are currently developing a detailed mathematical model of malaria transmission for Africa in the School of Public Health. This model will contribute to evidence-based policy decisions at the WHO and other international organizations. Given the increasing relevance of urbanization to malaria transmission, we are interested in gaining a qualitative understanding of the impact of urbanization on malaria transmission, which may then be used to generate quantitative models of transmission for policy analysis.

**Research question or hypothesis student will investigate:** The goal of this project is to decipher the effects of urbanization on malaria transmission in two sub-Saharan African cities of the student’s choice, and to discuss the implications for malaria control.

**Rationale for research plan:** Urbanization has a variety of effects on malaria transmission which vary from city to city. It can lead to a reduction in malaria transmission because cities tend to have better housing and the primary African malaria vector prefers to breed in clean water, which is less readily-available in cities. On the other hand, it can lead to an increase in transmission because rural migrants tend to live in poor conditions and import rural practices which create mosquito habitats. As more people move to the city, there is also more movement and hence transmission from rural to urban locations. We are interested in detangling these effects and their relative importance in a variety of African settings.

**Sample and methods (techniques) student will use:** The project will involve selecting two urban locations in Africa and conducting a systematic review to determine the most important effects of urbanization on malaria transmission at these sites. The project will be largely descriptive; however, since its motivation is to inform mathematical models, parameter estimates will be of great interest. We will seek to organize telephone conferences with local malaria researchers to gain a better intuitive understanding of malaria dynamics at the chosen locations. There will also be an opportunity to interact with the malaria modelling group in the School of Public Health.

## Proposed scheme of analysis:

## Will the research involve?\*

## (Please select the relevant answer)

## Access to confidential patient information No

## If YES:

* **Has ethical approval been obtained?** **Yes/No**

**Please give date and reference number:**

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**Guidelines in the food ration design for Home Grown School Feeding**

Supervisor: Dr Aulo Gelli

Background

Recent and on-going assessments of Home-Grown School Feeding (HGSF) in a number of Sub-Saharan African countries highlighted that there is a need to support national governments in the design of HGSF menus, balancing the nutritional content (including kilocalories and micronutrients), with other issues including price and “home-grown” food availability, for example (PCD, 2011). A recent United States Department of Agriculture report on HGSF adds that “menu guidelines for HGSF programs, including room for variances and availability, should ensure that students are receiving balanced, nutritious meals. National governments should use priority program objectives to guide them in balancing the nutritional needs of children while choosing foodstuffs that can be purchased locally” (USDA, 2009).

Objectives

This project will aim to address the need identified in the recent assessments for guidance regarding the ration design for HGSF and the inclusion of “home-grown” foods in the menus for school feeding programmes. More specifically, the project will provide:

* An up-to-date review of existing data on menus for school meals in selected countries in sub-Saharan Africa
* A series of country specific menu combinations, including comparative analyses of nutritional content and cost-efficiency of the different menus
* Develop a menu design support checklist

Methodology

This project will focus on analysing secondary data including country specific food composition tables and menu composition. The initial review and analysis will inform the development of different menu combinations using “home-grown” foods. The analysis will also compare HGSF menus with more traditional school feeding rations, including fortified biscuits and blended foods, using linear models to estimate full implementation costs and cost-efficiency.

Outputs

* Summary report and presentation
* Spread sheet with country data on menus, nutritional content, costs …etc…
* Menu design checklist