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*Josip Car* [*josip.car@imperial.ac.uk*](mailto:josip.car@imperial.ac.uk) *and Mr Lambert Felix* [*l.felix@imperial.ac.uk*](mailto:l.felix@imperial.ac.uk)

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*Dr Rachel Smith and Dr Mireille Toledano*

For informal discussion and further information contact Dr Rachel Smith.

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*Aulo Gelli* [*aulo.gelli09@imperial.ac.uk*](mailto:aulo.gelli09@imperial.ac.uk)

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*Dr Graham Cooke* [*g.cooke@imperial.ac.uk*](mailto:g.cooke@imperial.ac.uk)

*Co-supervisor: Nathan Ford* [*Nathan.Ford@msf.org*](mailto:Nathan.Ford@msf.org)

1. ***Should hepatitis C be classified as a Neglected Tropical Disease (NTD)?***

*Dr. Graham Cooke and Co-supervisor: Alan Fenwick* [*a.fenwick@imperial.ac.uk*](mailto:a.fenwick@imperial.ac.uk)

1. **For Use by the Faculty Education Office: 2012/13 BSc Projects**

BSC SYSTEMATIC REVIEW PROJECT OUTLINE, 2012-13

**Academic Supervisor: Dr Josip Car, Mr Lambert Felix**

**Project Title:** ‘What are the effects of behaviour change communications strategies embedded in social marketing programs on health behaviours and related health and welfare outcomes?’ – a systematic review.

**Your grant code to which you would like the project funds (£150) to be transferred if your project is selected:** Grant code yet to set up

**Background to Project:**

Health related communication strategies have changed significantly in the last 15 years from top down public service announcements to a wider approach which draws on behaviour models and methods used in marketing and adapted for the purposes of "social marketing" (Figueroa 2002). However the evidence on the effectiveness of social marketing communication strategies in the health and public health context is not well synthesized, and are scattered across a number of sub sectors in water and sanitation, family planning, mother and child health, malaria, and epidemic disease such as HIV, polio, avian influenza. The communication strategies reported can also be confounded by issues related to health product or service characteristics, summarized though the “four Ps” and which should be addressed within the context of a social marketing programme. The “four P’s” consider:

* Place: is the service or the product offered easily available, convenient and accessible?
* Price: is it affordable to the target audience?
* Product: are the attributes and characteristics attractive to or required by the customer or user?
* Promotion: are communication and messaging skills and activities appropriate to the audience targeted and needs of the programme.

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

* What theoretical models of behaviour change have been used to underpin communication strategy interventions? And what are the potential mediators and moderators of behaviour change?
* What are the approaches used in communications strategies of social marketing programmes? Which are most frequently used?
* What are the changes in health behaviours resulting from these approaches?
* What is the evidence of change in health outcomes consequent on behaviour change realised through communication strategies?
* What is the evidence of a change in welfare outcomes consequent on behaviour change and or health outcome change realised through communication strategies?
* What are the potential barriers, mediators and moderators which significantly influence the impact of communication strategies on health behaviour change?
* Where and what are the important evidence gaps that arise in investigating these questions?

## Rationale for research plan:

None of the existing reviews are specific to behaviour change communication in social marketing programmes and their impact on behaviours and health outcomes in developing countries. A number of the reviews have included a method of communication as one of the interventions or have focused on a specific method (e.g. Mass media) or disease (e.g. HIV). Hence a comprehensive systematic review on this topic is needed.

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

**List of study designs eligible for inclusion in the review**

**At the individual level**:

* Randomized controlled trial
* Quasi-randomized controlled trial
* Non-randomized controlled trial
* Controlled before-and-after study
* Prospective cohort study
* Historically controlled trial
* Cross-sectional study
* Before-and-after comparison propensity scores and covariate matching,
* Regression discontinuity,
* Difference-in-differences,
* Interrupted time series

**At the group level:**

* Cluster randomized controlled trial
* Cluster quasi-randomized controlled trial
* Cluster non-randomized controlled trial
* Controlled interrupted time series
* Controlled cohort before-and-after study
* Interrupted time series
* Cohort before and after study
* Ecological cross-sectional study

For all the included studies, we will also search for any accompanying primary research paper. This could include:

* Participant observation
* In-depth interviews
* Focus groups
* Content analysis

## Proposed scheme of analysis:

Data synthesis: If suitable numerical data are not available and/or if meta-analysis is not appropriate where the included studies are too heterogeneous to be combined, we will perform a narrative synthesis of the evidence. We will refer to the narrative synthesis framework to guide this process (Rodgers 2009). We will use the following steps:  
• develop a preliminary synthesis by grouping the included studies by the type of preventive health care and intervention;  
• describe Participants, Interventions, Comparators, Outcomes (PICO elements) along with the reported findings for each of the included studies;  
• explore the relationships between characteristics of individual studies and their reported findings, as well as those between the findings of different studies;  
• describe the moderators as well as the mediators that would have an impact on the intervention effects;  
• use the summary of the risk of bias of an outcome across studies to judge the robustness of the evidence.

## Will the research involve?\*

## (Please select the relevant answer)

## Access to confidential patient information No

## If YES:

* **Has ethical approval been obtained?** **Not applicable**

**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.*

*Signed:* 

*Supervisor: Dr Josip Car*

*Date:* 01/11/2012

1. ***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 potential impact of genetically modified living microbicides for HIV prevention

**Your grant code to which you would like the project funds (£150) to be transferred if your project is selected:** WPIA\_P39443

**Background to Project:** Microbicides represent an important component of future HIV prevention strategies as they allow women to take control over their own health outcomes, particularly in situations where men refuse to use condoms. Microbicides containing antiretrovirals (ARVs) are expected to be highly effective at HIV prevention; however concerns have been raised that, when used by HIV-positive women, drug-resistance may emerge. Consequently, alternative options are being pursued, including the use of genetically modified (GM) vaginal bacteria. These are being considered as a form of living microbicide expressing high levels of HIV entry inhibitors that prevent HIV from infecting new people. The benefits of living microbicides are that: (a) upon colonizing the vaginal mucosa, they are able to inhibit HIV for much longer periods of time than ARV-based microbicides; (b) they complement and hence do not degrade the natural vaginal flora; (c) as a living system, they are expected to cost less to produce; and (d) as a strategy free of ARVs, drug-resistance is less of a concern. Human trials are yet to be conducted; however studies in both mice and rhesus monkeys have shown that engineered strains of vaginal bacteria are capable of transiently colonizing the vaginal mucosa and expressing high levels of HIV inhibitors.

**Research question or hypothesis student will investigate:** The goal of this project is to summarize our current knowledge of the performance of living microbicides – i.e. their potential to inhibit HIV inhibition, their expected duration of efficacy, and how their efficacy decays over time. A second goal is to discuss the potential role that living microbicides could play in HIV prevention given recent progress on ARV-based strategies.

## Rationale for research plan: With no HIV-fighting microbicide currently being used, the field of microbicides is open to innovation. Much attention is currently being placed on ARV-based microbicides, especially following the failure of early, nonspecific microbicides to inhibit HIV infection. ARV-based microbicides are highly promising; however they are not without flaws. The vagina is highly permeable, and ARV-based products could lead to systemic toxicity following absorption or the emergence of ARV drug-resistance if used by HIV-positive women. Living microbicides are further from development and have received relatively little attention, partly due to the fact that they are genetically modified; but is this lack of attention justified? Living microbicides offer several potential benefits – for example, an increased duration of efficacy, a potentially lower cost, and no possibility of generating ARV drug-resistance. In addition, they complement the natural vaginal flora, and could potentially provide protection against other vaginal infections such as HSV2. Their consideration is therefore justified. Determining ballpark estimates for the expected performance of living microbicides will be useful for incorporating them into existing models of HIV prevention (using local epidemiological, clinical and behavioural data to determine other parameter values), and hence to explore their potential utility as a novel HIV prevention strategy. Questions then arise as to whether their increased duration of efficacy could compensate for modest adherence levels due to the fact that they are genetically modified, and whether they could play a role in delaying the emergence and spread of resistance to ARV drugs.

**Sample and methods (techniques) student will use:** The project will involve a systematic review of the literature on living microbicides, with a limited comparative review of alternative microbicides and other forms of pre-exposure prophylaxis. Parameter estimation (for example, from rhesus monkey and mouse trials) may require simple data analysis; however, the project is expected to be largely descriptive. We will seek to organize telephone conferences with leading researchers in the field of living microbicides to get a better insight into the latest (sometimes unpublished) research developments. There will also be an opportunity to interact with the HIV modelling community in the School of Public Health, particularly those with an interest in pre-exposure prophylaxis and microbicides.

**Proposed scheme of analysis:** Standard PRISMA or MOOSE guidelines (available online) provide an easy-to-follow scheme for analysis and a reliable format for publication.

## Will the research involve?\*

## (Please select the relevant answer)

## Access to confidential patient information No

## If YES:

* **Has ethical approval been obtained?** **N/A**

**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.*

*Signed:……* *…….*

*Supervisor*

*Date……1/11/2012…….*

1. **Mobile phone use, health and lifestyle in the UK Biobank cohort**

**Supervisors:**

Dr Rachel Smith and Dr Mireille Toledano

For informal discussion and further information contact Dr Rachel Smith.

[rachel.smith05@imperial.ac.uk](mailto:rachel.smith05@imperial.ac.uk)

020 7594 3313

**Background**

There is extensive public and scientific interest in the possibility that exposure to radiofrequency electromagnetic fields (RF) from mobile telephony might increase the risk of disease. The results of epidemiological studies on RF and disease risk published to date have not been entirely consistent, indicating methodological limitations, for example being limited by retrospective self-reported assessment of exposure which can lead to bias. In addition, research has been limited to a few health outcomes, mainly tumours of the brain and the head. The possible effects of mobile phone use upon risk of other chronic disease outcomes (e.g. neurological disorders) and symptoms (e.g. headaches) require further attention, and the relationship between mobile phone use and psychosocial well-being (which may impact upon risk of other health outcomes) is not well understood.

UK Biobank is a large prospective cohort study, with 500,000 participants aged between 40-69 years recruited in 2006-2010 from across the UK. In addition to providing biological samples, undergoing physical measures and agreeing to long-term health follow-up, participants have provided detailed information via baseline questionnaire and interview about their health, sociodemographics, lifestyle and environment, including information about their mobile phone use. This project will utilise the UK Biobank data resource to explore interrelationships between mobile phone use, lifestyle and health-related measures such as symptoms and psychosocial well-being.

**Overall Aim:**

To conduct detailed descriptive analyses of self-reported baseline questionnaire data on mobile phone use according to demographic and lifestyle factors, and to examine interrelationships between mobile phone use, lifestyle, and health-related measures (such as symptoms and psychosocial well-being) in the UK Biobank cohort.

**Skills required**

This project will suit students with some understanding of / an interest in:

* New technologies and health
* Environmental epidemiology
* Performing and interpreting statistical analyses

**Outcomes**

Students will gain knowledge and experience in:

* Environmental epidemiology
* Manipulation of large datasets
* Statistical analysis
* Scientific writing

**Location:** The student undertaking the project will be working with researchers based at the Department of Epidemiology & Biostatistics at the St Mary’s Campus.

1. ***For Use by the Faculty Education Office: 2012/13 BSc Projects***

BSC SYSTEMATIC REVIEW PROJECT OUTLINE, 2012-13

**Academic Supervisor:** Aulo Gelli

**Project Title:** Review of the effectiveness of school based nutrition education and behaviour change on dietary practices on household nutrition status.

**Your grant code to which you would like the project funds (£150) to be transferred if your project is selected:** WPIA P26413

**Background to Project:** Schools have been shown to be cost-efficient platforms for the roll-out of health and nutrition programmes at scale (Jukes et al., 2008). Recent and on-going assessments of school feeding programmes linked to small holder agriculture, or Home-Grown School Feeding (HGSF), in a number of Sub-Saharan African countries highlighted a programmatic gap in terms of addressing long term challenge of improved household nutrition (Gelli et al., 2010). Changing behaviours and dietary practices should be part of the strategic design of HGSF programmes (Galloway, 2010). This is extremely relevant in the context of countries undergoing a ‘nutritional transition’, facing the simultaneous burden of undernutrition and overnutrition, and emerging epidemics in non-communicable diseases.

**Research question or hypothesis student will investigate:** The primary outcomes for the systematic review include measures of child health and nutrition status, including anthropometry (height for age, weight for age, body-mass-index) and micronutritent status (iron, vitamin A and iodine in particular). Intermediate outcomes include household diet diversity and nutrition practices.

Key questions to include in the review include identifying what evidence there is on what school children are consuming at home; how to mitigate the substitution effect (children eating less at home); how children and their families view diversification; how to increase the demand for a more varied diet; how to improve the food intake and nutritional status of farm families, particularly children less than two years of age; what determines the choice of meals at home and what parents and children know about the nutritional values of common foods; what is the bio-availability of certain nutrients for different foods; and what farmers are willing to grow and how they can or will “buy into” HGSF?

## Rationale for research plan: Despite considerable investments there are still gaps in the evidence on how to optimise the design of school feeding programmes linked to small holder agriculture. The project will provide an up-to-date review of the literature on school based nutrition education and behaviour interventions on household nutrition. The project will then begin to explore good practise in terms of the roll-out of these types of interventions.

**Sample and methods (techniques) student will use:** This project will focus on analysing secondary data.

## Proposed scheme of analysis: The review will begin by developing the programme theory for the intervention following a standard programme theory approach (Rossi et al., 2004). The review will then focus on identifying the evidence for the different elements of the programme theory, as well as structure the gaps in the evidence into a coherent research agenda.

## Will the research involve?\*

## (Please select the relevant answer)

## Access to confidential patient information Yes/No

## If YES:

* **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.*

*Signed:………………………………………………….*

*Supervisor*

*Date………………………….*

1. ***For Use by the Faculty Education Office: 2012/13 BSc Projects***

BSc Clinical project outline, 2012-13

**Academic Supervisor:** Dr Alison Evans & Prof Helen Ward

**Project Title:** Does patient experience vary by ethnicity, social class, gender and age? A mixed methods study.

**Your grant code to which you would like the project funds (£xxx) to be transferred if your project is selected:** Helen Ward, F account

**Background to Project:**

Patient experience is a key part of quality in healthcare, alongside patient safety and clinical outcomes. There are regular surveys of patients to ask them in detail about their experiences, and the results are increasingly being used to rate and rank hospitals in an attempt to drive up standards. These ratings will be linked to financial incentives. There is some evidence from national data that patient reports of experience vary by demographic characteristics: for example, in national cancer surveys better ratings are generally provided by older people, men, white people, heterosexuals and people without long term conditions or disabilities. There was no consistent pattern according to social deprivation.

If these differences are confirmed in more detailed analyses, they indicate the need for changes to the ways that care is delivered if we are to achieve equity in quality of care. It would also suggest that comparisons between trusts should take such factors into account, otherwise some trusts could be unfairly penalised because they are serving a more diverse population.

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

We hypothesise that patient experience varies by social group (ethnicity, social class, gender and age). The project will address the following objectives using data from a 2009 in-patient survey of patients at Imperial College Healthcare NHS Trust.

1. Are there variations in response rate by gender and age?
2. What aspects of experience vary by social group?
3. How do people from different groups describe their care?

## Research plan:

The study will use a large dataset from a survey of inpatients at ICHT from 2009. The survey is largely made up of questions with categorical responses, plus three free text questions:

* Was there anything particularly good about your hospital care?
* Was there anything that could have been improved?
* Any other comments?

Analyses:

1. a review of the literature on patient experience and social factors
2. Analysis of categorical variables by social group
3. Thematic analysis of qualitative data from the three free text questions, linked to social group.

## Will the research involve?\*

## (Please select the relevant answer)

## Access to confidential patient information No (the data set is anonymised)

## If YES:

**Has ethical approval been obtained?** **NA**

**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.*

*Signed:……* *…………………………….*

*Supervisor*

*Date…13-11-12……………………….*

1. ***For Use by the Faculty Education Office: 2012/13 BSc Projects***

BSC SYSTEMATIC REVIEW PROJECT OUTLINE, 2012-13

**Academic Supervisor:** Daniela Fecht

**Project Title:** Effect of improved socio-economic conditions on health inequalities and urbanisation in the developing world

**Your grant code to which you would like the project funds (£150) to be transferred if your project is selected:** To be confirmed.

**Background to Project:**

More and more people are living in urban areas. The WHO estimates that by 2050 70% of the population will be living in cities with the most growth taking place across Asia and Africa. The urban environment and its associated health risks as well as benefits already affect the health status of a large part of the world population and will increase to do so over the next couple of decades.

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

This project looks at the urban-rural disparities in health, in particular in the developing world, and how these health inequalities are changing as socio-economic conditions improve.

## Rationale for research plan:

Differences in health between urban and rural areas in developing countries are well established. Generally, urban populations have a better health status than their rural counterparts which is mostly due to better health care provision, access to information and education as well as higher incomes and socio-economic status. But with increasing economic and social development comes a shift in risk factors such as higher pollution levels, different diets and changes to life style. Urbanisation across the world is therefore associated with an increase in prevalence of chronic diseases such as obesity and cardiovascular diseases. Not much, however, is known about how the rural-urban health disparities change as socio-economic conditions improve.

**Sample and methods (techniques) student will use:** Systematic review of the literature using relevant publication databases such as PubMed, Web of Science, etc.

## Proposed scheme of analysis: See above.

## 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:**

*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.*

*Signed:………………………………………………….*

*Supervisor*

*Date…13th Nov 2012……………………….*

1. *For Use by the Faculty Education Office: 2012/13 BSc Projects*

BSC CLINICAL PROJECT OUTLINE, 2012-13

**Academic Supervisor: Dr Graham Cooke**

**Co-supervisor: Nathan Ford**

**Project Title:** Improving our understanding of the global burden of HCV

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

**Background to Project:**

There is rapid progress being made in the treatment of hepatitis C. At present treatment remains lengthy, toxic and has limited success, particularly in some harder to treat genotypes. However, before too long, shorter oral treatments will be available with the potential to cure >90% of those treated. Such advances have lead some commentators to suggest HCV might be eradicatable.

The measurement of the global burden of infection is hampered by the limited availability of population surveillance data. Recent work has attempted to survey infection in Europe, Latin America and Asia. However, Africa has been relatively neglected. In addition, as new agents have differential activity against different genotypes, better estimates of the total numbers of individuals with each genotype are needed.

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

The student will systematically review the data from all available sources (published literature, grey literature and national statistics) to assess the prevalence of HCV in Africa. Following this the student will combine the data collected with existing data sources to ask the question “what is the global burden of HCV by genotype?”

## Rationale for research plan:

The work will inform planned surveillance in countries where a lack of data is identified. The distribution of HCV genotype will allow effective advocacy for drug access within individual countries where new treatment might have genotype specific effects.

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

A systematic Review of National and regional studies, accessing them from published available sources and, where necessary, contacting Ministries of Health and key informants.

**Proposed scheme of analysis:**

## 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?** **N/A**

**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:………………………………………………….*

*Supervisor*

*Date………………………….*

1. *For Use by the Faculty Education Office: 2012/13 BSc Projects*

BSC CLINICAL PROJECT OUTLINE, 2012-13

**Academic Supervisor: Dr Graham Cooke Co-supervisor: Alan Fenwick**

**Project Title:** Should hepatitis C be classified as a Neglected Tropical Disease (NTD)?

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

**Background to Project:**

There is rapid progress being made in the treatment of hepatitis C. At present treatment remains lengthy, toxic and has limited success, particularly in some harder to treat genotypes. However, before too long, shorter oral treatments will be available with the potential to cure >90% of those treated.

Although the burden of HCV globally has not been studied in detail, it is prevalent in many populations. It leads to a high burden of deaths from both end stage liver disease and liver cancer. However treatment, whilst widely available in developed countries, is very rarely available in resource poor settings. As the delivery of treatment becomes more feasible, the question of how such treatment will be funded becomes more relevant. One approach to raise the global profile of HCV would be to group it as a neglected tropical disease (NTD)

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

The project will involve three parts:

1. What links the NTDs? A critical appraisal of the designated NTDs, assessing the features that link them (with particular attention to newly designated NTDs)
2. An assessment of HCV within the framework of other NTDs as desribed in (i)
3. A critical evalution of whether HCV could be included as an NTD and the implications of that conclusion

## Rationale for research plan:

See background

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

Part (i) Systematic review of literature on NTDs, search of grey literature and interview with key informants

(ii) Targetted review of HCV literature informed by part (i)

## Proposed scheme of analysis:

N/A

## 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?** **N/A**

**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:………………………………………………….*

*Supervisor*

*Date………………………….*