Post-REF 2014 Panel Feedback

Main Panel A – General Feedback
UoA 2 specific comments

Main Panel A impact and evidence examples

Impacts
Evidence

Impact case studies – suggested do’s and don’ts

Case study section specific guidance
General writing style guidance

Strong REF2014 Impact case studies

1. University of Bristol – Avoiding harm and evaluating benefit: establishing and implementing an evidence-based policy for prostate cancer screening in the UK
2. University of Bristol – Cataract Surgery – Quality of life benefits and improved access to treatment in the UK and beyond
3. University of Sheffield – Identifying failing hospitals: a new measure implemented by the NHS
4. University of Sheffield – Introduction of a national colorectal cancer screening programme
5. University of Liverpool – Household air pollution from Global Inequalities in access to clean energy: Improving prevention strategies to maximise health gain

Weak REF2014 Impact case studies

1. University of Manchester – Assessment of patient experience of NHS primary care services
2. Leeds Metropolitan University – Developing evidence based on practice on lay health roles
POST-REF2014 PANEL FEEDBACK

Extracts taken from: http://www.ref.ac.uk/panels/paneloverviewreports/

Main Panel A – General feedback

- Future submissions could be strengthened if HEIs were proactive in collecting more qualitative and quantitative data evidencing the reach and significance of the impact.
- The best impact case studies in Main Panel A were characterised by a clear and compelling narrative linking the research programme to the claimed impact; verifiable evidence (qualitative or quantitative) to support the claimed impact provided within the text of the case study (and, if research at multiple HEIs had contributed to the same impact, evidence of the contribution of the submitting HEI); and (where appropriate) spread of the impact beyond the immediate beneficiaries to a much broader and possibly global audience.
- Most low-scoring impact case studies were characterised by lack of objective evidence of the reach and significance of the impact claimed. Low scores were also given to relatively superficial impacts or where evidence of use and uptake was lacking. Impact with excellent future promise but modest current reach or significance also attracted lower scores.

UoA2

- The sub-panel was impressed with the very important contribution that public health, health services and primary care research has made to health and welfare worldwide. Many of the impact case studies that were submitted were the culmination of many years of research and impact, resulting in many examples with outstanding reach and significance.
- Outstanding examples included cases focused on national screening programmes for the detection and early diagnosis of conditions, UK wide and international studies leading to changes to clinical practice which have improved outcomes and saved many lives, and contributions related to changes in national policy and legislation.
- The range of case studies submitted was extensive. The majority were related to impacts on policy and practice. These included case studies which described changes to Department of Health or NHS guidelines and guidance. Importantly, these included demonstration of policies being maintained, changed and removed as well as new policies being introduced. There were also case studies concerning the management of illnesses in general practice and other settings, and improving treatment delivery. Some case studies illustrated informed public debate, for example on issues such as breast-feeding, obesity, alcohol consumption and smoking. Impact case studies on resource management and training of healthcare professionals were also received.
- The global reach of the impacts stood out and included cases that described the introduction of vaccine programmes, improving access to healthcare in developing countries, and contributions to changes in international prescribing practices.
- The outstanding reach and significance of the impact case studies underlines the importance of research in public health, health services, and primary care to the health, wealth, and well-being of the UK and elsewhere. The impact case studies were generally regarded more positively than the impact templates with many HEIs seen to still be developing a strategic approach to impact.
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<tr>
<th>UOA – Public Health, Health Services and Primary Care</th>
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<tr>
<td><strong>Impact Case Study pack</strong></td>
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<td><strong>Health and Welfare</strong></td>
<td><strong>Society, culture</strong> <strong>creativity</strong></td>
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<td>• Outcomes improved for patients/related groups</td>
<td>• Public health and well-being has improved.</td>
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<td>• Public understanding improved</td>
<td>• Public debate stimulated/infomation by research</td>
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<td>Evidence</td>
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<tr>
<td>• Measures of improved clinical outcomes, public behaviour or health services (lives saved, reduced infection rates).</td>
<td>• Documented evidence that public understanding has been enhanced through active collaborative involvement in research.</td>
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<td>• Measures of improved well-being.</td>
<td>• Critical reviews in the media.</td>
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<td>• Documented changes to clinical and public health guidelines (documented references to research evidence in guidelines).</td>
<td>• Evidence from audit, change in guidelines.</td>
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<td>• Evidence from audit, change in guidelines.</td>
<td>• Documented changes to animal welfare codes or guidelines.</td>
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<td>• Documented evidence of patient experience.</td>
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<td><strong>Summary of the Impact (100 words)</strong></td>
<td>This section should briefly state what specific impact is being described in the case study</td>
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<td>• The summary should be a clear, concise overview of the case study using non-specialist, jargon free language.</td>
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<td>• Include key facts and figures and clearly identify the impact(s) claimed as well as the beneficiaries.</td>
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<td>• The main impacts should be readily identifiable and an indication of significance and reach given.</td>
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<td><strong>2. Underpinning research (500 words)</strong></td>
<td>This section should outline the key research insights or findings that underpinned the impact, and provide details of what research was undertaken, when, and by whom. References to specific research outputs that embody the research described in this section, and evidence of its quality, should be provided in the next section.</td>
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<td>• Explain your research clearly beyond a description of publications and goals – clarify the nature, methods and key findings in an accessible way.</td>
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<td>• Set out the original objectives of the research and specify intended reach. This allows you to demonstrate impacts were in line with maximum potential reach of your work.</td>
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<td>• Be explicit in naming the individuals and institutions involved and be clear on stating the contribution of the submitting HEI and eligibility of the researchers.</td>
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<td>• Most ‘unclassified’ case studies failed to establish the link between the HEI and the research or impact, or a link to underpinning research of 2* quality.</td>
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<tr>
<td><strong>3. References to the research (six max)</strong></td>
<td>This section should provide references to key outputs from the research described in the previous section, and evidence about the quality of the research. Include the following details for each cited output: Authors, Title, Year of Publication, Type of output, Details to enable to panel to gain access to the output</td>
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<td><strong>4. Details of the impact (750 words)</strong></td>
<td>This section should provide a narrative, with supporting evidence, the explain:</td>
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<td>• Using headings to subdivide this section by beneficiary or impact type can help to ensure that this is clearly structured and focussed.</td>
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<td>• It should cover all of the impacts mentioned in the summary. Evidence should be used to explicitly demonstrate the reach and significance of each impact.</td>
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<td>• How the research underpinned (made a distinct and material contribution to) the impact</td>
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<td>• The nature and extent of the impact</td>
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| | • A clear explanation of the process of means through which the research led to, underpinned or made a
| contribution to the impact (for example, how it was disseminated, how it came to influence users to beneficiaries, or how it came to be exploited, taken up or applied)  
• Where the submitted unit’s research was part of a wider body of research that contributed to the impact (for example, where there has been research collaboration with other institutions), the case study should specify the particular contribution of the submitted unit’s research and acknowledge other key research contributions.  
• Details of the beneficiaries – who or what community, constituency or organisation has benefitted, been affected or impacted on.  
• Details of the nature of the impact – how they have benefitted, been affected or impacted on.  
• Evidence or indicators of the extent of the impact described, as appropriate to the case being made.  
• Dates of when these impacts occurred. | Clearly identify all beneficiaries (those who have benefitted or those who have changed something) of your work – both intermediary organisations and end-user audiences.  
• Link the impacts to the underlying research.  
• Place the impacts in context to show significance.  
• Be realistic – do not overstate the impacts.  
• Evidence should offer both quantitative and qualitative independent support for the impact claims being made.  
• Quote directly from your corroborating sources to support your impact claims. The panel do not have access to your corroborating evidence unless requested for audit purposes.  
• Quotes should be limited to a couple of sentences to reinforce the impact. |
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<td>5. Sources to corroborate the impact (max 10 references)</td>
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This section should list sources external to the submitting HEI that could, if audited, provide corroboration of specific claims made in the case study. Sources provided in this section should not be substituted for providing clear evidence of impact in section 4; the information in this section will be used for audit purposes only.  
This section should list sufficient sources that could, if audited, corroborate key claims made about the impact of the unit’s research. These could include, as appropriate to the case study, the following external sources of corroboration (stating which claim each source provides corroboration for):  
• Reports, reviews, web links or other documented sources of information in the public domain.  
• Confidential reports or documents (must be available for audit)  
• Individual users/beneficiaries who could be contacted by the REF team to corroborate claims  
• Factual statements already provided to the HEI by key users/beneficiaries, that corroborate specific claims made in the case study and that could be made available for audit. | Panels were required to submit formal audit requests to view corroborating sources. Case studies which incorporated evidence into section 4 were viewed very favourably. |
**General writing style guidance:**

**Style:**

- Ensure that the case study is written in clear, non-specialist language so that it would be easily understood by someone who is not an expert in your field.
- Avoid using the passive form, ensure you take the credit for your work. It is common in academic papers to use passive verbs, but in this context be explicit about who did what.
- Ensure that your case study is concise and try to stick to the word limit guidance. A concise, well structured case study will be much easier for the review panel to digest and judge than a dense and rambling one where impact may be lost.
- The 2014 REF included indicative word limits and page limits. Many 4* impact cases were over the indicative word limits, but it does appear that dense, long-winded cases were marked down. The important content clearly ties the research to the demonstrable impact, if you are struggling to stick to page limits consider cutting down contextual information first.

**Structure:**

- A clear presentation of the case study was well received by the panel. This included case studies using sub-heading, adequate spacing, picture and/or diagrams.
- Ensure that the narrative is simple, linear and coherent with a chronological story of development: problem identified, research conducted, problem addressed.
- Ensure that you define your intended reach and clearly state the reach achieved. It has been stated in a number of blogs and discussion pieces that this can be considered similar to writing your own exam paper. A case study which achieves significant impact on a narrow region or group may score highly if the project aims are local and specific due to the nature of the problem being addressed. Conversely, a case study which fails to define aims or sets far-reaching objectives may receive a lower score if the panel perceive that maximum potential reach has not been achieved.
**Impact case study (REF3b)**

**Institution:** University of Bristol

**Unit of Assessment:** UoA2

**Title of case study:** Avoiding harm and evaluating benefit: establishing and implementing an evidence-based policy for prostate cancer screening in the UK

### 1. Summary of the impact

Research at the University of Bristol (UoB) led to the Department of Health (DH) decision in 1997 that screening for prostate cancer would not be introduced in the UK until there was evidence that benefits outweighed harms. UoB-led and collaborative research subsequently provided evidence to support informed decision-making in the NHS. A formal review by the DH in 2010 endorsed the policy and confirmed that any change would be based on evidence from the team’s randomised trials. This research has ensured UK men have avoided known harms of prostate cancer screening in the context of uncertain benefits, and saved the UK economy £ billions.

### 2. Underpinning research

The research was initiated at UoB with a comprehensive systematic review of prostate cancer diagnosis, treatment and screening literature, funded by NHS R&D and led by Donovan (UoB).[1] Published in 1997, the review concluded "current evidence does not support a national screening programme for prostate cancer in the UK".[1] A major research programme was then designed and undertaken by UoB researchers in collaboration with Hamdy (Oxford) and Neal (Cambridge) to provide the required evidence, including:

- The ProtecT (Prostate testing for cancer and Treatment) feasibility study led by Donovan (UoB) investigated barriers inhibiting an RCT (randomised controlled trial) of treatment.[2] Over 8,500 men aged 50-69 years were recruited from general practices, and 224 men diagnosed with localised prostate cancer participated in the pilot RCT of treatments.[2] Integrated qualitative research supported clinicians and men in accepting randomisation between surgery, radiotherapy and ‘active monitoring’ (a management option developed with patients consisting of regular review and avoiding radical treatment).[2]

- The main ProtecT RCT (joint Principal Investigators (PIs): Donovan (UoB), Hamdy and Neal) was launched in 2001 to evaluate the comparative effectiveness of radical surgery, radical conformal radiotherapy and active monitoring for men with localised prostate cancer.[3] Recruitment of 111,000 men with a PSA (prostate specific antigen) blood test was completed in 2009, over 8,500 received biopsies, and 1,650 with prostate cancer were randomised between the treatment arms. The primary outcome (prostate cancer mortality) will be analysed in 2015 (with 10 years' median follow up). A nested cohort study of 1,100 men undergoing prostate biopsy investigated side-effects of prostate biopsy, including symptoms, health-care use,[4] and psychological impact.[5]

- The CAP (Cluster RCT of testing for Prostate Cancer) (joint PIs: Martin and Donovan (UoB), Hamdy, Neal) randomised 573 general practices to enable a comparison between PSA testing and treatment in ProtecT (screening) and usual NHS care (control) in 415,000 UK men.[6] An ecological study confirmed a much lower incidence of prostate cancer in the UK compared with the USA,[7] and a cohort study confirmed low rates of PSA testing in UK primary care[8] - reflecting much higher rates of screening in the USA compared with the UK.

The research programme began by exposing the lack of evidence for prostate cancer screening,[1] and then carried out a study to investigate the feasibility of mounting an RCT to provide robust evidence.[2] The success of the feasibility study,[2] led to the launch of the ProtecT RCT to evaluate the effectiveness of treatment[3] and the CAP RCT to evaluate the population impact of screening.[6] Studies embedded in these RCTs have produced policy-relevant evidence about the impacts on men of undergoing prostate biopsy,[4,5] and levels of PSA testing and cancer diagnosis compared with the USA,[7] and in UK primary care.[8]
Impact case study (REF3b)

| Research team (positions held at UoB or dates of leaving; and researchers outside UoB) |
| Principal investigators: at UoB - Donovan (Professor), Martin (Professor); outside UoB - Hamdy (Professor, Oxford), Neal (Professor, Cambridge). |
| Key researchers at UoB: Collin (Research Fellow - RF), Metcalfe (Reader), Turner (Research Associate - RA), Lane (Senior RF), Peters (Professor), Wade (RA); outside UoB: Williams (RA Sheffield), Rosario (CSL Sheffield), Hughes (RA Cambridge). |
| Left UoB: Selley (RA, 1998), Faulkner (RF, 1999), Coast (Reader, 2005). |

3. References to the research

[1] Donovan JL (PI), Faulkner A, Coast J et al. Prostate cancer: a systematic review. NHS R&D HTA Programme. 1/1/95 - 31/12/95. £52,052. (Peer-reviewed research grant.)


[3] Donovan JL, Hamdy FC, Neal DE (PIs) et al. The ProtecT study: a multi-centre RCT of treatments for localised prostate cancer, NHS/NIHR HTA Programme:1/5/01- 31/5/08 (£20 million); 1/6/08-31/12/13 (£14 million); 1/1/2014-31/12/2016 (£5.4 million). (Peer-reviewed research grant.)


[6] Martin RM, Donovan JL, Hamdy FC, Neal DE (PIs) et al. Evaluating population-based screening for localised prostate cancer in the UK: an extension to ProtecT – the CAP trial. Cancer Research-UK/DoH. 1/3/02-31/12/06 (£1.19 million); 1/1/07-31/12/09 (£931,232); 1/1/10–31/12/12 (£1.3 million); 1/1/13-31/12/16 (£1.2 million). (Peer-reviewed research grant.)


4. Details of the impact

Prostate cancer screening is one of the most controversial healthcare topics globally. Prostate cancer kills over 11,000 men per annum in the UK. Many prostate cancers can be identified when potentially curable following screening with a PSA blood test and prostate biopsy, but it is not possible to identify which tumours will become aggressive or life-threatening (the vast majority will not). Screening leads to large numbers of men being diagnosed and suffering harms related to the diagnosis and treatment of prostate cancer in the context of small and uncertain benefits - hence the current UK policy not to recommend screening. Our research has provided the evidence-base for this policy and has had the following specific impacts:
The establishment of UK policy and origin of the impact

UK policy was established in a letter from the DH to all UK health authorities and clinicians in 1997, stating that: “Population screening for prostate cancer, including the use of prostate specific antigen (PSA) as a screening test, should not be provided by the NHS or offered to the public until there is new evidence of an effective screening technology for prostate cancer”. This was based directly on two cited systematic literature reviews, one led from UoB. The policy has remained unchanged throughout the REF impact reporting period, based on this original policy statement.

Implementing UK policy

A National Screening Committee (NSC) Scientific Reference Group (including UoB Donovan and Lane as members) launched the Prostate Cancer Risk Management Programme (PCRMP) in 2002. PCRMP issued on-line and paper documents containing information about PSA testing, prostate cancer diagnosis, and treatment, based on evidence from the UoB systematic review to enable patients to make informed decisions about screening. PCRMP documents were revised in 2009[c] with UoB Donovan given first acknowledgement (p.2) for contributing evidence from the review and ProtecT feasibility study. The PCRMP remains the primary source of information for UK GPs and men.

Low levels of UK PSA-testing have been corroborated by independent research in 2004 showing the rate of PSA-testing in primary care of 6% of eligible men; UoB research confirmed this rate (6.2%) in 2008.[8]

Evaluating the benefits and harms of screening

UK policy has led to much lower levels of incidence and treatment of localised prostate cancer compared with countries where PSA testing has been widespread since the 1980s: for example in the USA (as shown by our research), and Canada, Australasia, Northern and Western Europe.[7] Evidence for a potential prostate cancer-specific mortality benefit from screening comes from a relatively robust European RCT, published alongside a USA RCT showing no benefit from screening. Our research has provided evidence about the harms of screening. A cohort study of men undergoing prostate biopsy in the ProtecT study showed that 1.3% required hospital admission and 10.4% consultation with a doctor because of post-biopsy symptoms including pain, fever, and blood in urine, faeces and ejaculate. Among the two-thirds of men who received a negative or inconclusive biopsy result, around 20% reported high distress persisting up to 12 weeks. Concerns about the harms caused by prostate cancer diagnosis and treatment in the context of uncertain benefit, and increasing realisation that high levels of PSA-testing did not reflect clinical need, led to a policy review in the USA in 2011. The review focussed on the harms and uncertain benefits and so in 2011, USA policy changed explicitly not to recommend prostate cancer screening - 14 years after the 1997 UK policy decision.

Formal review of UK policy in 2010

The UK NSC formally reviewed policy for prostate cancer screening in 2010 using evidence from an independent option appraisal analysis based on ProtecT trial data (acknowledged, p.xi). The appraisal analysis estimated rates of diagnosis, potential benefits and harms of treatment, as well as impact on survival and costs to the UK economy of introducing prostate cancer screening at age 50 years, annually, or every two or four years, using statistical modelling. The harms of treatment always outweighed any possible benefit of screening in each potential scenario. The clinical costs alone, without administrative costs, were estimated to be £0.6 to £1.7 billion per year. The 2010 review concluded that UK policy should remain as established in 1997, and re-iterated that any change needed to await evidence from this research team’s ProtecT and CAP RCTs.

Health Technology Assessment in the UK, review 2013

This review, written by an independent team, specifically identified the ProtecT study as “The outstanding example of 143 projects for screening and diagnostics funded by the HTA programme,” and noted ProtecT had “affected clinical practice … by allowing the UK to reaffirm its policy of no routine screening” and through its qualitative research that “pioneered ways to involve patients” in research and research on the psychosocial effect of screening.
In summary, UoB-led research established UK policy in 1997, and UoB-led and collaborative research has supported policy implementation since then, including providing evidence for the formal confirmation of UK policy in 2010. UK policy, underpinned by this research, has ensured that knowledge about prostate cancer screening has increased, very many men have avoided known harms of testing, and the UK economy has saved billions of £s every year.

5. Sources to corroborate the impact

[a] Letter EL(97)12 from Graham Winyard, DoH Medical Director (Room 3N12, Quarry House, Leeds LS2 7UE), June, 1997, to Health Authority and NHS Trust Chief Executives and all UK health practitioners. It stated that “systematic reviews commissioned by the NHS R&D HTA Programme have concluded that current evidence does not support a national screening programme for prostate cancer in the United Kingdom. Current screening technologies (including the PSA test) have a limited accuracy that could lead to a positive result for those without the disease. Follow up procedures could thus cause unnecessary harm to healthy individuals.” One of the cited reviews was UoB[1].

[b] UK Prostate Cancer Risk Management Programme (PCRMP). This webpage links to PCRMP documents providing information for GPs and patients to make informed decisions. [http://www.cancerscreening.nhs.uk/prostate/about-pcrm.html](http://www.cancerscreening.nhs.uk/prostate/about-pcrm.html) cites the UoB systematic review[1] in paragraph eight, after bullet points.

[c] [http://www.cancerscreening.nhs.uk/prostate/prostate-booklet-text.pdf](http://www.cancerscreening.nhs.uk/prostate/prostate-booklet-text.pdf) is the 2009 revised booklet with UoB Donovan given first acknowledgement on p.2 for contributing evidence from the UoB review.[1]


[i] Chilcott J, Hummel S, Mildred M. Report to the UK National Screening Committee, May 2010 Option appraisal: screening for prostate cancer [ScHARR] (PDF document, 1.11MB, 02/08/10). Report from the independent option appraisal analysis commissioned by the NSC from the University of Sheffield for the policy review. Potential benefits and harms of screening, and costs to the economy were estimated using ProtecT data (directly acknowledged on p.xi.).

[j] This web-link: [http://www.screening.nhs.uk/prostatecancer](http://www.screening.nhs.uk/prostatecancer) confirms the 2010 National Screening Committee review decision that UK policy should remain as established in 1997, and directly cites documents produced by PCRMP ([b] above), UoB systematic review[1] and ProtecT study data.

**Impact case study (REF3b)**

**Institution:** University of Bristol  
**Unit of Assessment:** UoA2  
**Title of case study:** Cataract Surgery – Quality of Life Benefits and Improved Access to Treatment in the UK and beyond

1. **Summary of the impact**

   The most frequent surgical procedure undertaken in the NHS is cataract surgery and it improves vision and quality of life (QoL). In the 1990’s there were long waiting times for cataract surgery with rationing most frequently restricting surgery on the 2nd eye. A randomised controlled trial undertaken at the University of Bristol (UoB) demonstrated clear QoL benefits from 2nd eye cataract surgery, followed by a population study quantifying population requirements for 1st and 2nd eye surgery and the surgical backlog. Government policy, announced in ‘Action on Cataracts - Good Practice Guidance, 2000’, advised that the volume cataract surgery, including on the 2nd eye, should be increased. This policy ensured timely access to surgery becoming routine practice in the NHS, thus improving the lives of thousands of people. Second-eye surgery rates rose from ~25% of operations to 35-40%, with overall increases in operations for patients needing surgery (e.g. in England up from 201,682 operations in 1998-1999 to 332,625 in 2009-2010) and reduced waiting times. These improvements were sustained throughout to the end of the 2000’s. The research has become highly relevant again as the NHS enters another period of constrained expenditure.

2. **Underpinning research**

   Prior to and during the 1990s there was uncertainty and disagreement regarding the indications for and benefits from cataract surgery, in particular 2nd eye surgery. There were widespread limits to the number of NHS procedures permitted, with more stringent restrictions applied to 2nd eye surgery on the assumption that good vision in one eye was sufficient for the needs of most people. Demand for surgery outstripped supply resulting in the build up of long waiting times. These NHS delivery and clinical issues provided the rationale for the UoB research, which aimed to address two key questions:

   **Q1. What are the benefits of a 2nd eye cataract operation following a successful 1st eye operation?**

   A Wellcome Trust funded[1] randomised controlled trial of 2nd eye cataract surgery, published in 1998 in the Lancet[2] was undertaken collaboratively between the University of Bristol and the Bristol Eye Hospital from 1993 to 1998. People who had undergone a successful 1st eye cataract operation and who were awaiting surgery for their 2nd cataract were eligible for recruitment. The intervention group underwent expedited surgery and were compared at 6 months following randomisation with the control group (who were still awaiting 2nd eye surgery). Outcomes included visual function and patient reported benefits which were assessed with a valid cataract specific instrument, the Visual Symptoms and Quality of life (VSQ) questionnaire[3] developed by the research group for the trial. 208 patients were recruited into the study which showed significant visual function and vision related QoL benefits from 2nd eye surgery. Distance acuity, near acuity, contrast sensitivity and particularly stereo-acuity and self reported vision problems (such as reading and seeing faces) improved when assessed with both eyes open[1]. Our RCT remains the only randomised trial of 2nd eye cataract surgery to date which directly addresses the visual function and quality of life benefits of 2nd eye surgery following a successful 1st eye operation.

   **Q2. What are the population requirements for cataract surgery?**

   A further University of Bristol and Bristol Eye Hospital collaboration funded by DH[4] and Regional R&D research[5,6] funding streams from 1995 to 2001 undertook a cross sectional geographically based population study of chronic potentially blinding eye disease on over 1000 participants aged 65 years and older. Eligibility for cataract surgery in this representative sample was assessed using an applied epidemiological approach in which indications for surgery were modelled from detailed clinical and quality of life data. From this work it was estimated that the backlog of cataract surgery for visually significant cataract in England was of the order of half a million operations [7].
Impact case study (REF3b)

Key researchers with UoB positions from 1992 forward:
- Sparrow, J. M. Senior Lecturer UoB 1992-2000, subsequently Honorary Senior Lecturer and Honorary Professor
- Donovan, J. L. Lecturer, subsequently Professor and Head of School of Social and Community Medicine, UoB
- Frankel, S. J. Professor, Head of Department of Social Medicine, UoB, now retired
- Laidlaw, D. A. Lecturer UoB 1993-1995, subsequently left Bristol for promotion to Consultant
- Harrad, R. A. Honorary Senior Lecturer UoB, subsequently Honorary Reader
- Peters, T. J. Senior Lecturer, subsequently Professor of Primary Care Health Services Research and Head of School of Clinical Sciences, UoB
- Frost, N. A. Research Fellow and Honorary Lecturer UoB, 1994-2001, subsequently left Bristol for promotion to Consultant.

3. References to the research

4. Details of the impact
During the 1990s rationing of surgery for visually impairing cataract was common with contract limits placed on secondary care providers. 2nd eye surgery was particularly targeted for access restrictions and NHS waiting times for surgery were typically a year or more. For older people, for example, the implications of long waits and poor vision were substantial, leading to potentially reduced confidence and higher functional dependence. Following publication of our Randomised Controlled Trial of 2nd eye cataract surgery in the Lancet in 1998, the DH ‘Action on Cataracts’ policy document released in 2000 recommended 2nd eye surgery as uncontroversially good practice[a]. Our Lancet paper was referred to as one of just 7 references in the policy document. The clear benefits, both in terms of visual function and self reported symptoms which our research demonstrated, informed a firm and strong policy recommendation in favour of 2nd eye surgery across the NHS. During the early and mid 1990s, prior to the publication of our research report, 2nd eye surgery comprised around 25% of operations[b]. Data from the National Ophthalmology Database (NOD - 30 contributing NHS trusts) for the years 2004-2010 show a steady increase each year of 2nd eye surgery from 24.2% in 2004 to 34.9% in 2010 based on around 232,000 operations[c], with our own published analysis of over 55,000 operations (12 trusts) in the mid to late 2000s indicating 41.5% of operations being on 2nd eyes[d] reflecting widespread acceptance within the NHS of the benefits gained from 2nd eye surgery for bilateral cataract. Similarly the European Registry of Quality Outcomes for Cataract and Refractive Surgery (EUREQUO) reported that based on 318,000 operations from 2009 to August 2011, 40.6% of cataract surgery was for 2nd
eyes [e]. The findings of our RCT have since been corroborated through studies in which the benefits of 1st and 2nd eye surgery have been found to be either similar or, as in the Swedish National Cataract Register data, greater from 2nd eye surgery for certain subgroups compared with 1st eyes[f].

Our research report on the population requirements for both 1st and 2nd eye cataract surgery[7] provided a robust estimate of the cataract surgical backlog facing the NHS. Our estimate of around half a million additional operations needed to clear the backlog was based on sound applied epidemiological and ophthalmological methodology and provided an empirically evidenced and considerably more accurate estimate of unmet need for surgery than earlier inflated estimates. During the decade following publication of our research an uplift of just over half a million operations cleared the backlog (HES data), confirming the accuracy of our estimate.

The 2000 DH ‘Action on Cataracts’ document referred to our randomised trial and recommended 2nd eye cataract surgery along with process and commissioning changes to increase efficiency, delivery and access for cataract surgery [a]. This document was reinforced by the subsequent NHS Institute for Innovation and Improvement publication, ‘Focus on Cataracts’ [g], and sequential updates of the Royal College of Ophthalmologists Cataract Surgery Guidelines in 2010[h] which directly cited our research. Internationally our RCT on 2nd eye cataract surgery has been referred to in the previous and the current American Academy of Ophthalmology Preferred Practice Pattern: Cataract in the Adult Eye, 2011 [i] and in Guidelines based on data in the European Registry of Quality Outcomes for Cataract[e], with the International Centre for Eye Health [j] having recommend the Royal College 2010 Guidelines which directly cite our research.

In the NHS, with achievable numbers [7] and the strong policy impetus provided by the DH significant inroads were made into the unmet need for cataract surgery. A 65% increase in the frequency of cataract surgery resulted across England, from 201,682 operations in 1998-1999 to 332,625 in 2009-2010. During the 1990s long waiting times for cataract surgery patients were routine, typically around a year. As a consequence of the policy adjustments informed by our research, this increase in cataract surgery reduced waiting times in England to below 18 weeks from referral to surgery for well over 90% of NHS patients.

In addition to the direct benefits to vision [d] and QoL [f] provided by cataract surgery, there are downstream benefits to health such as a reduction in falls for people with improved vision. These benefits are difficult to quantify but include prevention of falls and associated mortality and morbidity among elderly people. Recent austerity-driven reductions in numbers of cataract operations has attracted professional and media interest. Giving evidence to a hearing of the public accounts committee in January 2013 the Medical Director of the NHS, Sir Bruce Keogh said: “We do know that about 50 per cent of PCTs have restricted access to cataract surgery, and we do know that the bulk of policies used by PCTs actually haven’t used the best evidence that’s available in order to ration that care.”

The Royal National Institute for Blind people (RNIB) has cited our RCT[2] in its collaborative report with the RCOphth ‘Don’t turn back the clock: Cataract surgery- the need for patient-centred care’, June 2011[k]. The RNIB is investigating the variation in cataract surgery across England and has done a FOI request to each PCT with regards to their commissioning policies on 2nd eye surgery. The RNIB Assistant Policy and Campaigns Officer (Eye Health) has indicated that the UoB research evidence would be used to ‘interact with commissioners and highlight evidence as to why their restrictive 2nd eye policy is harmful to patients’ and that ‘some PCTs have decided to review their policies in light of our [RNIB] concerns’. NHS Atlas of Variation in Healthcare (Nov 2010) discusses standardising cataract surgery. It mentions ‘added value of 2nd eye surgery’ and cites our RCT. Our RCT is cited first in The European Registry of Quality Outcomes for Cataract and Refractive Surgery (EUREQUO) project publication ‘Evidence-based guidelines for cataract surgery: Guidelines based on data in the European Registry of Quality Outcomes for Cataract and Refractive Surgery database’, 2012 [e]. The Technology Scoping Report No.8 from Healthcare Improvement Scotland (August 2012) cites our RCT.

In summary, UoB research has been instrumental in informing and changing cataract surgical policy to the visual and quality of life benefit of hundreds of thousands of older people with cataract in the UK and beyond. We demonstrated the visual and QoL benefits of 2nd eye cataract surgery
Impact case study (REF3b)

<table>
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<th>Sources to corroborate the impact</th>
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<td>[g] DH. Focus on Cataracts. NHS Institute for Innovation and Improvement publication 2006; <a href="http://www.institute.nhs.uk/quality_and_value/high_volume_care/ncataracts.html">http://www.institute.nhs.uk/quality_and_value/high_volume_care/ncataracts.html</a>. Policy encouraged high volume cataract surgery to meet population requirements for surgery and confirmed that 2nd eye surgery should be uncontroversially routine care when indicated.</td>
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<td>[h] The Royal College of Ophthalmologists Cataract Surgery Guidelines (current). 2010; <a href="http://www.rcophth.ac.uk/core/core_picker/download.asp?id=544&amp;filetitle=Cataract+Surgey+Guidelines+2010">http://www.rcophth.ac.uk/core/core_picker/download.asp?id=544&amp;filetitle=Cataract+Surgey+Guidelines+2010</a>. Royal College guideline comments on population requirements (P6) recommended that people with symptomatic 1st and 2nd eye cataracts should be considered for surgery (P10,14,17,60) and cites UoB research (P8,15,65).</td>
</tr>
<tr>
<td>[i] American Academy of Ophthalmology’s Preferred Practice Pattern: Cataract in the Adult Eye. 2011; <a href="http://one.aao.org/CE/PracticeGuidelines/PPP.aspx?sid=a3043761-ec14-40a0-bb84-d353240d211e">http://one.aao.org/CE/PracticeGuidelines/PPP.aspx?sid=a3043761-ec14-40a0-bb84-d353240d211e</a>. US guideline recommended that people with symptomatic 1st and 2nd eye cataracts should be considered for surgery (P40) and cites UoB research (Ref 769).</td>
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# Impact case study (REF3b)

**Institution:** University of Sheffield  
**Unit of Assessment:** 2 - Public Health, Health Services and Primary Care  
**Title of case study:** Identifying failing hospitals: a new measure implemented by the NHS

## 1. Summary of the impact

This case study describes a significant new index used to monitor death rates in hospitals. The Summary Hospital Mortality Index (SHMI) was developed as a direct result of research carried out at the School of Health and Related Research (ScHARR). This was implemented nationally in October 2011 and the SHMI is now the main mortality indicator used by the NHS. Following publication of the high profile Francis Inquiry on Mid Staffordshire in February 2013, set up to investigate excess mortality in the Trust, the Government has used the SHMI to identify and target 8 further hospitals for investigation.

## 2. Underpinning research

Around 60% of all deaths occur in hospital and preventing avoidable deaths is an essential objective for health services. Since 2001, the Department of Health (DoH) used the Hospital Standardised Mortality Ratio, developed by commercial company Dr Foster. In 2010 the DoH decided it needed its own index and after a competitive tendering round, the University of Sheffield was commissioned to develop this. During the early part of 2011 the ScHARR team had regular meetings with the DoH in London and Sheffield as they worked on the project.

The research team was led by Mike Campbell (Professor of Medical Statistics) and all the team were based in ScHARR.

The research question was this: When explainable factors such as the age of the patient and method of admission are taken into account, is there unexplainable variation remaining between hospitals in mortality in hospital and 30 days after discharge?

The project was a major data processing and statistical exercise [R1]. It led to two papers in mainstream journals [R2,R4] and an international speaking invitation [R3]. It involved linking hospital and national mortality data from 2005 to 2010 from the Office of National Statistics (92 million records). There were considerable logistical problems to be overcome in fitting statistical models to such large data sets. The analysis used data from all deaths both in hospital and within 30 days of discharge. The 30 day post discharge period is to try and discourage hospitals from discharging patients who are likely to die within 30 days so that the deaths no longer count in their mortality figures. The key insight was that certain hospitals had mortality rates well above that which could be accounted for by chance, even when known risk factors were accounted for.

The key innovations are:

- The SHMI uses all deaths in hospital and deaths 30 days after discharge rather than only 80% of in-hospital deaths used by the Dr Foster model
- It is robust to practices such as coding patients as ‘palliative care’
- The limits are calculated using a ‘random effects’ model
- It is updated every three months, but with the weights calculated from 12 months of data, which means that seasonality is not a problem.
- The weights are available on the NHS Information Centre Website and so are open to scrutiny (unlike other competing models).
Impact case study (REF3b)

Our report’s specification was accepted by the DoH and was implemented nationally in October 2011.

3. References to the research

URL: http://sheffield.ac.uk/scharr/sections/dts/statistics


4. Details of the impact

The impact of this research is on national policy and public services

Pathway to impact

A report was produced in April 2011 [R1] and this was presented to the DoH Hospital Mortality committee chaired by Sir Bruce Keogh (Medical Director of the NHS) in May 2011. The key insights were that a relatively simple combination of age, sex, diagnosis on admission, method of admission (emergency or elective) and comorbidity score produced a useful and stable model which could be used to calculate how many deaths would have been expected in a hospital, given its particular case-mix. Using random effects model and funnel plots to identify unexplained variation, limits were drawn for the ratio of the observed to expected number of deaths, and above or below these limits a hospital was deemed to be an ‘outlier’. A number of hospitals were thus identified.

We recommended that mortality indicators should not be used on their own at one point in time, but rather over a period of time, and with due consideration of the changes to both the observed mortality and the expected mortality. We also advised that the index should be used in conjunction with other indicators, and that avoidable mortality was only a small proportion of the total deaths in a hospital.

The hospital morbidity indicator developed by Sheffield has been rolled out across the NHS. Our SHMI enables robust and transparent monitoring of hospital performance and enables early identification of possibly failing hospitals so that investigations and remedial action can be taken. In the long run patients will benefit from better hospital care.

ScHARR’s contribution is highlighted by the following statement on the NHS Information Centre website:
The Department of Health are committed to implementing the SHMI as the single hospital-level indicator for the NHS in England and have commissioned the Health and Social Care Information Centre to produce it. This decision was based on the recommendations from the national review of the Hospital Standardised Mortality Ratios (HSMR) with independent statistical modelling work commissioned by the Department of Health and carried out by the School of Health and Related Research (ScHARR) at the University of Sheffield. (http://www.hscic.gov.uk/SHMI.)

Dissemination
The SHMI was disseminated via a major conference in London in May 2012: http://www.healthcareconferencesuk.co.uk/reducing-measuring-avoidable-mortality attended by managers and clinicians from Hospital Trusts across England and by the Department of Health.

Beneficiaries:
DoH – accurate and independent monitoring
The Francis Report on the Mid-Staffordshire Hospital Trust in Feb 2013 showed that excess mortality for the Trust was associated with poor care. Subsequently 14 hospitals (many of which were also identified in our report of 2011) have been identified by the Department of Health as having unacceptably high mortality, over two years using the Sheffield SHMI, amongst other measures. The consequence of this is that the Care Quality Commission has sent teams in to investigate the care of patients at these hospitals and this has been reported in the Keogh report (2013) which will ultimately impact on staff, patients and hospital systems with the aim of improving patient outcomes.

NHS Trusts – can verify their results from published weightings
Previous hospital mortality indicators have been strongly criticised because of a lack of transparency as to how different case-mix variables were weighted. This has been solved because the weights for the SHMI are published on the NHS Information Centre’s website and can be downloaded and used by individual Trusts to verify their SHMI.

International beneficiaries – learning from our research
As authors of the SHMI we were in a unique position of being able to advise on its use. In 2012 we gave a presentation on the use of the SHMI to the Catalonian Department of Health in Barcelona. In April 2013 five representatives from The Netherlands National Statistics Group came see us to discuss comparisons with Dutch methods and we have also had a visitor from Milan to discuss Italian methods. This may lead to attempts to standardise these measure in parts of Europe.

5. Sources to corroborate the impact
S1. The SHMI and the HSMR were used in the Keogh report, to identify 14 ‘at risk’ hospitals

S2. The Francis Report into the mid Staffordshire Hospital Trust states (p.457) “There is now a consensus that significantly high HSMR/SHMI results should trigger a serious consideration of whether poor care is an explanation for them”

S3. Its development was widely reported, for example News Medical ‘University of Sheffield’s ScHARR team develops new index to measure hospital mortality rates’
S4. Medicalxpress 'New hospital mortality rate index to be used across UK'

S5. The fact that it has been used to identify failing hospitals was widely reported for example by the Daily Telegraph, which named eight hospitals identified by the SHMI as having high death rates.
   http://www.telegraph.co.uk/health/healthnews/9824260/Persistently-high-death-rates-at-eight-large-hospitals.html
Institution: University of Sheffield

Unit of Assessment: 2 - Public Health, Health Services and Primary Care

Title of case study: Introduction of a national colorectal cancer screening programme

1. Summary of the impact

Research undertaken at the University of Sheffield in 2005 to evaluate the cost-effectiveness and resource implications of potential screening programmes for colorectal cancer informed the decision to launch a national colorectal cancer screening programme in England. Upon their 60th/61st birthday, all individuals in England are now invited to participate in biennial bowel cancer screening using faecal occult blood testing (FOBT) until the age of 74. The programme identifies individuals with less advanced colorectal cancer and there is emerging evidence that it has led to an overall improvement in prognosis. Projections suggest that the programme is on course to reduce colorectal cancer deaths by 16%.

Amongst others, follow-on research includes an options appraisal of screening in Ireland that has informed national policy and a re-appraisal of colorectal screening options following publication of a pivotal trial of flexible sigmoidoscopy (FSIG) screening for NHS Cancer Screening Programmes.

2. Underpinning research

Colorectal (bowel) cancer is the third most common cancer with more than 41,000 people diagnosed with the disease each year in the UK. Approximately 16,000 people die of colorectal cancer each year. Evidence suggests that colorectal cancer screening may reduce incidence, morbidity and mortality associated with the disease.

Between 2004 and 2005, the School of Health and Related Research (ScHARR) at the University of Sheffield undertook a Colorectal Cancer Screening Options Appraisal on behalf of NHS Cancer Screening Programmes and the Department of Health. The work was undertaken by a team led by Dr Paul Tappenden (Reader in Health Economic Modelling); other team members included Hannah Sakai (Research Assistant, left 2004), Simon Eggington (Research Associate, left 2006) and Jim Chilcott (Professor of Health Economics and Decision Modelling).

The objective of the project was to evaluate the cost-effectiveness and resource implications of potential screening programmes for colorectal cancer to inform decisions about whether the NHS should adopt a bowel cancer screening programme and, if so, which test modalities, population and frequency should form the basis of the programme.

The research study included a review of existing randomised trials of alternative screening modalities, a model-based health economic evaluation and an analysis of resource implications for alternative options.

The team developed a health economic model to simulate the life experience of a hypothetical cohort of individuals without polyps or cancer through to the development of adenomas and malignant carcinoma and subsequent death in the general population of England. The costs, health effects and resource impact of five screening options were evaluated using this model: (a) biennial FOBT for individuals aged 50–69; (b) biennial FOBT for individuals aged 60–69; (c) once-only FSIG for individuals aged 55; (d) once-only FSIG for individuals aged 60; and (e) once-only FSIG for individuals aged 60, followed by biennial FOBT for individuals aged 61–70.
Each option was compared in terms of expected health benefits (survival/quality-adjusted life years [QALYs] gained), costs and resource implications. The economic analysis suggested that screening using FSIG with or without FOBT was likely to produce cost-savings and additional health benefits compared against no screening. However, the accompanying resource use analysis suggested that the considerable endoscopy capacity requirements associated with the FSIG screening options may make them infeasible given capacity constraints.

The original work was presented by Dr Tappenden to the English Bowel Cancer Working Party and was later discussed in Parliament. The study was published as a peer-reviewed report which is hosted on the NHS Cancer Screening Programmes website. A series of subsequent peer-reviewed publications followed directly from this modelling work and from subsequent research projects initiated by the original options appraisal.

Following the options appraisal, several further related research projects have been undertaken by ScHARR using the bowel cancer screening model including:

- Department of Health – an assessment of early awareness campaigns for colorectal cancer
- Department of Health – re-appraisal of colorectal screening options following publication of the FSIG trial
- HIQA – an appraisal of colorectal cancer screening options in Ireland.

### 3. References to the research


### 4. Details of the impact

The research study was used to inform a policy decision to implement a national bowel cancer screening programme which in turn has led to improvements in the prognosis of patients with diagnosed bowel cancer (S6,S7). Whilst there is not yet direct evidence of patient benefit from the programme itself, other evidence suggests that earlier diagnosis is associated with improved survival (S7) and improved health-related quality of life (S8). Analyses from RCTs and the English bowel cancer screening programme indicate that screening results in earlier diagnosis, thus patient benefit is fully expected.

This research study provided the key evidence which was reviewed by the English Bowel Cancer Advisory Group in 2004 in formulating recommendations to the Secretary of State for Health for colorectal cancer screening in England (this can be corroborated by Professor Sir Mike Richards – See coversheet). The commissioning of this options appraisal was cited in Parliament in 2004 (S1) and its relationship to the policy decision is cited in advice to the NHS on bowel cancer screening.
The work was presented by Dr Tappenden to the English Bowel Cancer Advisory Group in 2004. In 2005, the Secretary of State for Health announced that a national screening programme involving FOBT for individuals aged 60-69 would be launched in England. The NHS Bowel Cancer Screening Programme launched an FOBT-based programme in 2006 and this is now fully rolled out across England.

This policy decision resulted in a substantial service change for the NHS requiring the establishment of whole new system infrastructures (screening hubs, laboratory testing etc.) and their integration with existing services for endoscopy. The screening programme is available to all men and women in England from the date of their 60th or 61st birthday. An extension has recently been rolled out to include individuals up to the age of 74 years of age. The government is also planning to include an additional screening FSIG for individuals aged 55 years of age (S3). This policy option was re-evaluated retrospectively in a Department of Health funded project using the original ScHARR options appraisal model.

The introduction of a national screening programme has also changed the agenda for health intervention in this area, with a new focus on increasing participation in screening and promoting the earlier diagnosis of the disease.

At this time, it is difficult to assess the direct health impact of introducing bowel cancer screening in England as cancer incidence and mortality fluctuate year on year and other changes to the health system may account for some additional benefits. There is also a time lag in the availability of national mortality data from the Office for National Statistics.

There is, however, an evident trend towards increased incidence (~13% in the UK between 2006 and 2008) since the rollout of the programme; this reflects additional cases of preclinical cancer that would otherwise have been likely to have been diagnosed later, potentially at a more advanced stage. Research evidence from randomised controlled trials has shown that FOBT can reduce colorectal cancer mortality (approximately 16%) and that FSIG can reduce both incidence and mortality (23% and 31% respectively). Statistics from Cancer Research UK indicate that the mortality rate for bowel cancer in the period 2008-2010 was 14% lower than the rate in the period 1991-1999. It is likely that a proportion of this benefit is attributable to the introduction of the screening programme (http://www.cancerresearchuk.org/cancer-info/cancerstats/types/bowel/incidence/uk-bowel-cancer-incidence-statistics). The available evidence (see Section 5) indicates that the screening programme has had a positive impact upon the prognosis of patients with screen-detected colorectal cancer and a mortality reduction of approximately 16% is estimated on the basis of this evidence; this suggests around 2,500 colorectal cancer deaths are expected to be avoided each year (S5).

5. Sources to corroborate the impact

The benefits of colorectal cancer screening in reducing mortality have been demonstrated in randomised controlled trials, meta-analyses and pilot studies. There is now emerging evidence that the national bowel cancer screening programme is having a positive impact upon patient prognosis.

References relating to policy decisions:


S2. Direct link between options appraisal and policy decision discussed in NBCSP Bowel Cancer Advice to the NHS document – available from:
Impact case study (REF3b)

S3. Extension of screening programme to include flexible sigmoidoscopy. Parliamentary minutes –
http://www.publications.parliament.uk/pa/cm201011/cmhansrd/cm111123/debtext/111123-0004.htm

Press releases relating to benefit impact for patients and predicted economic benefits:

S5. English Bowel Cancer Screening Programme. “The NHSBCSP in England is on track to cut bowel cancer deaths by 16 per cent.” 2011. Available from:
www.cancerscreening.nhs.uk/bowel/news/010.html

Peer reviewed publications relating to benefit impact & prognosis for patients:
www.ncbi.nlm.nih.gov/pmc/articles/PMC3437782/

www.nature.com/bjc/journal/v107/n5/abs/bjc2012331a.html


Other statistics relating to impact:
S9. Cancer Research UK lists sources of data: Between 2006 and 2008, bowel cancer European age-standardised incidence rates for people aged 60-69 increased by more than 12% in the UK (http://www.ons.gov.uk/ons/search)
1. Summary of the impact
The University of Liverpool (UoL) team at the WHO Collaborating Centre for Policy Research on Social Determinants of Health (Liverpool WHO CC) has made a leading, internationally recognised contribution to addressing the adverse health consequences of household air pollution, a problem responsible for an estimated 4 million premature deaths among 2.8 billion of the world’s poorest people. Impacts include (i) generating global awareness of a hitherto poorly recognised problem through defining the disease burden, (ii) leading development of new WHO Guidelines on the issue, (iii) providing key evidence for intervention and policy studies in low-income countries and (iv) helping to formulate strategy for global initiatives to address the problem.

2. Underpinning research
The Liverpool WHO CC team has made a leading contribution to quantifying the Global Burden of Disease (GBD) from Household Air Pollution (HAP), with Nigel Bruce (Professor in Public Health, 1993 – present) co-chairing the HAP expert group for the GBD 2010 study, and Daniel Pope (Snr Lecturer; 2003 – present) leading systematic reviews assisted by Debbi Stanistreet (Snr Lecturer; 1997 – present) and Mukesh Dherani (Senior Research Fellow; 2006 – present). They estimated that 2.8 billion people globally rely on traditional solid fuels (wood, dung, coal, etc) and simple stoves for cooking [1] leading to levels of HAP (particulate matter - PM2.5) in homes some 20 to 40 times the WHO ‘safe’ air quality guideline level in 2010; this resulted in 4.3% of the GBD in 2010, with 4 million premature deaths from childhood pneumonia and a range of adult diseases [2].

Core to this work have been systematic reviews and the RESPIRE trial co-led by Universities of Liverpool and Berkeley [3]. RESPIRE is the first ever Randomised Controlled Trial (RCT) of low-cost technology to reduce air pollution in human populations. It tested the impact of reducing HAP exposure on child pneumonia, and showed that while a good quality chimney stove could reduce exposure (by about 50%) and achieve some reduction in pneumonia risk, exposure reduction to levels much closer to WHO guideline levels are needed to prevent most pneumonia cases caused by HAP. Building on the experience with RESPIRE, Liverpool WHO CC are co-investigators on a new RCT evaluating the impact of an improved combustion stove on childhood pneumonia in Malawi (CAPS – MRC JGHT grant).

The systematic reviews conducted by Liverpool WHO CC have provided intervention effect estimates for several important preventive strategies and tools, including the Global Action Plan for the Prevention and Control of Pneumonia & Diarrhoea (GAPPD) and the Lives-Saved Tool [4] which is used to prioritise interventions for child and maternal survival, work undertaken by UoL jointly with the WHO, UNICEF and the Child Health Epidemiology Reference Group (CHERG) since 2009.

Liverpool WHO CC has led research on policy for securing effective and lasting uptake of improved household energy interventions at scale through a comprehensive mixed-methods systematic review [5]. Carried out under competitive tender for UK-DFID and incorporated in the WHO Guidelines (section 4), the review identified key factors across domains spanning household/community characteristics and preferences, to national and international policy on energy supply, finance and regulation. The UoL is currently working with DFID, WHO, UN Global Alliance of Clean Cookstoves (GACC) and other partners to develop a tool to support implementation of these findings in LMICs.

Research by the Liverpool WHO CC modelling the benefits of a 10-year programme to shift Indian solid fuel-using homes to low-emission alternatives [6] found that substantial health (deaths, Disability Adjusted Life Years (DALYs) and climate change (CO2-equivalent) co-benefits can be
obtained through household energy improvements.

3. References to the research

Key publications

The following publications report research outputs of work that has been ongoing throughout the period of research. The work itself was used prior to publication to underpin the outputs outlined in section 4.


Key research grants


2003-2006. World Health Organisation (Geneva), additional support for Guatemala study to include investigation of RSV infection in children, and respiratory health of women, US$71,000, PI N Bruce.


Impact case study (REF3b)

2011-2012. **Department for International Development.** Systematic review of enabling or limiting factors influencing the large scale uptake by households of cleaner and more efficient household energy technologies, covering cleaner fuel and improved solid fuel cookstoves, £40,150.

2012-2017. **UK Medical Research Council.** An advanced cookstove intervention to prevent pneumonia in children under 5 years old in Malawi: a cluster randomised controlled trial, £2,678,588, PI Dr Kevin Mortimer (Liverpool School of Tropical Medicine), Co-Is N Bruce and D Pope.

4. Details of the impact

In 1993, the health, development and climate consequences of household energy in Lower and Middle Income Countries (LMICs) were barely recognised outside a small number of specialist agencies. The UoL’s research has shown that HAP is the 4th most important risk factor globally leading to 4m premature deaths and 11m DALYs. The research has been significant in generating international awareness and mobilising action. The Liverpool WHO CC has had a central advisory role in many initiatives including the (i) United Nations Foundation Global Alliance for Clean Cookstoves (GACC) – a public-private partnership aiming to secure the health, economic, climate and related benefits of clean cooking, and (ii) the United Nations initiative on Sustainable Energy for All (SE4All). Bruce co-chaired the GACC health working group which informed the strategic plan (Igniting Change, 2011 [8]), Bruce and Pope led an NIH-sponsored workshop (May 2011) informing GACC research agenda, and have consulted on research funding allocation for GACC.

The work is influencing global household air pollution initiatives. For example, through secondment with the WHO Public Health and Environment Department (PHE) from 2009 to present, Bruce has contributed to the UN SE4All strategy, including the recently published tracking framework and work to strengthen data collection on household energy use through national surveys including the Demographic and Health Survey. He has also contributed to health impact assessment from climate change mitigation strategies through recently-established collaboration between WHO and the United Nations Environment Programme-led Climate and Clean Air Coalition (CCAC) which is focused on securing climate and health co-benefits of action on short-lived climate pollutants and which builds on UoL’s modelling approach. The Executive Director of UN GACC, stated in 2013 that “the University of Liverpool research led by Professor Bruce has spurred global efforts over the past 15 years to quantify and communicate the health burden from household air pollution, particularly in Sub-Saharan Africa and Latin America… it has certainly helped gain commitment for action at the highest levels and will support the development of the clean cookstoves and fuels markets” [10]. These actions are also leading to health improvements, lower costs for poor families and reducing carbon emissions.

Liverpool WHO CC systematic reviews provided estimates of risk for the GBD-2010 study, and intervention effect estimates for several important preventive strategies and tools. These include (i) the Global Action Plan for the Prevention and Control of Pneumonia & Diarrhoea (GAPPD) – a WHO/UNICEF initiative integrating evidence-based prevention and treatment measures for the two largest causes of death of children under 5 years, and (ii) the Lives-Saved Tool which is used to prioritise interventions for child and maternal survival and which the UoL has been working on with the Child Health Epidemiology Reference Group (CHERG) since 2009. Bruce served as a key adviser on HAP for both GAPPD and CHERG, and recently served on the expert committee advising the Bill and Melinda Gates Foundation on financing strategy for supporting work on HAP and child pneumonia. The Director of Maternal and Child Health and Development at WHO Geneva, stated in 2013 that “UoL-led research has been instrumental in developing the environmental component of our integrated strategy for the prevention and control of pneumonia, which remains the single largest global cause of under-5 mortality” [11].

Bruce was a WHO steering group member of WHO’s indoor air quality guidelines in 2010 [13]. The Liverpool WHO CC is coordinating new WHO Guidelines on indoor air quality, designed specifically to address the scientific and implementation issues for household fuel combustion with a focus on LMICs. They are in an advanced state of development (publication expected early 2014). Bruce,
Pope, Stanistreet and Dherani are on the expert Guidelines Development Group (GDG). The GDG is responsible for defining the guidelines scope, evidence review including methodological quality, and drafting recommendations. The guidelines incorporate much of the UoL’s systematic review and primary research (including RESPIRE). The Director of the Department of Public Health and Environment, WHO stated in 2013 “The University of Liverpool research led by Professor Bruce has, over a number of years, made an important and influential contribution to WHO strategy on energy, air pollution health and climate. This evidence, together with direct technical inputs from the Liverpool University team, have provided much of the core evidence base for new indoor air quality guidelines for household fuel combustion, reports and other collaborative work which is supporting WHO’s contribution to implementing effective policy for this issue.” [12] These new WHO guidelines will be used by governments and other implementing agencies to develop policy, standards and regulation affecting the lives and health of almost 3 billion people, and make an important contribution to preventing up to 4 million premature deaths annually.

5. Sources to corroborate the impact

Each source listed below provides evidence for the corresponding numbered claim made in section 4 (details of the impact).


Research evidence used as basis for inclusion of reducing household air pollution as an intervention for preventing pneumonia, and includes reports on global solid fuel use and the RESPIRE study.


The main strategy document for the UN Foundation Alliance, which incorporates the outputs of the working groups, including that for health informed by the UoL research.


The initial stage of development of international standards has been an IWA. For health risks, this uses emissions rate tiers based on exposure-response evidence, derived mainly from the RESPIRE study. An ISO technical committee has recently been formed to develop full ISO standards.


Institution: the University of Manchester

Unit of Assessment: 2

Title of case study: Assessment of patient experience of NHS primary care services

1. Summary of the impact

Improving patient experience of health services is a policy priority worldwide. The University of Manchester (UoM) has conducted research on patient experience since 1995, leading to the development of a series of validated measures for assessing patient experience of quality of care in primary care, including access to care and the degree to which services are patient-centred. Our measures have been in routine use in the NHS since 2004, sent to samples of several million patients. The data have been used to provide incentives for the highest quality practices, and to inform policy makers about current care throughout the UK.

2. Underpinning research

See numbered references in section 3.

The impact case is based on research that took place at the UoM from 2000-2011. The research was conducted by the National Primary Care Research and Development Centre (NPCRDC), a Department of Health-funded policy research unit at the UoM. The key researchers were:

- Peter Bower (Professor of Health Services Research, 1995-date)
- Stephen Campbell (Professor of Primary Care Research, 1993-date)
- Sudeh Cheraghi-Sohi (Research Fellow, 2004-date)
- Nicola Mead (Research Fellow, 1999-2010)
- David Reeves (Reader in Statistics, 2001-date)
- Martin Roland (Professor of General Practice, 1992-2009)

A key aim of NPCRDC was to develop methods to assess and improve quality of care for patients in primary health care settings. Quality of health care for individual patients can be judged in terms of ready access to care, and the effectiveness of care once it is accessed. Although scientific evidence and clinical consensus are both important methods of determining quality, there is increasing agreement that a comprehensive assessment of quality needs consideration of the views and experience of patients.

However, reliable, valid and useable assessments of the patient experience have not always been available, which has meant that the patient voice has been largely missing from the quality improvement agenda.

Our work involved multidisciplinary research on theory, in-depth qualitative work with patients, and large-scale quantitative evaluations. Key contributions are detailed below:

- We defined the core dimensions of patient-centredness (1).
- We investigated how patients make judgments about quality of care, assessing the dimensions they can judge effectively, and those (such as clinical quality of care) that may be better assessed by other quality improvement methods (2). We also considered the relative priority that patients place on different aspects of care (3) to help decision-makers
respond more effectively.

- We designed a series of measures to provide reliable and valid assessments of patient experience of care. We progressively tested and refined these measures, through ongoing empirical and psychometric validation work, ending in the development of the General Practice Patient Survey (GPPS) (4).

- We used our measures in a series of high impact research studies exploring quality of care in primary care and the determinants of quality. This approach enabled us to better inform policy makers about current deficits in care as experienced by patients. For example, we demonstrated the mismatch between the expectations of patients and policy makers for standards of service in general practice (5). Following the introduction of a world-leading pay-for-performance scheme in the UK (the Quality and Outcomes Framework, or QoF), and consequent improvements in the quality of clinical care, we also demonstrated that patient experience of continuity of care was worsening over time (6).

- We worked closely with policy makers at the Department of Health to develop methods to use the products of this research programme within new incentive systems for practitioners to drive improvements in quality of care.

3. References to the research


4. Details of the impact

See numbered corroborating sources (S) in section 5.

Traditionally, assessment of quality of care in health services has been limited to professional perspectives, with little central collection of data and minimal consideration of patient perspectives on service delivery. We ensured that patients were at the heart of quality improvement activities,
through the development, validation and implementation of measures of patient experience, and their adoption and collection on a national scale. Our impact has been to raise the profile of patient experience and link it to quality improvement activity across the UK.

_Raising the profile of patient experience_

Policy documents have highlighted the critical role of information on patient experience. The White Paper ‘Equity and excellence: Liberating the NHS’ (S1) sought to ‘encourage more widespread use of patient experience surveys and real-time feedback’ to inform choice and drive quality improvement.

The NHS centralised the use of standardised measures in the assessment of patient experience in 2007-2008, sending our GPPS measure to samples of patients in a rolling programme of quality measurement. This has resulted in GPPS being completed by millions of patients, with their views assessed and analysed on a large scale and a sustained basis over time (S2).

Collection of data on patient experience is not simply for the benefit of managers and policy makers. All NHS patients can now access information on GPPS scores of their local general practices from a website (www.gp-patient.co.uk/faq/accessing/), to help them assess the quality of care and make choices about local services.

_Linking patient experience to quality improvement_

Much research has shown how simple provision of information is insufficient for securing change. To ensure appropriate impact from patient experience measures, in 2004, use of one of our earlier patient experience measures (GPAQ) was linked to payments in the early version of the Quality and Outcomes Framework (QOF).

The QOF represents a unique programme for quality improvement and the results have been of interest worldwide. Early in the development of the QOF, general practitioners were incentivised to conduct surveys on their practice population, and to respond to these surveys with appropriate quality improvement activities to enhance patient experience and ensure that their services were responsive to the needs of their local population. Between 2004 and 2009, the vast majority of practices (>90%) undertook such activities.

To support this activity and enhance value for money, we disseminated written guidance for practitioners to interpret the GPAQ data and use it to target these quality improvement activities at a local level (S3). Twenty three thousand copies of the guidance were disseminated, to stimulate and guide quality improvement across the United Kingdom.

Although initial incentives linked to patient experience were largely for the use of surveys, later versions of the QOF significantly raised the level of achievement required. In 2009, £68 million pounds worth of general practitioners’ pay were linked to actual patient reports of their ability to gain ready access to care, such as getting an urgent appointment and being able to book ahead (S1). These targets were harder to meet, with around 70% of practices achieving maximum performance on these more stringent targets between 2010 and 2012.

The national regulator, the Care Quality Commission (CQC) used patient experience scores as
Impact case study (REF3b)

part of their performance assessment of Primary Care Trusts undertaken by the predecessor of the CQC (the Health Care Commission). Current CQC documentation includes patient experience surveys as an indicator of standards to be expected of all GP practices (S4,S5).

Department of Health reports list the other activities it has conducted in response to the data collected by patient surveys, including the GPPS (S6,S7). This has ranged from public dissemination to encourage responsiveness of patient experience among Primary Care Trusts, review of the needs of marginalised groups such as ethnic minorities, and establishment of teams to respond to practices and PCTs with the lowest scores.

5. Sources to corroborate the impact


   DOI: 10.1136/bmj.b3851


S5. Care Quality Commission (2013). What standards you have a right to expect from the regulation of your GP practice.


S7. Data on the use of patient experience surveys by general practices and associated incentives within each year the Quality and Outcomes Framework can be found
   http://gof.hscic.gov.uk/index.asp
Institution: Leeds Metropolitan University

Unit of Assessment: 2A Public Health, Health Services & Primary Care

Title of case study: Developing evidence based practice on lay health roles

1. Summary of the impact (indicative maximum 100 words)
The ‘People in Public Health’ (PIPH) study and related research on health trainers, health champions and volunteers has brought together evidence on rationales for lay engagement, effectiveness and models of support. Dissemination activities, supported by a Department of Health grant, have achieved reach into various policy arenas and national networks. At the same time there is evidence of research utilisation in public health practice. One of the impacts has been the establishment of ‘Active Citizens for Health’, a national network of partner organisations to bring together evidence and learning that has been hosted by Leeds Metropolitan University.

2. Underpinning research (indicative maximum 500 words)
Since its inception, the Centre for Health Promotion Research (CHPR) has been a leading centre for the theory and practice of health promotion. A focused programme of research on community participation and lay health workers was developed within the CHPR, initially through the work of one member of staff (J. South). Early work involved evaluations of innovative public health programmes, which later led to further partnerships, new research grants and transfer of knowledge to practice. Examples included:

- Development and evaluation of Bradford health trainers, one of the first health trainer pilots in England (2005-7).
- Evaluation of a community health apprentices project in Bradford (2007)

Publications resulting from this work explored various mechanisms to strengthen community-state relationships [1 & 2]. The strong links with practice and the growing base of community research led to the award of a NIHR SDO grant to examine lay roles in public health. The ‘People in Public Health’ study (2007-9) made a major contribution to understandings of lay health worker roles and the support processes required to initiate and sustain health programmes involving the public. The systematic scoping review led to new categorisations of roles, including definitions of lay status [4]. Three national expert hearings were held in June 2008, giving the university a leading role in this field [3]. An accessible report was later produced to highlight key issues for policy and practice and this was disseminated throughout different practice networks. Overall results identified key factors for the development of lay health worker programmes and volunteering activity. Research findings have been published in international journals and presented at various national and international conferences [4-5]. In 2010, in recognition of the significance of the research, the Department of Health (DH) awarded a grant for the ‘Production and dissemination of accessible research-based information to support better engagement with citizens to co-produce better health and well-being outcomes’.

Lay engagement in public health and the wider issue of volunteering in health feature prominently in UK policy. J. South was commissioned in 2009-10 to undertake a series of evidence reviews and thematic evaluations on a new community health champion model and, in 2011, was awarded a NIHR HS &DR grant to undertake a systematic review of peer-based interventions in prison settings. Further research includes an evaluation of volunteer-led walking for health groups commissioned by Natural England (2011) and an evaluation of the Department of Health’s new volunteering fund (2012-3). Staff at the CHPR (led by J.White) have made a major contribution to the development of a national evidence base for health trainers.

Over the past six years, public engagement activity has been strengthened as part of this research programme. Staff, (led by J.South), have pioneered new ways of public involvement, including use of deliberative methods, participatory workshops, and informal consultation methods [6]. The CHPR maintains strong links with local community organisations and in 2013 established a
Impact case study (REF3b)

Community Campus Partnerships initiative to promote knowledge exchange between professionals, researchers and community members.

3. References to the research (indicative maximum of six references)


Relevant grants awarded to J. South as Principal Investigator


4. Details of the impact (indicative maximum 750 words)
The NIHR ‘People in Public Health’ study provided a foundation to develop understanding around lay health worker roles and related programme support. This was a high profile study that involved extensive public engagement and the production of outputs for practitioners and policy makers. In 2007, the PIPH website was launched. A register of interest has over 150 individuals who receive information about the study. In 2009, an online searchable database was created on the website with the results of 224 reviewed publications [1]. A research briefing for practice (2010) was
A summary of the PIPH study was reported by the NHS Confederation’s Health Policy Digest reaching over 4,500 senior NHS managers [3]. Volunteering England highlighted the study in their January e-newsletter, reaching 1200 people and a feature article was published in their on-line newsletter in March 2011. The study findings also featured by LGID on their website and a news item appeared in their Healthy Communities bulletin in March 2011, reaching over 33,000 interested parties. The article ‘Harnessing people power’ was the lead article on cover of Primary Health Care -the RCN community health nursing journal and the Editor wrote “it’s time to take a look at what the government’s talk of a Big Society means for primary care nursing and public health... this article could not have been more timely” [4].

The CHPR have submitted evidence on lay health workers and volunteering to various enquiries and consultations. For example, in 2010, J. South took part in the Natural England and Local Government Information Unit national inquiry on Walking for Health and findings from PIPH were given prominence in the subsequent report [5:19]. A number of written submissions based on the research findings were also made to parliamentary groups and policy consultations, e.g. All Party Parliamentary Group on Primary Care & Public Health inquiry into NHS White Paper [6]. Meetings have been held with the Third Sector Partnership Team in the DH Policy & Strategy Directorate and with the Head of Patient Voice and Information, NHS Commissioning Board.

Research on community health champions and health trainers has achieved good reach into public health practice. Evidence reviews and thematic evaluations on community champions have been disseminated nationally through the champion network. Some indication of the reach is that the Community Health Champion Evidence Review has been downloaded 3356 times from Yorkshire & Humber Health Intelligence [7]. The community health champions approach was highlighted as a case study in the White Paper ‘Healthy lives, healthy People’ where it was noted that there was ‘a sound practical evidence base for the approach’ [p. 43]. J.White has led on the development of a national web resource for health trainers: ‘Health Trainers England’ [8]. Oral evidence on health trainers was submitted to House of Lords Science and Technology Sub-Committee on behaviour change [9]. In October, 2011 J.White gave expert testimony to the NICE Programme Development Group on ‘Obesity: working with local communities’.

5. Sources to corroborate the impact (indicative maximum of 10 references)
   1. People in Public Health website and databases http://www.leedsmet.ac.uk/health/piph/
   5. Heron, C. and Bradshaw, G. (2010) Walk this way: recognising the value in active health prevention. Local Government Information Unit, Natural England (p.19) A copy can be found: http://www.leedsmet.ac.uk/health/piph/documents/Walk%20This%20Way.pdf
   7. Community Health Champions - Evidence Review ‘Health Trainers England’: Yorkshire and Humber Health Intelligence. Available at:
Impact case study (REF3b)

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