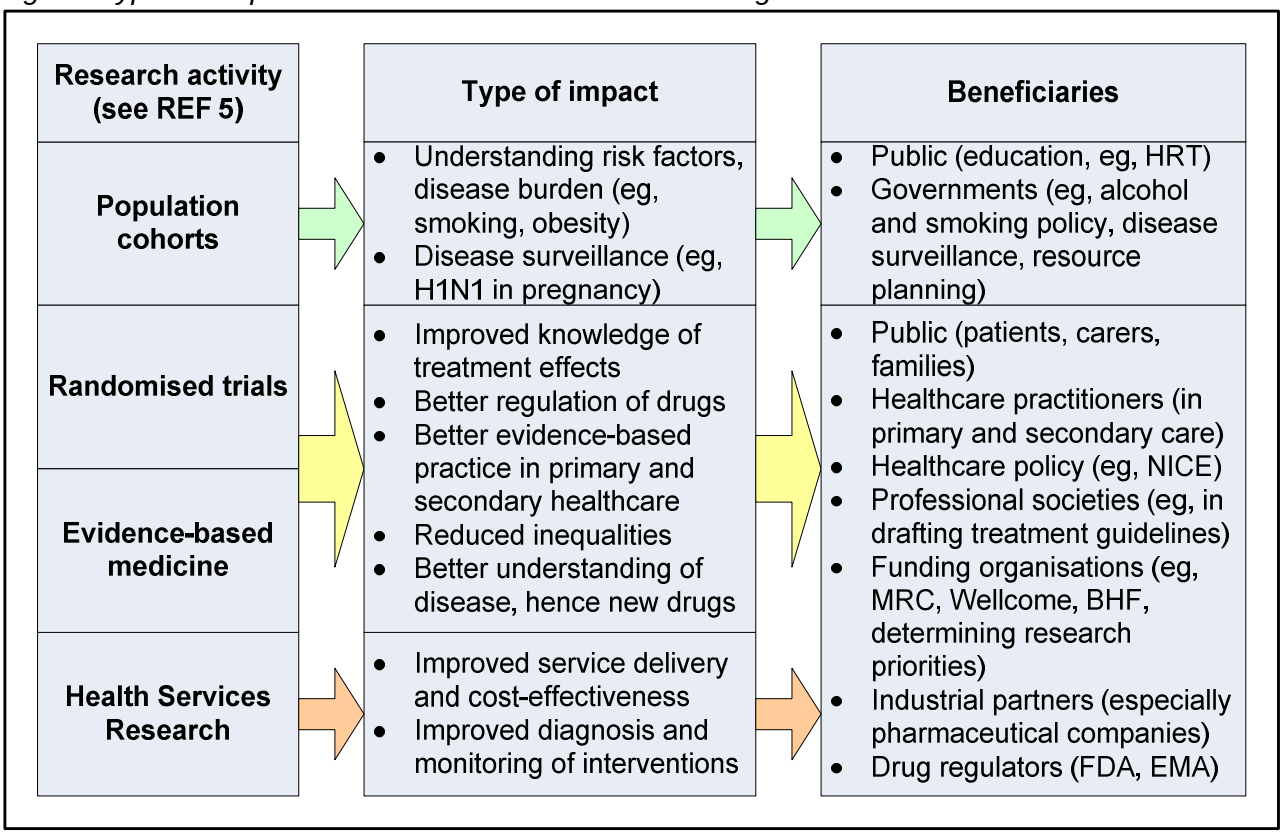
**Institution: University of Oxford**

**Unit of Assessment: 2**

## a. CONTEXT

Research in Oxford UoA2 is notable for the **exceptional breadth** of research activity in primary care and population health (population cohorts, randomised trials, evidence-synthesis, and health services research), geographical scope (local to international), range of healthcare settings (primary, secondary and intermediate care), and study size (from small numbers of patients to very large populations). This scale itself aids translation into a wide range of major impacts.

*Figure: Types of impact and beneficiaries for different categories of research undertaken in UoA2*




The main beneficiaries (right column, Figure), and some examples of the types of impact experienced by them (middle column, Figure), are as follows:

- **Public**: Population cohorts have changed international health guidance and policy, thereby providing public benefit, through data on disease risk factors or drug safety (eg, heart failure diagnosis in ECHOES cohort, HRT in the Million Women's Study, obesity in the Prospective Studies Collaboration).
- **Healthcare practitioners**: High-impact publications of randomised trials in primary care (eg, TAMSINH 2&3), secondary care (eg, SHARP in chronic kidney disease, ATLAS in breast cancer, CORONIS trial of caesarean surgical techniques) and meta-analyses (aspirin, statins, antihypertensives, NSAIDs, breast cancer treatments) or systematic reviews (eg, tobacco cessation) have all had direct impact on practice, encouraged through dissemination by their PIs who are international opinion-leaders in their fields.
- **Governments**: NDPH's epidemiological work led directly to a change in Russian government policy on alcohol pricing, and its work on tracking the epidemic of smoking-related diseases in large cohorts worldwide, coupled with work in primary care on Tobacco cessation policies, have led to changes in government tobacco policies internationally.
- **Healthcare policymakers and professional bodies**: Significant influences on health guidance and policy include NHS stroke policy (AF screening and management) and guideline updates in many areas (eg, hypertension, atrial fibrillation, statins, aspirin, tamoxifen, and heart failure diagnosis).
- **Funding organisations**: UoA2 staff have helped MRC, Wellcome, British Heart

Foundation in setting research policy (eg, methodology hubs and policy committees).

- **Industrial partners**: Collaborative work on statin trials (Astra Zeneca, Merck), on diagnostics with point-of-care assay development (Roche) and on monitors (Microlife, Omron), have led to investment in trials infrastructure, and provided economic benefits.
- **Drug regulators**: investigators have liaised closely with the EMA (eg, over niacin and diclofenac safety), FDA (eg, over LDL-lowering efficacy in renal patients), and have also influenced FDA thinking on risk-based approaches to monitoring and quality-by-design in trials, which will ultimately benefit patient care by improving research practices.

**b. APPROACH TO IMPACT**

UoA2's strategy for enhancing impact comprises 3 key elements: efficient design; engagement with stakeholders; and institutional support.

**Efficient design**

The process of ensuring impact begins with the **efficient and technology-driven design** of our research studies, since an unconvincing result is unlikely to have a lasting impact on patient care. Therefore, throughout the UoA2, particular care is taken to ensure that our studies (especially randomised trials) are sufficiently large to produce statistically convincing results that change international clinical practice. When designing new studies, a notable example of Oxford's pioneering approach is in NDPH (CTSU), where streamlined design of trials and technology-driven methods of reducing costs (eg, bespoke electronic data capture systems, central statistical monitoring) allow patients to be recruited at low cost and, as a result, allow its trials (eg, of lipid-modification) to be substantially larger and, therefore, their results more convincing. UoA2 also enhances the impact of its studies by **integrating health economic analyses into study design** in collaboration with NDPH's Health Economic Research Centre (HERC), which ensures that evidence on cost-effectiveness is an integral part of evidence generated by its studies. Furthermore, wherever possible, DPCHS (through the Centre for Evidence-based Medicine) and NDPH (in CTSU and CEU particularly), ensure that meta-analyses and systematic reviews of randomised trials or observational studies addressing important questions are used to summarise what is reliably known and, where appropriate, inform the design of new studies.

**Engagement with stakeholders**

Once results from our studies emerge, UoA2 deploys systematic methods to engage with the relevant stakeholders required to maximise impact. These include:

***General public***. UoA2 scientists actively engage in communicating research messages through various forms of media, with their Departments ensuring appropriate media training and working with the University and funders' press offices (eg, MRC, BHF, CR-UK & WT) to communicate effectively both nationally and internationally. Examples include:

- Recent outputs from DPCHS's Centre for Evidence Based Medicine achieved significant press coverage, such as dedicated C4 Dispatches and BBC Panorama programmes on medical device research, and several US broadcasters on the evidence for energy drinks.
- Reports from NDPH achieved massive international news coverage (print, television, and website) of CTSU's work on statins (eg, in primary prevention), on aspirin (also in primary prevention), breast cancer (effects of longer tamoxifen), and UK Biobank, as well as coverage of CEU's work on the effects of smoking in women in the Million Women's Study.
- Oxford University's Press Office supported UoA2 scientists by arranging press briefings at the Science Media Centre in London to facilitate effective press coverage, for example on the cardiovascular hazards of non-steroidal anti-inflammatory drugs.

As well as communicating directly with patients through print and online media, DPCHS's Institute for Health Experience (HEXI) promotes communication on health by collecting and synthesising patient experiences of illness, and publishing on the award-winning healthtalkonline website, the world's largest repository of health experience. The website has global reach and, though aimed at patients and carers, is used as a major teaching resource by practitioners in many settings.

***Healthcare practitioners***. Specific efforts are made to engage directly with healthcare practitioners by using forms of communication, and influencing sources of information, that they find convenient and accessible. For example, DPCHS has strong links with BMJ Evidence and

the Cochrane Collaboration, both of which provide web-based resources that include point-of-care decision support. Since healthcare practitioners keep up to date by attending medical educational events, UoA2 staff are active in lecturing at such events and seek to collaborate (eg, as in NDPH's trials and collaborative meta-analyses of statins and breast cancer treatments) with international opinion leaders who often feature as speakers: this strategy promotes effective dissemination of research findings as well as their rapid incorporation into guidelines.

***Healthcare organisations, professional bodies and funders***. Our strategy is to influence clinical practice by becoming actively involved in local, national and international organisations that impact on health care. Within the UK, there is senior representation on many bodies that promote or legislate for improved care on the basis of best evidence. Examples include:

- Strategic NHS links such as the formation of Oxford University Hospitals (OUH) NHS Trust and the strategic Partnership Board in 2011 to develop local healthcare and two-way appointments in the clinical school and hospital; joint clinical research facilities and clinical research networks in cancer, stroke, primary care and diabetes.
- Leadership roles in national organisations providing support infrastructure for research. Nationally, we lead the NIHR School for Primary Care Research (*Hobbs*), and chair or sit on many funding boards which include research uptake as a central objective (eg, *Fitzpatrick*, Director, NIHR HS&DR Programme; *Hobbs*, member Wellcome HICF Board).
- Influencing guidelines from professional bodies, nationally and internationally, both directly (eg, *Baigent*, member of European Society of Cardiology taskforces on antiplatelets and anticoagulants) and through collaboration with opinion leaders in our research.
- Engagement with regulators. NDPH (CTSU), for example, has influenced regulators by its advocacy of improved regulation of randomised trials (eg, NDPH's collaboration with US and Canadian researchers in the Sensible Guidelines group; *Landray's* leadership role in the US FDA-funded Clinical Trials Transformation Initiative).

***Industrial partnerships***: A key strategic objective is to influence public health through appropriate collaboration with industrial partners, whereby pharmaceutical companies provide funding for large trials of promising drugs, but the University of Oxford remains the sponsor and owns the resulting study data and controls their analysis. NDPH (CTSU) expertise is such that it is one of a handful of academic facilities in the world which pharmaceutical companies (eg, Merck) will entrust with designing and conducting phase 3 trials (eg, THRIVE trial of niacin/laropiprant; REVEAL trial of anacetrapib) intended for drug registration. Such collaboration enhances impact because input from academic groups improves trial design, ensuring that they are large and cost-effective, and their conduct by independent scientists enhances acceptance of study findings.

**Institutional support**

The third component of our strategy for ensuring research impact is harnessing support we receive from the University, for example, support during the current REF period includes:

- Support and strategic investment that resulted in major re-arrangements of both DPCHS and NDPH, which has enhanced the ability of both Departments to deliver impact: for example, by recruiting new senior staff; by facilitating synergies between research groups.
- Legal support and expertise on insurance for drug trials from the University's Research Services, which has allowed the negotiation of research contracts with collaborators in hundreds of hospitals worldwide during the REF period.
- University computing support, for example for storage of very large amounts of data.

**c. STRATEGY AND PLANS**

UoA2 will continue with its 3-component strategic approach to achieving impact into the next REF period, but there are new developments planned for each element:

***Efficient design***: A major forthcoming development that will enhance our impact on population health is the creation of a new **Big Data Institute** adjacent to NDPH on the Old Road Campus, with building scheduled to commence in the first quarter of 2014. This unique organisation will bring together the diverse range of skills (epidemiologic, bioinformatics, statistical, clinical, genetic) to generate massive data sets in which genomic, metabolomic, imaging and other

phenotypic data will be linked to patient outcome data derived from electronic patient records in large population cohorts and randomised trials. It is expected that the Institute will lead to new insights about the effects of treatments in particular types of patients (ie, stratified medicine), which will have a major impact on the care of patients with cancer, cardiovascular disease, neurodegenerative disease and other serious conditions.

***Engagement with stakeholders***: Major enhancements are planned to allow better communication with patients, healthcare practitioners and other stakeholders. In particular, NDPH is undertaking a comprehensive review of its communication strategy, and has appointed a new director of knowledge transfer (*Sprosen*). He will work with the current communications director (*Trehearne*) in developing a new strategy, which will include a new website (incorporating each of the components of the new Department) and the use of social media (eg, Twitter) to enhance the speed of communication and direct consumers of information (patients, healthcare personnel) to the new website. This new strategy will be assisted by several new communications personnel, who will maintain web content more effectively than is currently possible with available resources.

***Institutional support***: The support of the University is vital to sustaining impacts, and future developments exemplifying that support include a commitment that one third of the space in the new Big Data Institute will be committed to the NDPH, thereby allowing much-needed expansion of NDPH's bioinformatics capacity, and a refit of heritage Radcliffe Observatory Quarter space for DPCHS to house those staff not in the main facility at New Radcliffe House by 2015. There are also plans to capitalise on the opportunities for synergies created by the new NDPH: for example, the Health Service Research Unit has expertise in the use of PROMs which may be of value in trials conducted within both Departments: in future, there will be a more 'joined-up' process for identifying such synergies and ensuring that they are used to enhance impacts.

**d. RELATIONSHIP TO CASE STUDIES**

Our impact case studies illustrate each of the 3 elements of our approach to impact and have also been selected to show breadth of impact, from long term incremental evidence generation (adding impact within the REF period to decades of prior impact) to rapid impact addressing a major new health priority:

***Efficient design***: Each of the case studies illustrates our approach to efficient, streamlined design of trials (case studies on statins, magnesium, antiplatelet therapy, antivirals) and cohort studies (case studies on hormonal factors and tobacco), and our emphasis on collating all of the available evidence in meta-analyses (case studies on statins, antiplatelet therapy, and tobacco). For example, several of our large trials of statin-based therapy (Heart Protection Study, SHARP) described in the case study on statins provided clear results because they were unusually large and, hence, able to determine the efficacy and safety of such treatment more reliably than previous, much smaller, trials. The clarity of those results led to wide consensus on their interpretation and, hence, enhanced their impact on public health.

***Engagement with stakeholders***: The case studies provide several examples of our success with enhancing impacts through various forms of engagement. These include: engaging the public (eg, wide press coverage for our work on statins, antiplatelet therapy, HRT, influenza and smoking); healthcare practitioners, including opinion leaders (underpinning work in all case studies is highly cited and incorporated into guidelines); healthcare organisations (eg, NICE guidelines cite work presented in our case studies on statins, antiplatelet therapy, HRT, smoking, influenza and magnesium); and our partnerships with industry (eg, trials in the case study on statins).

***Institutional support***: Achieving impacts during the current REF period would not have been possible without the extensive support for UoA2's work from the University of Oxford. Examples include the support from the University's Research Services that facilitated the negotiation of around 400 contracts in the SHARP trial of statin-based treatment in chronic kidney disease (in the statin case study). Similar support has been provided for each of the major trials that have been conducted by UoA2, involving expertise in negotiating nationally and internationally.