

## STUDY PROTOCOL

<b>Programme Name</b>	PHR
<b>Funding Opportunity</b>	Mass Media for Public Health Messages
<b>Call</b>	13/163 Mass Media for Public Health Messages
<b>Host Organisation</b>	University of Stirling
<b>Application Type</b>	Secondary Research

<b>Details of Chief Investigator</b>	Professor Linda Bauld
<b><i>Department</i></b>	Institute for Social Marketing and UK Centre for Tobacco and Alcohol Studies
<b><i>Speciality</i></b>	Public health - health behaviour
<b><i>Job Position</i></b>	Professor of Health Policy
<b><i>Email / Phone</i></b>	Linda.Bauld@stir.ac.uk 01786467347
<b>Organisation</b>	University of Stirling

## 1. FULL TITLE

MASS MEDIA FOR PUBLIC HEALTH MESSAGES

## 2. BACKGROUND

Media campaigns can reach large numbers of people at relatively low cost compared with other interventions and are widely agreed to have an important role to play in influencing health behaviour change [1]. For example, a 2013 Cochrane review concluded that “there is a broad consensus that comprehensive tobacco control interventions which include mass media campaigns can be effective in reducing smoking consumption and prevalence” [2].

Media campaigns can influence how those watching or interacting with them behave, and act as prompts to change existing behaviours or adopt new ones [3]. The current Public Health England marketing plan states that “new scientific insights about behaviour change and the transforming media landscape offer scope to deliver programmes of unprecedented depth and quality” [4]. A strong emphasis is placed in the plan on locally delivered interventions, participatory and user-generated approaches, and developing a more sophisticated insight into how media can influence behaviour.

This proposal is written in response to a commissioning brief that set out the case for reviewing existing and emerging literature on mass media for public health messages. It stated that in order to design effective campaigns, local and national organisations need access to good quality evidence about the best approaches and design elements to include. This proposed study will aim to identify, review, synthesise and communicate that evidence.

The proposed study will involve secondary research to draw together evidence on effective use of mass-media to communicate public health messages at local, regional and national levels. It includes a review of reviews and also further subject specific reviews where no reviews currently exist. It will include consideration of delivery to different target populations, consideration of different message themes and other campaign elements and characteristics, and will consider a range of behavioural and intermediate outcomes. The research team has extensive, relevant expertise and will work with a wide range of stakeholders and the public to deliver the research.

## 3. RESEARCH OBJECTIVES

The aim of this study is to provide the NHS, local authorities, government and other organisations with evidence on the effective use of mass media to communicate public health messages. By mass media, we mean the intentional use of the mass media by local, regional and national organisations *to influence lifestyle behaviour*. The focus will be on behaviours that are preventable risk factors for disease. The review will focus on the following lifestyle behaviours and issues that are of direct relevance to public health, particularly at the local level: alcohol use, illicit substance use, diet, physical activity, sexual and reproductive health, and smoking cessation and prevention. We include in our definition of mass media both traditional channels, such as TV, radio, press and outdoor advertising, and also newer digital media, including websites, text messaging and social media.

We aim to systematically search for and review evidence on effective uses of mass media to convey messages that lead to health behaviour change in the target audience – by preventing risky or unhealthy behaviours, by encouraging the cessation of existing risky or unhealthy

behaviours, by promoting the uptake of healthy behaviours and by raising public awareness of key public health issues.

The evidence synthesis will be comprehensive and have the following objectives:

1. Assess the effectiveness of mass media campaigns to communicate public health messages
2. Examine the components of messages that can be effectively communicated through mass media
3. Explore how different types and forms of media campaigns can reach and be effective with different target populations (particularly disadvantaged groups)
4. Assess new or emerging evidence about campaigns that employ different forms of media (including new media)
5. Examine the relationship between local, regional and national campaigns and evidence of effectiveness where this exists
6. Assess the extent to which mass media campaigns can interact with other interventions or services to improve health outcomes
7. Explore the currency, utility and applicability of findings as they emerge with key stakeholders.
8. Identify key research gaps in relation to mass media campaigns to communicate public health messages.

We will also examine the content of campaigns in order to identify whether effectiveness varies by a number of different dimensions (including type of message appeal, targeting strategy, source/branding of the campaign and intensity/duration). The review will examine short, medium and longer term outcomes where these data exist. Unlike previous evidence reviews in this area (even those that have looked at more than one type of health behaviour), we will synthesise evidence across multiple health behaviours and multiple media channels.

## **4. RESEARCH DESIGN**

We propose a study involving three stages: conceptual framework development, evidence synthesis (including a review of reviews and targeted additional reviews), and an engagement stage to assess the applicability and currency of emerging findings.

### **4.1 Conceptual framework**

The first stage of our study will involve the development of a conceptual framework to guide the research. At the heart of this conceptual work will be a *logic model*. All the topics in our proposed reviews involve complex behaviours, and the interventions themselves can be complex: they are sometimes made up of multiple components which interact with a dynamic environment and can have very different impacts depending on context. In order to navigate our way through the large range of possible factors which might be considered to impact on how the interventions achieve (or do not achieve) their intended outcomes, we propose to develop, use and refine a logic model. According to Anderson and colleagues [5], logic models can perform two main functions in a systematic review: first, they can help conceptualise the review, identifying hypothesised causal pathways – and hence effect mediators and moderators which can be explored in the synthesis; and second, they can help frame the scope of the review, guiding the literature search and helping to understand the implications of its findings. We would add to this a third purpose which is that they can be the outcome of a systematic review. It is important to note that, while we refer to our 'logic model' in the singular, that this is an umbrella model within which all interventions in the review can be located. Specific programme theories and causal pathways relating to different types of interventions will be present within the overarching logic model.

We will thus have three phases of logic model use and development:

1. We will begin the review with a protocol within which we will outline our initial logic model. Drawing on theories of how mass media interventions are intended to impact on outcomes, this initial logic model will be used to inform our search strategy, and understand the extent of research activity we identify. In response to reviewer and board members comments, we have already begun early work on this logic model and have included this as a separate uploaded document with the revised proposal. Within this initial logic model, a set of causal pathways will be suggested; but with the expectation that they will be refined in the next phase. Likewise, an initial list of potential intervention mediators and moderators will be identified, though again will be revised as appropriate in the next phase.
2. As different interventions are identified, they will be used to 'test' the conceptual breadth of the existing model, ensuring that it encapsulates the range of interventions identified – and resulting in modifications where it does not. The initial lists of causal pathways and mediators and moderators will also be 'tested' at this point in terms of their coverage.
3. Finally, an examination of potential mediators and moderators will be conducted where data allow, in the acknowledgement that this is likely to be an exploratory exercise, since we are unlikely to have sufficient data to make definitive claims. In the light of this final phase, the logic model will be updated once more.

The logic model thus underpins review activities, and also forms one of its outputs. The fact that the model will encompass multiple causal pathways between intervention strategy and outcome will make applying review findings to particular contexts more straightforward, enabling us to say which strategies appear to be more successful in which situations.

## **4.2 Evidence synthesis**

The second stage will be the identification and synthesis of relevant research. We will develop a review protocol that describes a 'map' of research activity followed by a series of evidence syntheses. Numerous reviews of evaluations of mass media campaigns for health have been conducted. Some have focussed on behaviours such as drink driving [6], smoking [7] and physical activity [8]; others have drawn together the evidence on a range of behaviours [1]. We will use an approach which we have used in the past [9]: where there are extant reviews of sufficient currency and quality we will conduct a review of reviews and carry out a high level synthesis of their findings; but where gaps are identified, primary research will be sought. Overviews of reviews are becoming an established component in the repertoire of evidence informed (or based) policy and practice [10-12] and thus we feel that starting with a review of reviews is a useful approach.

A protocol will specify the research questions and search strategy, inclusion criteria, the approach to quality appraisal and data extraction, and the methods for review and synthesis. Scoping research and pilot database searches will be conducted in order to refine the search and inclusion criteria, and to inform the approaches to appraisal, data extraction, and review and synthesis. The final Review Protocol will be submitted to the PROSPERO database. We have conducted an initial scoping exercise to help identify the likely size and scope of the evidence base across the topic areas. This has already informed our thinking about the search strategy and expected outputs. Results from this scoping exercise are included at the end of this detailed project description, under the heading 'Literature scoping findings'.

### **4.2.1 Search strategy**

Specific terms for the search strategy will be piloted as free-text and database-specific controlled vocabulary in the databases (below). We anticipate that they will include variations of the following terms: campaign, communication, community intervention, health education, health promotion, information, marketing of health services, mass media, media advocacy,

publicity, social marketing and terms for types of communications media (e.g. billboard, broadcast, digital, Facebook, mobile phone, newsprint, television, website) in conjunction with the public health topics of interest.

#### *Search strategy for reviews*

We will search a range of registers, databases, and websites for relevant systematic reviews of primary studies and recent reviews of reviews, published from 2000 onwards, including:

1. Database of Promoting Health Effectiveness Reviews (DoPHER)
2. Cochrane Database of Systematic Reviews (CDSR)
3. Database of Abstracts of Reviews of Effects (DARE)
4. Campbell Collaboration Library of Systematic Reviews
5. NIHR Health Technology Assessment Programme website/NIHR Journals Library
6. Health Technology Assessment (HTA) database hosted by the Centre for Reviews and Dissemination
7. Google Scholar.

Systematic reviews published in peer reviewed sources and as grey literature will be eligible for inclusion. Reviews of reviews will be used as a source to identify relevant systematic reviews.

#### *Search strategy for primary research*

The search strategy for primary studies is likely to include searches for studies in the academic and grey literature from generic and topic-specific databases from the fields of health, business and marketing, social sciences, psychology and anthropology. Our expectation is that we will not find reviews for all topics and so may need to go to individual papers in some instances. Examples of databases include: Medline, Embase, Business Source Premier, Web of Science's Social Sciences, Science and Arts & Humanities Citation Indices, PsycINFO, Sociological Abstracts, and the World Advertising Research Center.

In addition to electronic searches, we will contact authors, check bibliographies of included studies, and for records which cite included studies.

In order to utilise our resources efficiently, we will be targeted in our approach to searching, while ensuring that we have an unbiased dataset. We will use innovative text-mining methods developed at the EPPI-Centre to search located references and prioritise those studies most likely to be included for screening. This will ensure that the most relevant references are assessed first, such that the work proceeds quickly and is informed by the most relevant literature. EPPI-Reviewer 4.0 software will be used throughout for search, retrieval, assessment, appraisal and data extraction [13].

#### 4.2.2 Selection of studies

Two reviewers will inspect the full text of search results and potential studies identified through other sources to determine if they meet the inclusion criteria. Where there is disagreement, advice from co-applicants will be sought and consensus reached by discussion. Where necessary, we will contact authors to locate additional unpublished data.

#### *Inclusion and exclusion criteria*

Informed by our initial scoping exercise (see section 16 below), conceptual framework and search strategy piloting, detailed criteria will be specified for: study population (human populations of all age groups will be eligible for inclusion), year range of publication, type of media intervention, type of study, topic area and reporting of relevant outcomes.

#### 4.2.3 Quality appraisal and relevance assessment

Appropriate tools will be selected for appraising each study according to design and methodological rigour (e.g. the AMSTAR tool [14] for systematic reviews and the Cochrane Risk of Bias tool for controlled trials [15]). Included studies will be quality assessed

independently by two reviewers, with any disagreements resolved by another reviewer. Included studies will also be assessed for relevance. Relevance in this review will have two dimensions:

- (i) relevance to the UK. Studies will be rated in terms of UK applicability (for example, 'high' - conducted in the UK, 'medium' – conducted in a country/population with some similarities to the UK, or 'low' – conducted in a country/population with limited similarity to the UK).
- (ii) relevance for the current media landscape. This has changed considerably in recent years, in terms both of technological developments and media consumption behaviour. Whereas major mass media health campaigns in the past would have been largely implemented through above-the-line advertising in channels such as broadcast and print, nowadays many more channels and platforms are available to campaign managers, including social media and mobile phone apps. It is important that the review distinguishes between evidence from studies using more traditional forms of media and studies which have examined the application and effects of more recent technologies. A rating scale will be developed to reflect the type of media intervention and its relevance to the current UK landscape.

#### 4.2.4 Data extraction

Data from studies identified as meeting the inclusion criteria will be extracted into a standardised data extraction form, developed in response to the type and quality of studies identified for inclusion, and the models developed in Stage 1. Data extracted will include: study characteristics; participant characteristics; any theoretical basis; setting; outcome measures and results. Extracted data will be independently checked by a second reviewer, for accuracy and completeness. Disagreements will be resolved by involving a third reviewer.

#### 4.2.5 Methods for synthesis

We will classify outcomes according to their position in our emerging logic model (see Appendix 1 for an initial 'demonstration' logic model). For example, immediate outcomes might be changes in attitudes, knowledge, awareness of services or self-efficacy; these may give rise to changes in behaviour and/or seeking support / service provision. We then see more sustained changes in behaviour before more 'distal' outcomes are observed: reduction in related illness / changes in social norms, etc.

Given the heterogeneity between interventions and contexts we are likely to identify, statistical synthesis is likely to be impossible in many cases, and structured comparative analysis – examining intervention components – may be more practicable [15]. Such an analysis might represent its results in tabular or visual form (e.g. using 'harvest plots') and a *thematic narrative account* given, highlighting those components that appear to be necessary in particular situations. 'Vote counting' is a danger in this type of analysis, and we will minimise its effects by focusing on the direction and magnitude of effects – not statistical significance. Notwithstanding the available data potentially limiting the type of analyses it is possible to undertake, we will examine the possibility of undertaking statistical synthesis – possibly in subsets of studies – and undertake these where possible, utilising moderator analyses and network meta-analysis should the data allow.

It is also worth noting that in addition to measuring the effects of media campaigns on proximal and more distal outcomes, this analysis will include data extraction on the characteristics of the way people consume and interact with different media. The key differences for the second generation of web applications (Web 2.0) that differentiates it from traditional media or earlier web platforms (Web 1.0) is its potential for (a) interactivity/ sharing (b) targeting people more accurately (c) tracing user responses more effectively (d) the potential to reach a wider audience in a short time period using many platforms (e) delivering and updating information more flexibly (in near real-time). Therefore some key areas for data extraction across media types will be *level of interactivity (one-way, two-way closed, sharing/networked)*, *message targeting* (generic or tailored to target audience), *messaging timing* (pre-

produced, responsive or real-time), *types of platforms* and *level of portability* (portability thought to increase supportive learning information seeking at relevant time).

#### **4.3 Stakeholder and public engagement**

Finally, to test applicability and currency we will prepare drafts of emerging findings and share them with our advisory group and with local stakeholders. We already have agreement from a range of colleagues from a number of different organisations (academics, clinicians, marketing experts and lay members) to join the study advisory group.

In addition, we will share findings with relevant service providers and stakeholders, and with young people through Young Scot, Scotland's national youth charity (see 15 below). We will also test them with the two collaborating CLAHRCs (East Midlands and North Thames). This consultation will help us examine relevance, applicability and acceptability, particularly for local contexts. It will also allow us to assess the extent to which the identified evidence could inform planning of local mass media campaigns.

### **5. POPULATION**

Mass media campaigns may be designed with the intention of reaching all or a majority of the population, or they may be targeted at specific populations and communities, through the use of specific channels (e.g. purchasing advertising space in specific magazines or programmes) or of particular message themes designed to appeal to particular groups. We will include evidence on all mass media campaigns intended to reach large numbers of people, whether targeted universally or targeted at a specific group. This will include campaigns aimed at both adults and young people, at national, regional or local communities, at different ethnic groups and at different genders.

Information will be recorded on targeting strategy, either as explicitly stated in studies or as inferred from information provided.

### **6. SOCIO-ECONOMIC POSITION AND INEQUALITIES**

Two of our research objectives focus on socio-economic position and inequalities: objective (#3) outlined above is to “Explore how different types and forms of campaigns can reach and be effective with different target populations (particularly disadvantaged groups)”, and research objective #8 to “Examine evidence of impacts on subgroups of specific interest”, which will include disadvantaged groups. To identify the groups who are most likely to engage in each health behaviour and therefore suffer the greatest burden of disease as a result, we propose to use national data including survey data. In particular, this is likely to include low income groups and those with mental health problems. In our evidence synthesis, we will review the evidence on the impact of campaigns on health inequalities, with a focus on differential impacts on the groups identified as most likely to engage in a particular negative health behaviour.

We will pay particular attention to the theoretical basis and design elements of targeted campaigns – i.e. those aiming to reach particular populations such as disadvantaged groups or young people. We will explore how different types and forms of campaigns can reach and be effective with different target populations (particularly disadvantaged groups) and conversely how different types of individuals respond to different types of message.

Studying the effect of mass media campaigns in subgroups is associated with particular challenges, however, in that the large sample sizes required to detect effects are often not achieved. We will critically appraise the strengths and weaknesses of the current evidence-based on the impact of campaigns in specific target groups including disadvantaged groups.

## **7. PLANNED INTERVENTIONS**

The interventions being assessed are mass media campaigns to communicate public health messages to populations in the UK. We define 'mass media campaigns' in this study as purposeful use of mass media channels to influence health behaviours and the individual level determinants of health behaviours (for example, awareness, knowledge, attitudes, identification with the message, norms).

Mass media campaigns can be delivered at local, regional and national level and through a range of channels. Media interventions are increasingly delivered through innovative new media platforms, with content and direction generated by users themselves, and these new forms of intervention pose particular challenges for evaluation and review. We will examine the following media channels:

- Broadcast media (television, radio, cinema, online broadcasting)
- Print media ( free and paid-for newspapers and magazines, leaflets/booklets, direct mail)
- Outdoor and ambient media (billboards, bus shelter ads, public transport and taxis, petrol pumps, packaging)
- Digital media (including websites, pop-up and banner ads, QR codes, viral marketing, mobile apps, participatory social media and other user generated content)
- Other media (e.g. video games).

Media campaigns may be implemented as stand-alone interventions, in conjunction with another intervention or as part of multi-faceted community interventions involving, for example, education, community action and policy change. The study will examine and compare the effects of stand-alone media interventions and media as part of wider interventions.

Media campaigns have addressed a wide range of health-related topics including screening, immunisation, mental illness and violence. Although these topics could be included, we believe that the most useful learning will emerge from considering media campaigns which have addressed the following health lifestyle behaviours and issues (as outlined above): alcohol use, illicit substance use, diet and physical activity, sexual and reproductive health, and smoking cessation and prevention. Our initial scoping exercise (see section 16 below) indicates that a number of reviews already exist in relation to these topics, although coverage varies across topics and searches will also need to be conducted for primary studies in some areas, particularly in relation to newer forms of media.

Priority will be given to considering evidence that is either drawn from the UK or is relevant to the UK (e.g. OECD countries), particularly that which could be applied at local authority level.

## **8. OUTCOMES**

We will refer to Nutbeam's framework of levels of outcomes for health promotion in our assessment of the relevance of outcomes [16]. According to the Nutbeam model, there are three levels of outcomes: health and social outcomes (which may include outcomes such as mortality or morbidity), intermediate health outcomes (which may include health behaviours) and health promotion outcomes (which may include knowledge, attitudes and behavioural intentions).



Based on our existing work on tobacco control mass media campaigns and our scoping search, we are aware that distal health outcomes – i.e. changes in morbidity or mortality – are very rarely reported in studies on the impact of mass media campaigns. This is due largely to the lag in changes in health outcomes that may be attributable to mass media campaigns, which means that changes often do not occur within the timescale of the study. In addition, and partly due to these lags in effect, there are challenges associated with disentangling the effect of mass media campaigns on distal health outcomes from that of other interventions.

Many studies therefore report more intermediate health outcomes including:

- Changes in behaviour, including uptake of new behaviours, modification of existing behaviours, cessation of behaviours, maintenance of behaviour change

Such effects are easier to detect than changes in health outcomes, owing to the shorter lag to effects. Nonetheless, as demonstrated in the tobacco control mass media literature, disentangling the effects of mass media campaigns from other interventions remains a challenge [2,17]. As a result, mass media campaign evaluations and studies often report evidence relating to the following health promotion outcomes:

- Changes in behavioural intentions
- Changes in norms
- Attitude change
- Knowledge change
- Awareness, reach and participation in campaigns
- Policy change or other changes in community conditions which might support behaviour change

These can be considered as determinants of intermediate health outcomes such as behaviour change. While they may represent steps towards behaviour change, there is sometimes little correlation with actual behaviour change, and their use as indicators of behavioural change should be treated with caution.

We will consider the review evidence according to individual health behaviours (as most reviews will be specific to a health behaviour), identifying the evidence according to the types of mass media campaign (context and channel of delivery), the types of outcome, and the target population that have been reviewed in each case. We will use this to determine the combinations of health behaviours that can be meaningfully considered together for each campaign type and outcome and group them accordingly.

We anticipate that one of the main discriminants will be the presence or absence of evidence on change in behaviour. Where there is evidence for behaviour change itself, we will confine our review to behaviour change outcomes for that combination of health behaviours and types of campaign as the ultimate marker of effectiveness. Where there is no evidence for behaviour change, we will consider the health promotion measures listed above, using our logic model to identify those outcomes on which we would expect to see an impact. In this way, the review will focus on behaviour change as the primary outcome where possible, but where evidence does not exist, will focus on intermediate outcomes with closest proximity to behaviour change for each topic. We anticipate that there will be very little review evidence on the effect of mass media campaigns on health outcomes, but will consider this if it is identified in our searches.

This approach will show us in which topics there are gaps in evidence on behaviour change, and will inform recommendations for practice/future research for those areas. We should be able to use our theoretical model to help identify similarities between different behaviours which may predict similarities in what works and how and in whom, as well as looking at similarities in types of mass media use, message content, relevant population groups.

## **9. SAMPLE SIZE**

The sample sizes will vary between the reviews and individual studies that will be examined.

## **10. STATISTICAL ANALYSIS**

The heterogeneous campaigns that will be investigated and study outcomes reported may prohibit meta-analysis. However, study data for primary outcomes and campaign components, characteristics, theories, and duration will be tabulated and directions of effect examined. Where statistical analysis is possible, we will carry it out (and employ sub group and network meta-analysis where appropriate [18]); where it is not possible, we will undertake a narrative synthesis, taking care to avoid the pitfalls of 'vote counting'. Sensitivity analyses will be carried out as per the protocol exploring, for example, the effect of study quality on outcomes. All data, including those pertaining to quality assessment will be tabulated.

## **11. ETHICS**

We have been advised by University of Stirling School of Health Sciences Research Ethics Committee that as this study involves secondary research and no primary data collection, and that as no stakeholder/public involvement data (eg. verbatim quotes) will be recorded or used in any reports, the study does not require ethical approval.

## **12. RESEARCH GOVERNANCE**

The University of Stirling will serve as nominated sponsor for this study, in line with Department of Health guidance. Other research governance arrangements for this study are fairly straightforward as it involves secondary research. We will establish a study steering committee in line with PHR Programme guidance, in addition to the advisory group that we will be working with for the stakeholder and public consultation elements of the research (see sections 4.3 above and 15 below). We anticipate that the study steering group will meet around 4 times during the research period, with an initial meeting planned during the first three months of the project. A DMEC will not be required for this study.

## **13. PROGRAMME TIMETABLE AND MILESTONES**

We aim to begin the study on 1<sup>st</sup> October 2015 for 18 months. A detailed project timetable, including the timing of key tasks and delivery of project milestones, is shown in Box 1 below.

## 1: Timeline and Milestones

Stage / Task	Months	Milestones
<b>1. Conceptual Framework Development</b>	1-3	<b>M1.</b> Final conceptual framework ( <i>month 2</i> )
<b>2. Evidence Synthesis</b>		
<i>a. Scoping and testing search strategy</i>	1-3	<b>M2.</b> 1 <sup>st</sup> meeting Advisory Group ( <i>mon 3</i> )
<i>b. Finalise protocol</i>	4	<b>M3.</b> Submit protocol to PROSPERO ( <i>mon 4</i> )
<i>c. Search for reviews and set up EPPI Reviewer database</i>	4-5	
<i>d. Assessment of reviews</i>	5-6	<b>M4.</b> 1 <sup>st</sup> Progress Report ( <i>mon 6</i> )
<i>e. Search for primary studies</i>	5-7	
<i>f. Assessment of primary studies</i>	6-8	<b>M5.</b> 2 <sup>nd</sup> meeting Advisory group ( <i>mon 7</i> )
<i>g. Quality appraisal &amp; data extraction</i>	7-12	<b>M6.</b> Final list of included studies ( <i>mon 8</i> )
<i>h. Analysis and synthesis</i>	12-18	<b>M7.</b> 2 <sup>nd</sup> Progress Report ( <i>mon 12</i> )
<b>3. Stakeholder Engagement</b>	14-18	<b>M8.</b> 3 <sup>rd</sup> meeting Advisory Group ( <i>mon 14</i> )
		<b>M9.</b> Final Report ( <i>mon 18</i> )

## 14. EXPERTISE

This proposal is led by the Institute for Social Marketing at the University of Stirling, who have 30 years experience of conducting research on marketing for behaviour change. The PI will be ISM's Director, Linda Bauld, who along with Martine Stead (Deputy Director) has extensive experience of conducting public health systematic reviews. In addition, ISM has expertise in conducting reviews of mass media [19-21] and primary research to develop and evaluate media campaigns in sexual health, smoking, cancer prevention, mental health and road safety [22-27].

ISM is part of the UK Centre for Tobacco and Alcohol Studies (UKCTAS) a UKCRC Centre for Public Health Excellence. UKCTAS is led by the University of Nottingham, where Sarah Lewis and Tessa Langley are completing a two year MRC programme to establish the effectiveness of tobacco control mass media campaigns. Sarah Lewis is a medical statistician with experience in systematic reviewing and meta-analysis, and Tessa Langley is a Lecturer in Health Economics with expertise on issues of study design, relevant outcomes and statistical methods.

The systematic review elements will be led by James Thomas at the EPPI-Centre, part of the Social Science Research, Institute of Education. It is a partner of the Cochrane Collaboration in Healthcare and the Campbell Collaboration for Social Interventions. EPPI has a direct role in developing methodology for systematic reviews across a range of study types and has the status as the Methods for Research Synthesis (MRS) Node of the ESRC National Centre for Research Methods.

Shona Hilton and S Vittal Katikireddi are from the MRC CSO Social & Public Health Sciences Unit, University of Glasgow. Shona leads a programme into how scientific knowledge is communicated and exchanged within society to inform public health advocacy strategies,

including examining the current media landscape. Vittal is a clinical lecturer in public health with expertise in social epidemiology, evaluating complex interventions and applying evidence synthesis.

Together the team members have the relevant expertise to conduct this study. They also have strong links with policy and practice networks and we set out below how collaboration with these networks and the public will enhance the research.

## **15. PARTNER COLLABORATION AND PUBLIC ENGAGEMENT**

Engagement with stakeholders and the public will be important at a number of stages in the proposed study and will help ensure the applicability and currency of our research plans, and of emerging findings. We will take advantage throughout the project of the mechanisms for engagement available through our membership of UKCTAS, collaboration with the East Midlands and North Thames CLAHRCs, and our strong links with national and local public health policy makers and networks.

As already mentioned above, we have assembled an **advisory group** of experts who have topic-specific expertise in lifestyle behaviours, mass media and social marketing, to complement those of the research team. In addition we have invited public health consultants within Public Health England and local authorities, experts in public engagement and two lay members. The advisory group will meet three times through the course of project to consider the research plans, and to provide consultation on drafts of our emerging findings.

We will collaborate with two NIHR **CLAHRCs** in England to ensure NHS and local government input into the study, and to support engagement with all stakeholders. Both have already been involved in contributing to the full proposal. The CLAHRC East Midlands, has as its overarching aim to improve health outcomes across the region, and as one of its key themes preventing chronic disease, and in particular the prevalence of smoking and obesity which have particular resonance in areas of the East Midlands where these are above the national average. The North Thames CLAHRC aims to improve health outcomes and reduce inequalities in its region through its research programme. Of special relevance to this proposal are its three overarching themes of work: 'Innovations in Systems and Models of Health Care', 'Optimising Behaviour and Engagement with Care', and 'Methodological Innovation'. The CLAHRCs bring together health providers, commissioners, patient groups, health and research networks, as well as academic institutions to support the NHS to meet locally identified priorities. They are therefore ideally placed to advise on the interpretation and practicality of implementing our findings at local and regional levels, and in enabling those changes to happen. They also provide access to a range of public and patient involvement groups which we will draw on, in addition to our other public engagement activities described below, to ensure that our research and findings are in plain English and disseminated widely.

The CLAHRCs have links with numerous NHS and local council partners across the East Midlands and North Thames regions, including **Consultants in Public Health working within**

## **the NHS and local authorities.**

With support from the CLAHRCs, we will take the opportunity to consult patients and the public as a reference group by organising a **public conference** towards the end of our study with delegates drawn from a variety of sources, including professionals as well as community groups, for example. The event will comprise a combination of presentations with break out small discussion groups to test the intelligibility, plausibility and acceptability of findings and the implications of our research. This event will be supported by the use of a graphic facilitator to produce a visual and pictorial output from the event. We will liaise with key organisations who run similar events linking research with public perceptions, such as 'Sense about Science' in designing our event.

We will also engage with the public through our **UKCTAS public engagement panels**. We have two smokers' panels, one in Nottingham and one in Bath, which discuss future and current research taking place within UKCTAS. We are currently in the process of establishing a UKCTAS drinker's panel (of adults who drink alcohol). Panel members come from a diverse range of backgrounds and we anticipate will also have important views to share regarding the other health behaviours that are a focus of this review in addition to smoking and drinking (illicit substance use, diet and physical activity and sexual and reproductive health). Proceedings of the panel meetings are taped and transcribed, and ideas and feedback used in writing new research proposals, reporting findings, and dissemination plans. We will present our plans and findings to these panels to obtain a user perspective. We will also consult with **members of Young Scot**, Scotland's national youth information and citizenship charity for 11-26 year olds. We will meet with Young Scot panel members in Edinburgh or Glasgow on two occasions during the study to seek their views and this element has been included in the proposed project funding.

Our advisory group, lay members and the CLAHRCs will help us develop a plan to communicate and publish our findings, including preparing a lay summary of the key findings of the research. Once this has been developed we will also aim to make it available to **service user groups of charities and community organisations** that champion health behaviour change and improving population health.

In addition, the applicants will draw on their links to a range of **public health and marketing networks** to ensure engagement of local and national stakeholders and that our findings are disseminated to inform the design of future mass media campaigns. Applicants currently hold key positions in policy and research organisations that will assist with this. For example, Professor Bauld has a part time seconded position as CRUK's cancer prevention champion – leading the BUPA/CRUK cancer prevention programme and also chairing their Tobacco Advisory Group. She also sits on other relevant committees for NICE, the WHO and the Scottish Government. Professor Lewis is on the ASH Advisory Council. Dr Vittal Katikireddi is an honorary specialist registrar in public health at NHS Lothian and a member of the Scottish Government's Health Inequalities Action Group. Other team members have additional links that can be drawn on to assist dissemination and to translate findings into policy and practice.

## **16. LITERATURE SCOPING FINDINGS**

The final section of this detailed project description sets out findings from preparatory work we have already done for the study. Following feedback from our outline proposal, we aimed to assess the extent of the existing literature that could be included in the review to assess the likely scale of the work. Thus we conducted a scoping exercise. This exercise has also informed our thinking on the search strategy that we describe earlier in this document.

## 16.1 Approach to the scoping exercise

For each of the topic areas in our initial full proposal (*please note in the resubmission of the full proposal the topic areas have been slightly reduced and no longer include breastfeeding and road safety*), we searched first of all for reviews of reviews (RRs), as these are a useful way of locating existing reviews. We then listed the individual reviews included in each RR. Where no RRs were found, we searched for individual reviews. Databases searched included Medline, Web of Science, EBSCO host, Cochrane library, DARE, Embase and Google. A wide range of search terms and search term combinations was tested out including "communication", "digital media", "mass media", "media programmes", "mobile phone", "social marketing", "social media", "social network\*", "text message\*", broadcast, campaign, Facebook, film/s, internet, magazine/s, Myspace, newsprint, newspapers, online, Press, radio, SMS, television, TV, Twitter, website, web page, bill board, and leaflet.

It should be emphasised that the searches were exploratory and not exhaustive, and are likely to under-estimate the number of reviews which may exist.

## 16.2 Results and implications for the full review

The results of the initial scoping (see Table 1) suggest that only a small number of RRs have examined mass media interventions in relation to the health behaviour topics of interest (between zero and 4 per health behaviour topic). This suggests that we will need to search for individual reviews as well as RRs in each topic area. In some areas we may also need to search for primary studies, depending on the quality and relevance of the reviews found.

**Table 1: Summary of initial scoping exercise**

Intervention type/Health behaviour		Reviews of reviews (RR) (n)	Individual reviews* (n)
Mass media specifically	Alcohol	1	2
	Diet	1	3
	Illicit substance use	1	n <sup>1</sup>
	Physical activity	1	5
	Sexual health	0	14
	Smoking	4	35
Multiple interventions (may include mass media)	Alcohol	4	10
	Diet	3	2 <sup>2</sup>
	Illicit substance use	4	2 <sup>2</sup>
	Physical activity	6	24 <sup>2</sup>
	Sexual health	**	**
	Smoking	9	35
Media interventions which may address health behaviours of interest		2	13

**Note: 1: Please note that breastfeeding and road safety will NOT be included in the review once it starts; these have been removed from the final full resubmitted proposal following feedback from the Board.**

<sup>1</sup> None listed in the RR for this topic (the RR covered multiple topics)

<sup>2</sup> Full text not available for all the RRs, so correct figure likely to be higher

\* Individual reviews were identified either from the reference lists of the RRs found, or from searches for reviews where no RRs were found.

\*\* Did not search for RRs and reviews of multiple interventions for these topics

In addition to reviews and RRs of mass media interventions in relation to specific health behaviour topics, our initial scoping uncovered two other types of review which are potentially relevant and should be included in the scope of work:

- Reviews and RRs of multiple interventions and of multi-component interventions (which may include mass media) in relation to specific health behaviour topics.
- Reviews and RRs of media interventions across a range of health behaviour topics.

The scoping exercise revealed that newer media are not as well covered in reviews and RRs as are traditional media, suggesting that original searches for primary studies are likely to be required in order to locate useful evidence on newer media.

It also suggested that reviews conducted pre-2000 are less likely to be systematic, and at this stage we plan to exclude reviews conducted before this date, although we will explore this issue further in the piloting.

The scoping exercise also threw up a number of issues and questions which we would intend to fully explore and resolve in the piloting work for the full review. These included:

1. The specification states that mass media are of interest because they can potentially reach large numbers of people. However, media can be used in a very wide range of contexts with different types and sizes of population. This raises the question of how to distinguish a *mass media* intervention – one which uses the media to reach a large proportion of a given target population – from an intervention which uses media channels and materials but does not have the same objective in terms of reach.

For example, an intervention conducted with a school population could use media materials (leaflets to all parents and children, DVDs, websites) alongside other teaching methods to promote a particular health behaviour issue. We will need to decide, in discussion with NIHR and our advisory group, whether use of media within a school population falls within the scope of the review. Media materials such as leaflets and DVDs may also be used in one-to-one settings, such as when they are given out during primary care consultations. Here, the key issue to consider is likely to be whether this distribution is part of an initiative to reach a large proportion of the population or whether the materials are intended for a specific patient group.

A third group of interventions which raises questions is those which use media channels to deliver individually tailored messages, such as text messaging on alcohol consumption which provides feedback tailored to an individual's responses and characteristics. Interventions using text messaging and other newer forms of media, such as websites, social media and apps, are clearly of interest to NIHR and to commissioners. However, we will need careful discussion to agree on how to define mass media in these contexts.

2. We have stated that we will focus on lifestyle behaviours rather than campaigns to encourage use of services. However, the distinction is not always clearcut, as in campaigns which encourage smoking cessation and promote use of a quitline service. A key dimension we will look for, therefore, is likely to be whether the service being promoted is also trying to achieve lifestyle behavioural change, in which case it would be potentially included.

The results of the scoping exercise indicate that there is a substantial amount of literature that will need to be reviewed in order to address the aims and objectives of the study. However, we did not identify anything in the scoping exercise that led us to believe that the reviews would be unmanageable or that our costings were unrealistic. We are even more confident of this in our revised resubmitted full proposal as two of the areas we proposed in the initial

submission, breastfeeding and road safety, will now not be included in the review following feedback from the Board. The final list of topics will focus on health behaviours that substantially contribute to the burden of disease and are a priority for public health, particularly at the local level. These still address the broad focus of the commissioning brief (which requested a cross cutting review of mass media for public health messages) but cover a slightly more focussed range of topics.

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## **Appendix 1: Demonstration Logic Model for Mass Media Interventions**

We propose to develop a logic model for mass media interventions separately for each of the public health areas before synthesising these into a common logic model. As well as demonstrating how mass media interventions may work, the resulting logic model will be used to guide the evidence synthesis through helping to define inclusion and exclusion criteria, identify moderators (and potentially sub-group analyses), identify mediating factors, and guide the search for evidence (Anderson, Petticrew et al. 2011). In the demonstration below, the model represents a synthesis of logic models developed independently of mass media interventions for smoking cessation and mass media interventions for healthy eating/physical activity. In common with the development of logic models more broadly, both logic models were developed through working backwards across an outcome and action chain starting from the distal outcome.

Beginning with smoking cessation, we first located the small number of systematic reviews of mass media interventions for smoking that included a logic model, and used the model included in Niederdeppe and colleagues' (2008) review as a starting point. This included detail on the change part of a logic model in particular, but was enhanced with further details that helped to disaggregate some of the intermediate outcomes around behaviour change; this corresponded with other models of 'stages of change' in health promotion. The action part of the model was enhanced through examining logic models developed in other studies of mass media interventions of public health but which were not necessarily specific to smoking cessation (for example Huhman, Potter et al. 2007), as well as significant components identified in reviews of mass media smoking interventions, but which were not conceptualised in a logic model (for example Durkin, Brennan et al. 2012). Finally, further stages of change of smoking cessation were identified through examining the logic models included in reviews of public health and policy interventions for smoking cessation, but that did not necessarily involve mass media (Amos, Brown et al. 2013). A similar process was employed to develop the logic model for healthy eating/physical activity.

To synthesise the models, common components were identified and the language harmonised; for example both the physical activity and smoking cessation logic models included common stages of change around the attempts at adopting healthier behaviours and reduction in unhealthy behaviours as precursors to successful behaviour change, although these were originally expressed in language specific to each health topic. Even though the two health topics included here were chosen because they were conceptually relatively different and could affect very different populations (making them suitable candidates to pilot this approach), their synthesis was relatively straightforward as both involved synthesising logic models of mass media interventions to stimulate behavioural change for lifestyle behaviours. However, as some of the health topics that we will consider may be more complex, our process of synthesising logic models and developing an overall logic model may result in topic-specific pathways being depicted within the final model: for example, mass media interventions for some health-topics may also attempt to change behaviour through an intermediary party, and this may need to be depicted in the logic model.

**Mass media interventions to promote smoking cessation / healthy eating / physical activity**

- Metrics of output**
- Recall of messaging
  - Awareness of campaign
  - Exposure to different channels
  - Engagement with campaign (e.g. repeat exposure or visits to further website)

- Mass media intervention outputs**
- Knowledge improvement
  - Heightened awareness of dangers of smoking / unhealthy eating / sedentary behaviour
  - Change in expectations and outcome expectations around feasibility of quitting / healthy eating / physical activity

- Change in social norms around smoking / overweight

- Proximal outcomes (Help and health seeking behaviour change)**
- Information seeking
  - Treatment seeking / engagement with health professionals
  - Continued knowledge improvement (beyond media messaging)

- Intermediate outcomes (Health Behaviour Change):**
- Successful attempt to change behaviour
  - Healthier behaviours
  - Attempts at healthier behaviours
  - Sustained healthier behaviours (e.g. healthier eating / increased physical activity / quitting smoking)

- Distal Outcomes**
- Reduction in related illness
  - Improvements in population health status
  - Reduction in health service usage

- Activities**
- Generating mass media content
  - Diffusion through incidental channels:
    - TV / Radio
    - Print / Magazine
    - Billboard / Outdoor
  - Forms of digital
  - Diffusion through social networks: Digital / other channels
    - Viral campaigns
  - Social digital media:
    - Resharing mass media content
    - Control of tobacco advertising
    - Limiting advertisements of sugary foods
  - Other intervention components (e.g.)
    - Counselling
    - Provision of material objects (e.g. nicotine patches)
    - Provision of mediated peer support / other group provision - e.g. physical activity classes

- Population and contextual moderators:**
- Age
  - social factors including social class, education level, ethnicity, gender
  - Health systems

- Intervention specific moderators:**
- Policy and health support
  - Specific legislation (e.g. smoke free places)
  - Source of mass media messaging (e.g. government, charity etc.)
  - Targeting and accessibility (e.g. style, tone, theme)
  - Exposure to previous campaigns
  - Theoretical underpinnings

**Action**

**Change**



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