

Institution: University of Leicester

Unit of assessment: 2 Public Health, Health Services and Primary Care

a. Overview

The University of Leicester is focused on delivering its research strategy through fully developed institutional structures, processes and facilities, with power devolved to research leads. The **College of Medicine, Biological Sciences & Psychology** was one of four Colleges of the University established following a major reorganisation in 2009, and has effected a step change in the integration and strengthening of our health research. The College has 11 Departments, which act as budget centres that deliver teaching and provide personnel management. Our research, meanwhile, is structured into **nine cross-disciplinary Themes**, with membership unrestricted by Department. The Themes, reflected in our submissions to Main Panel A, are the key units around which our research is organised, supported and nurtured. The **Population Science Theme** and **Diabetes & Metabolic Medicine Theme** form the core of this submission to UoA2. Together, the two Themes comprise six linked Research Groups working across the translational spectrum (see below), mainly hosted by the Department of Health Sciences and the Department of Genetics.

Our organisational structures and processes are designed to optimise development of our research, and have underpinned outstanding success. Over the course of the assessment period, we have been awarded over £32m in external grant income from diverse sources, including two successive Collaborations for Leadership in Applied Health Research and Care (CLAHRC), the first led by the Population Science Theme and the second by the Diabetes & Metabolic Medicine Theme, and involvement in Leicester's Cardiovascular Biomedical Research Unit. The outputs of our research are published in high-impact international journals, with many also demonstrating high social media impact scores. Realisation of our vision of research excellence has led to:

- The creation of an organisational structure that supports both established areas of expertise and new strategic priorities, while encouraging synergy and inter-disciplinarity within and beyond the Themes;
- A meritocratic and inclusive research culture that nurtures and rewards the contribution of all staff and research students, as reflected in the recent award of an Athena Swan Silver Award to the Department of Health Sciences;
- Growing research income focused on identified strengths—applied healthcare research, epidemiology, methodological innovation—and emergent fields of study;
- Major contributions by our staff to the wider research effort, and honours and distinctions for several staff members.

b. Research strategy

The core of the College's strategy 2008-13 has been **convergence, coordination and integration** of our activities into the nine Themes. This reorganisation, completed in 2009, has enabled targeted investments and major funding initiatives to support our established strengths and nurture new developments. This submission is made up of the Population Science Theme (led by Professor Martin) and the Diabetes & Metabolic Medicine Theme (led by Professors Khunti and Davies). Since their establishment, these Themes have been active in coordinating activity, developing joint strategy, and providing administrative support to their Research Groups. This adds value to all research activities, facilitates synergistic relationships, and ensures Groups are optimally positioned to take advantage of new opportunities. The result has been **growth in strategically important areas**, some remarkable **research successes**, and **international influence**, underpinned by systems that engage, support and develop researchers at all levels.

The **Research Groups** that constitute the Population Science and Diabetes & Metabolic Medicine Themes are:

Biostatistics (Abrams, Bujkiewicz, Cooper, Gillies, Gray, Jones, Lambert, Sutton): this Group pursues and extends high-quality applied and methodological research in areas including epidemiology, clinical trials and health technology assessment. Principal research foci include development of methods for meta-analysis and evidence synthesis, use of Bayesian methods in health technology assessment, and development of statistical aspects of relative survival methods, health-economic analysis and biomarker data. The Group includes five professors, three

lecturers, five research staff and seven doctoral candidates.

- *Highlight:* An MRC-funded study generated important methodological developments for adjusting for publication bias in evidence synthesis (see output *Abrams 3*); this was used in a highly cited secondary analysis of antidepressant trials in the FDA registry compared to original publications (*Sutton 1*), and led to development of widely used Stata software.

Bioinformatics (Brookes, Dalglish): this Group works on data management and knowledge-engineering solutions that bridge research and healthcare. Its research includes semantic, syntactic and technical standards development, and implementation of these components in the realms of biobanking, data management for omics and systems biology research, and decision support for healthcare practitioners. It leads a multi-group programme in 'data to knowledge for practice', which brings together the bioinformatics work of researchers and Biomedical Research Unit teams. The Group includes one professor, one senior lecturer and 10 research staff.

- *Highlight:* the Group developed the first and only unambiguous, stable genome coordinate referencing system, which has been adopted and managed by the European Bioinformatics Institute (*Dalglish 3*), and a new data model with unprecedented flexibility for complex omics databasing, used to manage large datasets in many biobanking settings (*Brookes 3*).

Genetic Epidemiology (Bethea, Sheehan, Thompson, Tobin, Wain, Wallace): this Group undertakes methodological and applied genetic epidemiology research. Methodological foci include disentangling causal and associational concepts, dealing with complexity created by family relationships, and genetic meta-analysis. Applied research focuses on the genetic determinants of disease to inform new treatments and stratified medicine; foci include respiratory and cardiovascular disease, public health utility and ethico-legal implications of genetic information. It includes three professors, three lecturers, five research staff and five doctoral candidates.

- *Highlight:* The Group established a consortium that discovered 21 of the 26 genetic loci now known to affect lung function, informing development of new treatments for chronic obstructive pulmonary disease (*Tobin 1, 2*), and is centrally involved in international consortia that have identified over 30 new loci for coronary artery disease (*Thompson 4*).

Primary Care (Baker, Khunti, Wilson, plus affiliates from other Groups including Dixon-Woods, Gray, Jones, Martin, Tarrant): this Group, in collaboration with members of Biostatistics and SAPPHIRE, conducts research into the quality of primary care, including the development and evaluation of community-based interventions to improve planned and emergency care of acute and long-term conditions, and health services research more broadly. A major focus is diabetes research, spanning aetiology, primary and secondary prevention, and service delivery, concentrated in a newly formed Leicester Diabetes Centre with a close interface with local NHS organisations. The Group includes three professors, 16 research staff and 12 doctoral candidates.

- *Highlight:* The Group organised the content, design and delivery of the community follow-up of participants in the CESAR trial of Extra-corporeal Membrane Oxygenation (ECMO) to treat acute respiratory distress syndrome. The positive results led to expansion of ECMO worldwide, resulting in reduced mortality, particularly during influenza epidemics (*Wilson 1*).

Social Science applied to Healthcare Improvement Research (SAPPHIRE) (Armstrong, Dixon-Woods, Eborall, Martin, Tarrant): this Group carries out theoretically and methodologically sophisticated social scientific study of healthcare quality and safety, including the social and organisational challenges of improving the quality of healthcare and clinical research. The Group includes two professors, one senior lecturer, two lecturers, 12 research staff (of various grades, including holders of personal fellowships) and six doctoral candidates.

- *Highlight:* The 'Lining Up' project demonstrated how high-quality, theoretically sophisticated health services research can influence policy and practice. Published in world-leading journals and cited in a leading textbook on patient safety, this study has contributed to new insights into how harm in healthcare settings can be measured and reduced (*Dixon-Woods 1; Tarrant 1*).

The Infant Mortality and Morbidity Studies (TIMMS) (Boyle, Draper, Field): this Group leads and collaborates in international research investigating causes, consequences and management of morbidity and mortality in the foetus and child, using large epidemiological studies and RCTs. Foci include case-mix adjustment in perinatal care, the influence of deprivation on perinatal outcomes, and long-term outcomes for preterm infants. The Group includes two professors, one senior

lecturer, 12 research staff, and six doctoral candidates.

- *Highlight:* A key programme of work has increased understanding of the influences on perinatal, neonatal and infant mortality, which is now incorporated into the national reporting of these data via Mothers and Babies: Reducing Risk through Audits and Confidential Enquiries (MBRRACE-UK), using appropriate risk adjustment and denominators (*Field 3, 4; Draper 1*)

While each Research Group has its own strategy and coherent programme of research, several multidisciplinary studies involve two, three or more Groups, and external partners, some of which we highlight below. Besides these Research Groups, the Themes also host the East Midlands Research Design Service (RDS) and the Leicester Clinical Trials Unit, providing crucial infrastructural support to Themes, College and the wider research-active healthcare community.

At Theme level, **we have been proactive in restructuring the way our research is organised, responding to opportunities in areas of strategic priority**, while maintaining the collaborative links across Research Groups that characterise our work and enable us to make major cross-disciplinary contributions to our field. The creation of the Leicester Diabetes Centre, for example, has permitted the co-location in state-of-the-art research accommodation of academics in the Population Science, Cardiovascular Science and Diabetes & Metabolic Medicine Themes, along with clinicians and managers with an interest in this area of high international and local priority. At the same time, however, these academics maintain close collaboration with colleagues elsewhere in the College. Similarly, internal reconfigurations—such as the creation of the SAPHIRE Group, with its focus on the crucially important field of healthcare quality and safety—have enabled strategic focus without sacrificing existing collaborative relationships.

Theme structures are designed to be flexible, devolving decision-making and strategic power to academics while facilitating collaboration across Research Groups. Quarterly meetings of the Themes' steering committees—including representation from each constituent Research Group, the RDS, the College, and a representative of fixed-term research staff—facilitate development of **overall strategic plans**, and enable decisions to be made on key operational matters, such as joint grant applications, infrastructural support, and developmental events. The focus here is adding value to work at Research Group level, and fostering joint work among Groups. Recent developments instigated by the Population Science Theme include a shared library of recent grant applications (a simple but effective means of pooling information needed for future applications, learning from past experiences, and identifying factors associated with success and failure), a symposium for prospective applicants for postdoctoral fellowships, and a workshop on using bibliometric indicators to maximise impact of research outputs. More broadly, the Themes underpin a vibrant research culture with a system for peer-reviewing grant proposals, a programme of regular seminars that attracts internationally renowned speakers in fields of interest across Groups, and an annual conference that celebrates achievements, shares research findings, and allows inclusive appraisal of strategic direction.

Below the level of the Themes, **each Research Group also runs its own activities to maintain and enhance an active research culture**. Each Group runs weekly or monthly seminar series, usually open to others across the College and beyond, and occasional workshops to discuss strategy and offer tailored training/development in identified areas. Research Groups also provide administrative and developmental support to researchers, appropriate to their size. For example, the management of the large portfolio of diabetes research undertaken by the Primary Care Group involves a fortnightly project initiation and performance group to deliver studies according to project management principles; similarly, within the SAPHIRE Group, much effort has gone into systematising administrative aspects of the research process, such as research governance and data management, through agreed standard operating procedures, so that researchers' time and skills are used optimally. Our Research Groups thus offer both the administrative backbone, and the supportive but constructively critical cultures, that underpin our research successes.

All this has given rise to substantial achievement of our strategic goals over the assessment period, evidenced in income generated and the quantity and quality of outputs produced over the course of the period.

The Themes as a whole, and each Research Group, have collaborated to develop a **strategy for the next five years** that aims to consolidate and develop our worldwide renown in our strengths,

and build capacity in key areas of growth to move towards being world leaders in these fields. We will achieve this by (i) continuing to build research capacity and funding in areas of established specialist expertise, on a Research Group by Group basis, particularly by obtaining large grants that provide a degree of underwriting for our research staff, (ii) responding proactively to new opportunities, especially in areas that cover interests of multiple Groups across the Themes, (iii) facilitating joint working towards major grant income where the whole breadth of our expertise is greater than the sum of its parts, and (iv) underwriting all this work with investments in our research infrastructure, particularly through funding new research studentships (see details in c ii below) and developing structures and processes for input from end users, including patients and the public (c details in d below). Several ongoing and planned developments speak to this agenda, and it is exemplified by three current areas of work in particular:

- A current NIHR programme grant application led by TIMMS to build on its existing programme grant, and bringing in wider expertise from cognate Research Groups (SAPPHIRE, external collaborators) to enrich the studies, broaden the research questions, and maximise impact
- An investment by the Health Foundation in a programme of doctoral fellowships, one of only eight such centres nationally. Led by the SAPPHIRE Group, but drawing on expertise elsewhere in the Themes, this programme will offer doctoral training in an area of strategic importance to the Themes, and of acknowledged under-capacity nationwide
- The University's successful recent bid for a successor CLAHRC from 2014 in collaboration with the University of Nottingham, led by the Diabetes & Metabolic Medicine Theme and supported by the Population Science Theme. This will also bring many millions of pounds of associated funding from local NHS partners to support research and implementation in areas of particular regional importance, and strategic investment from the College in several new posts that will add to our capacity for research of this nature.

Developments such as these will further enhance our ability to attract funding across our fields of expertise that responds to local, national and international priorities, generate high-impact outputs, and provide the financial and human capacity necessary to consolidate and refresh a productive, vibrant research environment.

c. People

i. Staffing strategy and staff development

Our research strategy is underpinned by an approach to **the recruitment, retention and development of staff** that combines the nurturing of all our personnel with careful planning to maintain and expand expertise in key areas. Our investment in core-funded staff is reflected in new appointments and remarkable achievements in internal promotions procedures: over the assessment period, six new (not replacement) academic posts have been created, and six individuals have been promoted to personal chairs. Our successor CLAHRC will bring further newly created posts, while anticipated retirements in the next 2-5 years provide us with the opportunity to appraise our current staffing needs, make judgements about areas of likely medium-term priority and funding, and plan for succession accordingly. The Themes provide a point of liaison between Research Groups and the College in determining priorities for new and replacement posts to secure a sustainable, responsive staffing structure, ensuring that all stakeholders are allowed to contribute to the decision-making process.

A critically important resource is the large cadre of **research staff** across our Research Groups. Research staff are treated as equal colleagues with whom we invest in long-term working relationships, not as a short-term expendable resource; we are proud of the work we have undertaken to ensure that such staff are well supported, fairly treated, and fully integrated into our research culture. In conjunction with wider University initiatives, we have fully implemented the **Concordat to Support Career Development of Researchers**, including induction, appraisal and mentorship schemes, and targeted development opportunities for research staff. We have gone beyond the Concordat's recommendations in identifying particular areas of importance in managing and valuing research staff: for example, we have developed guidance on the importance of specifically including research staff equitably in authorship of outputs, we promote their inclusion as investigators on new grant applications, and we enable externally funded researchers to act as PhD supervisors. We have an active Research Staff Advisory Group, which provides a forum for researchers to discuss issues including research strategy, career

development and policy; the chair of this group sits on the Population Science Theme steering committee to ensure representation of researcher views at this level. Our success in supporting research staff is mirrored in the length of service of many of our researchers—10 years or more in many cases—and in multiple promotions over the assessment period. Specific awards—such as NIHR Methods Training Fellowships (six in the last four years), NIHR In-practice Fellowships, Darzi Fellowships and placements funded through the CLAHRC, a local research facilitation fund for public health specialist trainees, and others—have enabled us to provide **research experience for NHS clinical professionals**, many of whom have gone on to sustain a continued relationship with the Theme, for mutual benefit in terms of research and implementation.

Currently, staff within Themes are concentrated in a number of **physical locations**. Research Groups with close working relationships—such as Biostatistics and Genetic Epidemiology—are co-located to facilitate collaboration, while Groups that have extensive day-to-day links with practitioners are located accordingly. The diabetes researchers in the Primary Care Group, for example, are housed in purpose-built facilities at a local hospital, entirely refurbished since 2012. An important medium-term development is the construction of a £42m medical school building, a strategic development that will bring most of the Population Science Theme's Research Groups together from mid-2015, greatly facilitating joint work.

Across all staff groups, we take **development and equality** very seriously. We have an established, fully implemented system of staff appraisal, and we use discretionary funds (such as Departmental and investigator shares of grant overheads) to ensure that developmental needs that cannot be addressed through the University's Academic Practice Unit—such as conference attendance—are met for both core- and grant-funded staff alike. An Equalities Officer sits on the Population Science Theme's steering committee, ensuring due acknowledgement of equalities issues in strategy. The Department of Health Sciences was recently successful in attaining an Athena SWAN Silver Award. Preparing this application enabled us to benchmark our progress in gender equality to date, recognise our achievements, and develop an action plan to build on these through strategic planning within the Themes, with a plan for achieving a Gold Award by 2016.

ii. Research students

We see doctoral students as an essential part of our research community. We ensure that they receive supervision and training support of the highest quality, and are fully integrated into the research culture of the Research Groups and Themes. We have attracted much external funding for PhD and MD studentships, most recently from the Health Foundation for a suite of 'Improvement Science' doctoral fellowships, and from other prestigious sources such as NIHR doctoral fellowships (four in four years). We supplement this by funding PhDs and MDs through ongoing projects, and by using money from grant overheads and consultancies. A recent competitive initiative within the Department of Health Sciences provided internal funding for four PhDs in key priority areas for the Population Science Theme (a currently open competition will fund a further 3-6). We have obtained similar funding for PhDs from College-wide competitions, and two studentships have been funded from a current Wellcome Trust Senior Investigator award.

Doctoral students are **carefully supported throughout their studies**, with a formal University-wide Code of Practice for Postgraduate Supervision supplemented by activities organised by the Themes and Departments. A formal induction programme is followed by a full appraisal of each student's training needs and agreement of a bespoke development plan. Each student has 2-3 supervisors, who meet the student weekly or fortnightly, and a thesis committee which convenes annually to review progress and offer advice from wider perspectives. Students are offered a mentor to help their development and deal with any personal issues. An annual Postgraduate Research Forum provides students with the opportunity to present to one another and to network. Students are also regular presenters at Research Groups' seminar events and at wider meetings, as well as at the Population Science Theme annual conference. Many postgraduate researchers have gone on to research and lecturing roles in the University and elsewhere, having been supported by their supervisors in applications for early-career postdoctoral funding. Currently eight research and lecturing staff in the Themes have pursued their careers to date, from their PhDs/MDs forward, entirely at Leicester. Remarkably, three quarters of staff in the Biostatistics Group originally graduated from Leicester's own MSc Medical Statistics: a testament to the investment made by the College in its academic skill base at every career level.

d. Income, infrastructure and facilities

At University level we are supported by Research and Enterprise offices under the direction of a Pro-Vice Chancellor (Prof Schürer). We have access to the ALICE High Performance Computing cluster: an essential facility for our Bioinformatics, Biostatistics and Genetic Epidemiology Groups' work. It has supported some of the largest worldwide genetic epidemiology studies led by Leicester and has recently been expanded to 3328 CPU cores, ensuring that we can meet the needs of current projects (e.g. the first genetic study in UK Biobank, genotyping 807,000 variants in each of 50,000 participants (Tobin, Wain)) and new e-health and genomics initiatives.

College Research Office and Theme support: We have a dedicated College Research Office led by an Assistant Registrar. This Office coordinates and manages applications for external and internal funding, operates our internal grant peer review system and organises key research committees. It also provides 0.5FTE administrative support to each Theme and administers meetings, workshops and seminars, as well as providing website management. Altogether, an annual budget of ~£2m is available to support Themes across the College, most of which is distributed through competitive bidding. We have developed a shared, cross-HEI infrastructure for leadership of respiratory genomics across the East Midlands, supported by two successive Collaborative Research and Development (CRD) awards (total £300k). The collaboration has led to new discoveries, new funding (MRC funding of £6.5m and industry funding of £1.47m since 2010) and new national and international consortia led by Leicester and Nottingham.

Beyond this, the Population Science and Diabetes & Metabolic Medicine Themes enjoy their own dedicated infrastructure to support research endeavours. In particular, the NIHR Research Design Service for the East Midlands, hosted in the Department of Health Sciences, provides high-quality methodological support to researchers in the region's NHS organisations; a close relationship between the RDS and the Theme's wider academic staff has led to numerous partnerships for research funding, to mutual benefit. This **engagement with the regional NHS** has been further developed through the NIHR CLAHRC for Leicestershire, Northamptonshire and Rutland (LNR), providing further infrastructural support for joint working between NHS clinicians, managers and academics in pursuit of international-quality, locally relevant research with potential for rapid, transformational impact on NHS services through collaborative implementation. This important work will continue in a new East Midlands-wide CLAHRC from 2014. We also enjoy close working relationships, including joint appointments, with local authority public health directorates.

At the level of the Themes, the fruits of our strategic approach to research development are reflected in funding successes over the assessment period. **Our grant income for the period under assessment, which is 58% higher per annum than the figure for the equivalent unit in the previous RAE period, is over £32m, and includes key collective and personal successes** for Theme personnel. These include the two CLAHRCs, which bring together researchers from across Leicester's strengths in chronic conditions. NIHR funding for the first CLAHRC has been accompanied by £10m of investment from regional NHS partners, enabling them to engage actively in our research programme to ensure that it addresses local healthcare priorities; further local and national funding will follow with the successor CLAHRC. Around 30% of our income comes from NIHR sources; other major funders include the research councils, EU, UK government and NHS, and increasing funding from UK-based charities. Achievements include:

- Major new grants for all Research Groups, often bringing together inputs from several parts of the Theme. For example, RCTs of educational interventions to improve diabetes management led by the Primary Care Group also incorporate social scientific input from SAPPHIRE and statistical input from Biostatistics; TIMMS's NIHR programme grant and associated research involves input from SAPPHIRE; and Bioinformatics and Genetic Epidemiology collaborate closely on many research grants. Beyond the College, Genetic Epidemiology, has recently obtained with external collaborators a £3.2m MRC grant to undertake the first genetic study of UK Biobank, and indeed the largest ever study of the genetic determinants of COPD; the Group is also a key partner in two of Leicester's BRUs, while the SAPPHIRE and Primary Care Groups are key elements of the new East Midlands CLAHRC;
- Prestigious Wellcome Trust, NIHR and MRC Senior Investigator / Senior Clinical Fellowship awards for four of our senior academics (Abrams (Biostatistics), Baker (Primary Care), Dixon-Woods (SAPPHIRE) and Tobin (Genetic Epidemiology));

- An ongoing programme of strategic investment in new posts across the Themes (resulting in the appointment of six new academic staff—Bethea, Bujkiewicz, Gray, Martin, Wain and Wallace—to cross-cutting posts hosted in three Research Groups).

Investment in organisation, infrastructure and personnel within the Theme has resulted in outstanding research outputs, of which those submitted under REF2 are only a small selection. Such successes are testament both to the way in which the restructuring of the College has mobilised collaborative work among colleagues in cognate areas across the translational spectrum, and to the commitment of the College to support for capacity development in areas of existing strength and future opportunity identified by academics.

A notable investment during the assessment period has been in **infrastructure to facilitate and resource patient and public involvement in research**. The University, the CLAHRC and other regional partners have together set up and funded the Leicestershire, Northamptonshire and Rutland Research Engaging with Patients Forum. This Forum offers a hub for patient and public involvement activities in the region, provides information, resources and support for health researchers, and organises conferences and other events. Building on the Forum, the Primary Care Research Group has recently incorporated the Leicester Centre for Ethnic Health Research. This facility, previously hosted by a local primary care trust, focuses on research on long-term conditions that caters for the needs and preferences of the city's multi-ethnic population, with a particular emphasis on fostering active involvement of patients and the public in research design, conduct and dissemination, and with the ultimate objective of improving outcomes in black and minority-ethnic communities. The Centre works collaboratively with Research Groups to integrate and embed existing good practice, expertise, skills and knowledge, and enjoys strong relationships with local voluntary, community and faith organisations. It is in the process of developing University-wide standards for research in black and minority-ethnic health research.

We are also investing in ensuring that knowledge deriving from **our research reaches the maximum number of beneficiaries, including those beyond the academic community**. Notable developments here include a rising number of papers published in open-access journals—supported in part by the University's Open Access Fund—and investment in new support roles, such as the SAPPHIRE Group's recent appointment of a 'communications associate', with a brief to optimise publicity and research dissemination.

Theme staff benefit from support from the College for **research ethics and governance**, including a College research ethics committee for studies not involving NHS patients. Junior staff are able to draw on the experience and knowledge of colleagues, and support of the Theme administration, in navigating the sometimes-complex NHS research governance system. The University employs a dedicated research governance manager, who leads a team based in the joint University and University Hospitals of Leicester research office, which provides a comprehensive research governance advice and support service to all our staff.

e. Collaboration and contribution to the discipline or research base

Members of the Population Science and Diabetes & Metabolic Medicine Themes enjoy **worldwide networks of scientific, practice and public collaborators**. In the course of the assessment period, we have had active research partnerships with colleagues at dozens of universities in the UK, across Europe and in all five continents, to mutual benefit. These include longstanding developmental partnerships with institutions in Ethiopia and other African countries, notably the Leicester-Gondar Medical and University Link, which has sponsored staff exchanges, reciprocal training events, and joint research projects and PhD studentships. We are partners in several pan-European studies and interest groups, and Theme academics act as advisors and steering group members on multiple major studies across the breadth of our interests. Our Research Groups are hosting an increasing number of visiting lectureships and secondments, bringing with them new research collaborations and further enriching our research culture, as well as acting as visiting academics at other institutions (e.g. the Karolinska Institute (Lambert), Bristol (Sheehan), Imperial College London and Johns Hopkins University (Dixon-Woods)).

We are particularly **strongly engaged with research commissioners and end users**, with numerous consultancy relationships and positions as scientific advisors to (among others) the International Cancer Genome Consortium Ethics and Policy Committee (Wallace), the Department

of Health (including an independent expert advisor to a cancer outcomes benchmarking group convened by the National Clinical Director for Cancer—Lambert), the Medicines and Healthcare Regulatory Authority (Jones), the Health Research Authority (Dixon-Woods), the National Institute for Health and Care Excellence (including a clinical advisor to the Diabetes QOF Panel—Khunti), the Nuffield Council on Bioethics Working Group on Biological and Health Data (Wallace), the Health Quality Improvement Partnership (Field) and the National Research Ethics Service (Dixon-Woods). We have provided consultancy services to the Royal College of Physicians, Arthritis Research UK, Bliss, SANDS, the US AHRQ, the Brazilian and Colombian Ministries of Health, and many NHS organisations and six pharmaceutical companies.

Alongside these ongoing partnerships, we are proactive in identifying specific opportunities to maximise the **translation of our research into practical influence**: notable examples from the assessment period include a year-long, ESRC-funded secondment to the Prime Minister's Strategy Unit for one academic (Armstrong), the funding of several fellowships for healthcare practitioners to undertake collaborative research in the CLAHRC and other ventures, and key roles in the Innovative Medicines Initiative's GetReal Programme, which aims to help representatives from 15 pharmaceutical companies and four regulatory / reimbursement agencies better understand how real-world data and analytical techniques can inform clinical decision making and improve the efficiency of the R&D process (Abrams, Bujkiewicz). The TIMMS Group has recently been selected, with the National Perinatal Epidemiology Unit at Oxford, to run the National Confidential Enquiry into Maternal, Perinatal and Infant Deaths, an important opportunity to undertake high-quality research work with a rapid impact on practice. Genetic Epidemiology worked with a partnership across the College to apply to include an exhibit at the 2012 Royal Society Summer Science Exhibition. This exhibit was one of only 21 chosen across all areas of science in the UK, and one of only four chosen for press preview. It was visited by approximately 12,000 members of the public and accessed online by approximately 50,000. We also undertake a wide range of local outreach work, such as regular science education sessions with local schools.

The Themes fully support staff to engage in **contributions to the range of disciplinary fields** covered by our Research Groups. Theme staff sit on funding panels for all but one of the NIHR's programmes, as well as the Wellcome Trust, Health Foundation, Asthma UK, Cancer Research UK, Diabetes UK, Stroke Association, RCGP Scientific Foundation Board, Great Ormond Street Hospital Children's Charity, the Medical Research Council, the Australian Medical Research Council, Sweden's Vinnvård Foundation, and the US National Institutes of Health. Our staff also regularly review final reports for these funders and many others. Theme members serve over 20 academic journals in an editorial capacity, and have edited special issues of several journals since 2008 including *Sociology of Health & Illness* (Armstrong, Eborall), *Seminars in Fetal and Neonatal Medicine* (Field, Boyle) and *Journal of Health Organization and Management* (Dixon-Woods).

Our staff play critical roles in key elements of **the wider research infrastructure** at regional, national and international levels. This includes international academic collaborations such as the Human Genome Organisation Council (Brookes was an elected member to 2010), important components of the British clinical research network infrastructure (Khunti is co-director of the South East Midlands Diabetes Research Network; until 2012, Wilson was clinical lead for the Primary Care Research Network, East Midlands & South Yorkshire), and involvement in the wider professional and academic communities that support research, for example:

- Members of TIMMS chair the Neonatal Clinical Standards Group, The British Association of Perinatal Medicine (BAPM) Data Working Group, and the British Isles Network of Congenital Anomaly Registers; Field was president of BAPM from 2008 to 2011;
- Two SAPPHERE members (Eborall, Martin) have served as elected members and co-conveners of the British Sociology Association's medical sociology group committee;
- Members of the Primary Care Group chair the Department of Health / RCGP Committee on the Classification of Diabetes, and are involved in several primary care and diabetes-related interest groups, and in INVOLVE;
- Genetic Epidemiology established and co-lead national and international consortia around lung function, COPD and blood pressure, and members are involved in initiatives including the Royal Statistical Society Medical Section (Sheehan is vice chair), the annual UK Causal Inference Meetings, and the International Centre for Mathematical Sciences.