

<b>Institution:</b> University of York
<b>Unit of Assessment:</b> 2 – Public Health, Health Services and Primary Care
<p><b>a. Overview</b></p> <p>York has a longstanding reputation for conceptually innovative, methodologically rigorous and influential policy and practice-relevant applied health research, ranked joint top in HSR in RAE 2008. Since then York has consolidated and further developed its research with several Centre and Programme grants, significant recruitment of staff, and a large number of postgraduates.</p> <p>This submission includes researchers who are based in the Department of Health Sciences and two internationally-renowned research centres, the Centre for Health Economics (CHE, celebrating its 30<sup>th</sup> anniversary this year) and the Centre for Reviews and Dissemination (CRD, celebrating its 20<sup>th</sup> anniversary), both of which have the status of university departments. Eight of the researchers included in this submission are staff of the Hull York Medical School (HYMS) who are embedded in these departments in order to build strong collaborative teams.</p> <p>A shared vision for health and medical research is fostered through the work of the Academic Coordinators of the Social Sciences and the Sciences, regular meetings of heads of department and departmental research directors, and annual medium and long-term planning meetings held with the University Senior Management Group. Ultimately, York's success over the last decades has come from sustaining a critical mass of excellent and committed researchers (supported by strong physical and methodological infrastructure) who work closely together on many projects, share seminars, use shared specialist research facilities but who have the freedom to pursue their interests and collaborate with the most appropriate groups nationally and internationally.</p> <p>Our research is organised broadly into three main areas. In each we conduct both substantive empirical research and methodological/theoretical work.</p> <p>(a) <i>Health Technology Assessment</i> (Adamson, Allgar, Bland, L. Bojke, Cocks, Craig, Croudace, Drummond, Eastwood, Flemming, Gabe, Gilbody, Golder, Griffin, Hewitt, Higgins, Iglesias, Jackson, Manca, Mason, MacPherson, McDaid, McGuire, McKenna, McMillan, Oddie, Palmer, Phillips, Richardson, Sculpher, Sheldon, Soares, Sowden, Stewart, Torgerson, Watson, Woolacott)</p> <p>(b) <i>Health Policy</i> (Bloor, C. Bojke, Chalkley, Cookson, Doran, Dusheiko, Flemming, Gilbody, Goddard, Gravelle, Jacobs, Lewin, Manea, Mason, Parrot, Spilsbury, Sheldon, Street, Thompson, van den Berg, Watt);</p> <p>(c) <i>Public Health &amp; Epidemiology</i> (Bland, Bywater, Cookson, Croudace, Doran, Fraser, Gilbody, Goddard, Gravelle, Griffin, Lewin, Lightfoot, Mason-Jones, Pickett, Roman, Siddiqi, Sheldon).</p> <p><b>b. Research strategy</b></p> <p>We achieved our strategic aims laid out in the RAE 2008: to build on multi-disciplinary strengths in clinical trials, evidence synthesis and economic evaluation and apply them to emerging areas underpinned by methodological innovation and commitment to user need. We have demonstrated sustainability through maintaining high levels of research income, particularly through large core centre and programme grants, and the ability to retain our research leaders, whilst recruiting new people to expand into new areas. Highlights of our success during the REF period include:</p> <ol style="list-style-type: none"> <li>A prestigious Queen's Anniversary Prize for Higher Education for Health Economics (2008);</li> <li>Dept of Health funding of 2 new large research programmes in health economics (2012-17);</li> <li>Major partner in the NIHR-funded CLAHRC (2008 -13) and new CLAHRC (2014 -9);</li> <li>Partner in an MRC-funded e-Health Informatics Research Centre (2013-18);</li> <li>Launched the National Audit of Cardiac Rehabilitation (commended by NICE) (2008);</li> <li>Renewed funding for the Leukaemia Lymphoma Research Centre of Excellence (2011-16);</li> <li>Renewal of the Centre for Reviews and Dissemination core contract from NIHR (2010-15);</li> <li>Renewal of NIHR contract to produce Technology Assessment Reviews (2011-16);</li> <li>Renewal of Dept of Health funding of the Public Health Research Consortium (2011-16).</li> </ol>

These testify to York's success in collaborative working across universities, and with NHS partners important for sustainability (see section e). Our emphasis on multidisciplinary has also borne fruit with several externally funded initiatives such as the ESRC White Rose Doctoral Training Centre in the Social Sciences and the Centre for Chronic Diseases and Disorders supported by a Wellcome Trust *Institutional Strategic Support Fund* award which promotes multidisciplinary research across health services research, basic, social, and environmental sciences and the humanities.

York's success also reflects a focus on socially useful and methodologically rigorous research, the quality of the research and support staff we have and the collegial and stimulating environment which has been created. Our influence is enhanced by our anticipation of and responsiveness to national and international policy and research agenda, our engagement with NHS related initiatives such as the AHSNs and an emphasis on dissemination to relevant user groups (e.g. NHS, professional bodies, public) supported by expertise in the Centre for Reviews & Dissemination (see REF3a). Our dissemination strategy is underpinned by methodological development; Thompson for example received NIHR HSDR funding to evaluate bespoke models of dissemination to the NHS.

We have actively involved service users and the general public in our work, in developing proposals, as project partners, as advisory group members and as dissemination partners. For example, a young person's public health reference group was established to elicit input from young people through the National Children's Bureau. We have also involved third sector organisations as co-applicants, costing their involvement in applications. A working group responsible to the Directors of Research offers support to colleagues who wish to increase user involvement.

We outline below some of our recent achievements under each of the research areas.

### ***Health Technology Assessment***

#### *Evidence synthesis:*

CRD obtained core funding from England, Wales and N. Ireland to promote research-based evidence on the effects of health and social care interventions via its four databases. DARE provides access to 34,000 quality assessed systematic reviews, NHS EED to 15,000 economic evaluations and the HTA Database to 12,700 assessments. In 2011 CRD established the world's first prospective register of systematic reviews (PROSPERO). Registration is now a condition of NIHR reviews funding; BioMed Central and PLoS expect authors to include the registration number when submitting reviews. There are over 2100 reviews from 62 countries registered.

York has undertaken technology assessments for NICE since 1999 and in 2011 secured, via competitive tender, a new five year contract. Since 2008 we published 23 appraisals for NICE (including the first diagnostic assessment), a further 12 NIHR-funded HTA reviews and published around 60 additional systematic reviews spanning prognosis, diagnosis, prevention, treatment and service delivery. York hosts the Cochrane Wound Care editorial group which, over the REF period published 56 new protocols, 32 new reviews and updated 94 reviews. Its overall impact factor increased from 3 to 5 and its managing editor, Bell-Syer, won the 2013 Chris Silagy Prize. York collaborates in 11 other Cochrane Review Groups and has contributed to over 37 Cochrane reviews since 2008; more than most universities in the world.

#### *Clinical trials*

The York Trials Unit has, since 2008, conducted over 40 RCTs of health, social care and education interventions, with a further 20 currently in set-up, recruitment or analysis stage. It specialises in complex pragmatic trials and conducts studies across many clinical areas. It is a registered UKCRC trials unit, is in receipt of NIHR infrastructure funding and houses a spoke of the Yorkshire & Humber Research Design Service. It has a strong portfolio of methodological work and has undertaken numerous studies and trials of recruitment and retention strategies, contributing several trials to the MRC START study of improving trial recruitment. It has led some of the largest trials ever carried out in the areas of: wound care; musculoskeletal pain; mental health; addiction and complementary therapy. Findings have been incorporated into a range of NICE and WHO guidelines, such as for chronic lower back pain, venous leg ulcers and screening for depression.

**Environment template (REF5)*****Economic Evaluation***

York was awarded a 5 year NIHR policy research programme on the economic evaluation of health and care interventions (joint with Sheffield). We also undertake an extensive range of applied economic evaluations: economic and clinical randomised trials, decision analytic modelling studies, and economic and statistical evaluation of observational and retrospective data sets, funded by the MRC, NIHR, NHS, EU, DfID and the charitable sector. Our applied work is underpinned by a strong emphasis on methodological development for economic evaluation, e.g., dealing with uncertainty, heterogeneity, generalisability and transferability

***Health Policy***

CHE has received core funding from the Dept of Health for almost 30 years. Notably (i) CHE was recently awarded a 5 year policy programme grant in 2010 for the Economics of Social and Health Care Research (with the LSE and Kent) and (ii) CRD will be funded from Jan 2014 by the DHPRP to establish a new review facility to support national policy development and evaluation (joint with the Institute of Education & LSHTM). Examples of key research since 2008 include: further development of the methods for allocating NHS resources; research showing the impact of payment mechanisms and other incentive schemes for hospitals (payment by results; performance targets) and for GPs (paying for quality under Quality & Outcomes Framework (QoF); labour supply and income); the impact of market structures (the effect of competition on prices, outputs, quality, inequality and outcomes), NHS case management in mental health and workforce research (on consultant productivity, the distribution of GPs and the roles of clinical support workers). Much of our research explores equity in care delivery, measurement and determinants of health inequalities, including the impact of policy reform on inequalities. Our applied work is underpinned by methods development, particularly on policy evaluation (e.g. micro-simulation techniques; advanced econometric methods to exploit natural experiments); measuring productivity at national, hospital and practitioner level, and analysis of Patient-Reported Outcomes (PROMs) data.

***Public Health and Epidemiology***

For much of the period York co-ordinated and is still a partner in the DH Policy Research Programme-funded Public Health Research Consortium to strengthen the evidence base for interventions to improve health. Its research programme has been developed in consultation with the DH and reflects priorities identified by its policy teams. Research on the wider determinants of health and inequalities using the Born in Bradford and Millennium cohort studies have led to intervention studies e.g. the NIHR-funded cluster RCT of a child physical activity intervention.

The Epidemiology and Cancer Statistics Group receives programme funding as a Leukaemia Lymphoma Research Centre of Excellence and was awarded the maximum score at its 2010 review. In partnership with the NHS it runs the population-based Haematological Malignancy Research Network, following patients diagnosed with blood cancer across Yorkshire & the Humber (3.7m people, 14 hospitals). The network is a world leading research resource and the national Cancer Reform Strategy cites its diagnostic component as '*the model for delivery of complex diagnostic services*'. Results will emerge over the next 5 years.

York research in smoking has demonstrated the effectiveness of behavioural support to increase quit rates in people with suspected TB in Pakistan (BUPA Foundation prize for research) and is evaluating approaches to increase the uptake and effectiveness of NHS Stop Smoking Services for pregnant women as well as ways to reduce secondary smoking in UK Muslims. Studies funded by the US National Institute for Drug Abuse and Cancer Research UK are exploring how antenatal cigarette smoke exposure may contribute to the development of problem behaviour

***Research plans***

Our overall aim is to make a significant contribution to the level and fair distribution of population health and the safety, quality and efficiency of services through high quality research across applied health and social care. Over the next 5 years we will build on our existing overall thematic 'architecture' whilst recognising the need to expand beyond traditional research boundaries:

*HTA:* we will evaluate the effectiveness, cost-effectiveness, safety, patient experience, equity implications and implementation of health care interventions and methods of health care delivery. We will emphasise methodological development and application in evidence synthesis, quasi-experimental and experimental studies and in health economics (in economic evaluation, decision-modelling and policy evaluation and their global application, particularly in low/ middle-income countries in collaboration with organisations like NICE International and the Washington-based Centre for Global Development). We will expand the scope of York Trials Unit's activities to a broader range of health, social care and other social interventions building on York's strengths.

*Health Policy:* Our research will address how services can be financed in a fair and efficient way; evaluate the best ways of organising the whole care and support system; explore the financial and non-financial factors which influence the behaviour and performance (including safety) of organisations and individuals within the healthcare system, and measure whether services provided are high quality and make the best use of public funds and focus on addressing questions which link health, public health and social care. We will explore better methods for rapid but robust evaluation of complex (e.g. service improvement) interventions with our AHSN. We will invest in world leading research (as part of the MRC-funded Health e-Research Centre) on collecting, linking and using routine administrative, NHS-linked databases, registries, clinical audit, survey and cohort data to conduct research in all three research areas, monitor health service performance and support policy, clinical and patient decision-making.

*Public Health and Epidemiology:* We will investigate further the social and healthcare delivery factors affecting inequalities in health and evaluate the effectiveness of interventions in non-NHS (e.g. school and community) settings to improve public health using advanced epidemiological approaches, RCTs (some nested in cohorts) and evidence synthesis. We will explore follow up data from our new birth cohort study Born and Bred in Yorkshire, (BaBY) which aims to track a large group of babies born in Yorkshire, and their parents, from pregnancy onwards. We will have a greater focus on cross-disciplinary work with biology and environmental science where many of the major 21<sup>st</sup> century research questions are likely to lie and where applied health research can make an exciting contribution. We will, for example, become more active partners in York's new Environmental Sustainability Institute and invest in cross-disciplinary appointments in environmental health, bioinformatics and epigenetics. This has been kick-started by a new ESRC 'transformative research' grant on Health Of Populations and Ecosystems (HOPE).

We will continue to emphasise methodological rigour, policy and practice focus, engagement, excellence and capacity building as follows:

*Methodological rigour.* This will be maintained through:

- a) identification of research areas which provide scope for major methodological work and seeking funding to maintain this including EU, MRC, ESRC, NIHR and charity programme grants, also taking opportunities within our core-funded programmes;
- b) collaboration with others where there are opportunities for a methodological contribution;
- c) building the expertise of staff (and where necessary recruiting new ones) to enable them to be at the forefront of the development and application of methods and theory.

*Policy and practice focus:* (see REF3a) research will inform health policy and practice by:

- d) ensuring we address questions of importance to society in a timely fashion, stimulated by our involvement with the Yorkshire & Humber AHSN, the new Yorkshire & Humber CLAHRC, building on our good links with Commissioning Groups around the country and by responding to commissions from the NIHR, and others and through our core-funded research programmes;
- e) investing in the long-term relationships with high-level national and international policy makers and looking for new opportunities to extend our links, whilst retaining our independence and reputation for academic integrity;
- f) encouraging staff to make a contribution to policy and practice fora and give early/mid-career staff more opportunities to participate as members of relevant committees and groups;
- g) being adaptable and responsive to policy change whilst retaining our core focus.

*Engagement:*

- h) ensuring all aspects of our research are informed by the views of those who it affects by developing further our advisory and stakeholder groups, involving policy, practice and public representatives, learning from and extending effective and efficient ways of doing this;
- i) investing further in the translation of our research into accessible formats.

*Excellence and capacity building:* We will retain, support, develop and expand our excellent research and support staff and our students by:

- j) ensuring research groups have the critical mass and administrative support to generate high-quality research (including continuation of succession planning);
- k) investing in the data infrastructure and training in analysis for leading-edge health research;
- l) providing enough resource and support for researchers to take risks with research applications while maintaining existing areas of strength;
- m) providing top quality academic and career mentorship for staff;
- n) support applications for competitive fellowships (aiming to maintain our 80% success rate to NIHR in 2012/13) and fund more PhD studentships to attract and grow the best talent;
- o) ensure protected time for scientific output (e.g. writing weeks) and the use of 1:1 mentoring;
- p) continue commitment to the Concordat for the Career Development of Contract Research staff.

**c. People, including:****i. Staffing strategy and staff development**

We invest in 'growing our own' research staff and attracting new ones to ensure critical mass in terms of the size and balance of expertise and experience and to succession plan for retirements. The financial strength and sustainability of our departments has also allowed us to make investment in key new professors (Doran, Chalkley, Croudace, Higgins, McGuire) and senior researchers (Cocks, Jackson, McMillan, Mason-Jones, Siddiqi) who bring strong methodological skills as well as emerging programmes of research which fit well into our future plans. Clinical academics in HYMS are embedded in either the Department of Health Sciences (Gilbody, Siddiqi, Watt) or the CRD (McGuire, Oddie, Phillips) so that they are co-located with researchers sharing their interests and they participate as part of strong teams. They supervise the Academic Clinical Fellows and Clinical Lecturers several whom are also based in these departments.

Staff work in teams led by senior researchers with specified role description and are supported by a structure that gives them access to senior advice in addition to their project line manager. Early career researchers (ECRs) are given opportunities to work on several different projects to acquire a range of skills and encouraged to develop their publication records. ECRs are also encouraged to study for PhDs alongside their job and 7 completed their PhD between 2008 and 2013.

We invest substantial resource in ensuring research staff are well supported administratively (e.g. team secretaries, publications/web staff, computing support, financial and support staff to help grant submission), so reducing their administrative burden. This support continues through the life of funded project and includes help with dissemination activity. We support staff in applying for external fellowships; 18 were awarded over the REF period (4 in the most recent round) – 14 postdocs from the NIHR/MRC/Wellcome Trust, and 4 NIHR senior research fellow awards.

We are committed to developing career researchers and seek to ensure continuity of employment. Budgets are managed to help smooth fluctuations in grant income, bridge funding gaps and secure funding and time to produce high quality publications before starting new projects. Combined with a commitment to redeployment this has resulted in over 90% of our contract research staff being retained over the medium term. We have also been successful in retaining staff at mid to senior level. This is particularly noteworthy in health economics where despite a very competitive labour market only one of our 21 researchers at Grade 8 or above left for another institution since 2008.

Women play a strong leadership role at York. The three departments have been headed by women for the REF period and this return includes 6 female professors (2 others are returned elsewhere). CHE has doubled the number of women at senior level (G8 and above) in the last 3 years, a figure

which was already high in the other departments. Part-time and flexible working is supported, along with support for women returning to work after maternity leave. York was the first Yorkshire university to win the Athena Swan bronze award in recognition of its success in providing positive support for women scientists during their careers. The Department of Health Sciences and HYMS have recently achieved bronze status. York is not an ethnically diverse city but we have increased our ethnic mix by working on public health research of relevance to the S. Asian population and through our extensive collaboration with the Bradford Institute for Health Research.

Our researcher development support is built around the Research Development Framework, a national initiative developed by Vitae in consultation with the Research Councils. As part of our commitment to the Concordat, we support researchers' personal and career development through training and development programmes, some offered at departmental level with central support and some centrally by York's Researcher Development Team. This is coordinated by a Training and Development Committee, responsible to senior management. Examples include: a bespoke 6 week part time grant writing course to develop real funding bids using case studies and with expertise from departmental staff and University colleagues (now used as a model in other departments); and a tailored "Getting Published" course developed with the assistance of Emerald Publishers. We reserve places for our staff and PhD students on the training we offer commercially in economic analysis and methods. Earmarked budgets are available for staff at all levels to attend key conferences to present their work. For example 14 researchers attended the 2012 European Health Economics conference in Zurich and 7 attended the 2013 Cochrane Colloquium in Quebec.

York's Researcher Development team won the Times Higher Education *Award for Outstanding Support for Early Career Researchers* in 2012 for its emerging research leaders programme that is "changing the way principal investigators understand and engage with their teams in terms of leadership and management," 15 staff have attended and participants feel that it has improved their leadership skills and ability to develop the transferable and career skills of researchers. Early career researchers have a good record of developing successful research careers at York and elsewhere. Bloor, Gilbody, Manca, Palmer, Spilsbury, Street and Thompson, for example, all joined as post-doctoral fellows or junior researchers and have progressed to become professors.

## ii. Research students

York strongly encourages the development of research students in the form of support for applications for externally funded studentships/scholarships and through internally-funded studentships. We have funded or secured support for 14 Masters studentships since 2008, many of whom have gone on to undertake a PhD with us. We have created or attracted 48 PhD studentships and fellowships since 2008: 18 from our own resources, 9 from NIHR/MRC funding, 12 as part of research grants and 9 from ESRC, MRC and NHS Trusts and charities. Support for research training is part of our financial planning process and we are committed to at least 12 further studentships in the coming four years.

Students are integrated into a high quality research environment where they become part of our research community. Each student has their own desk and £1000 over the 3 yrs for training, conferences, books and research expenses, if no external support. They participate in our departmental research seminars and they also organise their own seminar series, where they can practice presenting and also help build a postgraduate community. In addition to the departmental taught elements of their programmes, they have access to the advanced methods training and networking opportunities afforded by the ESRC's White Rose Doctoral Training Centre ([wrtdc.ac.uk/](http://wrtdc.ac.uk/)). The DTC offers a comprehensive collaborative training programme going beyond a traditional PhD. In addition, PhD students access a wide range of skills training provided from the Researcher Development team ([www.york.ac.uk/admin/hr/researcher-development/students/](http://www.york.ac.uk/admin/hr/researcher-development/students/)) which covers four broad domains: knowledge and intellectual abilities; engagement, influence and impact; research governance and organization; and personal effectiveness.

We implement the University's well documented and clear standards around supervision and support, including the role of Thesis Advisory Panels and the responsibility of supervisors in supporting and monitoring progress. Our adherence to these is monitored by Annual and Periodic

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Reviews that are undertaken by University Teaching Committee. 2013 Postgraduate Research Experience Survey (PRES) data show nearly 90% of our PhD students are satisfied with their overall research degree programme; which is higher than the sector average.

Our postgraduate students regularly win prizes, for example:

- Pedro Goncalves (supervisor Manca) won best student paper prize at the 11<sup>th</sup> Portuguese Health Economics Conference, Porto 2009;
- Lauren Young (supervisor McGuire) won 1<sup>st</sup> prize at the Academic Paediatrics Association of Great Britain Annual Conference, 2013 and the NIHR Annual Trainees Meeting 2012;
- Omara Dogar (supervisors Siddiqi and Sheldon) won a travel scholarship from the Society for Research in Nicotine & Tobacco for its conference in Boston 2013;
- Pedro Saramago (supervisor Manca) received the prize for best podium presentation at the 13th Portuguese National Health Economics Conference in Braga, Portugal.

PhD students also have access to Preparing Future Academics (PFA), an accredited introductory programme for researchers who intend to pursue an academic career in higher education. PFA provides researchers who teach with skills in facilitating learning, teaching techniques and the opportunity to learn from the experience of new academics. All those who successfully complete the programme are entitled to apply to become associate fellows of the Higher Education Academy. In 2012 the programme won a Vice-Chancellor Award for Outstanding Achievement. Feedback is excellent, e.g.: *“The PFA programme is outstanding in the breadth of training provided and the opportunity it provides for peer support as well as to get advice from experienced professionals”*. We have a track record of employing our PhD students after graduation in our research groups, offering them the opportunity to pursue their research interests further. 11 researchers in this submission are former York PhD students in either Health Sciences or Health Economics.

**d. Income, infrastructure and facilities**

Sustainability and vitality have been promoted by the University's organisational and financial stability, with steady growth and no restructuring. Research income from all sources has increased steadily since 2008/9 from £9.2m to £14.3m in 2012/13. The range of national and international sources (EU, NIHR, MRC, NICE, charities, and recent success in more novel sources e.g., the US Patient-Centred Outcome Research Institute) increases sustainability. Research income includes several large, competitively won, 5-year programme grants, which are important for continuity and for undertaking in-depth research with a longer-term focus than project grants (see section b).

The quality and vitality of our empirical research is enhanced by a strong methodological infrastructure and a large body of researchers who are principally methodologists (e.g. statisticians, economists, trialists, epidemiologists, reviewers, qualitative social scientists, psychometricians) who advise and collaborate with those pursuing substantive clinical and policy questions. We have high level access to a number of national health and social research databases (HES, CPRD, geocoded Millennium Cohort etc) and support for using them, and access to international family cohort studies allowing cross-cohort analysis through the European CHICOS project and the International Network for Research on Inequalities in Child Health. York also has a number of significant data-sets which we coordinate including:

- *Patient Case - Management Information System (PC-MIS ©)* which has high quality patient-level data on over one million patient episodes (over six million individual patient contacts) from the 'Improving Access to Psychological Therapies' (IAPT) services throughout England;
- The *Haematological Malignancy Research Network*, a comprehensive population-based register in Yorkshire & Humber which links haematological cancer diagnostic, prognostic, treatment and outcome data for >20,000 patients to inform clinical decision making and care;
- The *National Audit of Cardiac Rehabilitation* which contains comprehensive national audit data on patients after heart attack and the services they receive.

In addition, through participation in the Manchester-led HeRC ([www.herc.ac.uk/](http://www.herc.ac.uk/)) we have increased our ability to unlock and harness data-intensive linkages across health and social datasets, and our access to expert support in health informatics. York's computing facilities provide high capacity data handling and processing for staff and students working with extremely large

## Environment template (REF5)

databases and undertaking complex analyses which otherwise would be impossible to run using normal equipment. There is a data governance group, which takes responsibility for maintenance for the Data Security Policy (reviewed on an annual basis), including on-going review of our procedures, and for ensuring that staff are aware of the Policy and of their personal responsibilities for data security. The Department of Health Sciences has successfully completed the NHS Information Governance Toolkit which provides reassurance on our data security and infrastructure to safeguard information (8HL30).

We are based in two large adjacent and connected buildings (which further enhances collaboration). This includes the Alcuin Research Resource Centre which houses a dedicated suite of research facilities - a data preparation lab, research interview and focus group rooms, data analysis laboratory (for sharing advanced analytical packages), a secure data archive, space for dissemination staff and housing journal editorial offices, a 150-seater modern auditorium and seminar room for exclusive use by the research teams. Additional space within these two buildings to accommodate our growth, in particular the York Trials Unit, came on stream in Summer 2013, further supporting our sustainability over the next period. The Research Centre for Social Sciences opened in 2013, a dedicated nearby building, which provides complementary research training facilities. It houses the principal offices of the ESRC Doctoral Training Centre and will facilitate expansion of interdisciplinary research. The new building provides accommodation for about 80 PhD students, research meetings, conferences and a new Training Suite. The University of York and York Teaching Hospital NHS Foundation Trust have recently invested in and launched the York Clinical Research Facility based in the hospital which will further support clinical trials.

One Research Governance Committee covers all three departments and meets every two months. The group (which includes lay members), ensures that research involving human participants undertaken by staff and students is ethical and it establishes other good research practices, such as the proper storage of data. A subsidiary aim is to advance student research skills.

### **e. Collaboration or contribution to the discipline or research base**

#### **Effective academic collaborations**

York researchers have a strong tradition of collaboration across disciplines, institutions and countries. These permit a greater range and scope of research than would otherwise be possible, and also extended the influence and reach of our research. York uses a range of institutional, financial and motivational mechanisms to promote collaboration. For example, we have a University visitor programme and a regular cycle of university international visits. CHE, for example, funds *Alan Williams Fellowships* to support visitors to spend time working with its staff on a research topic (nine so far) and in the REF period had over 50 visitors from all over the world. Evidence for the extent and success of our collaborations is the very high proportion of our submitted outputs which are co-authored with researchers from other institutions.

#### ***Internal University Interdisciplinary Collaboration***

The University has eschewed faculties and schools, preferring instead a flatter structure, encouraging collaboration without disrupting the vitality and distinctive cultures of successful groups of researchers which have developed strong external profiles. Researchers work closely with Economics, (where Profs Karl Claxton and Nigel Rice are returned), Social Policy (where Prof Hilary Graham is returned), Sociology (where Prof Karl Atkin is returned), Education (Bywater) and the Departments of Biology, Computer Science, Electronics, Maths and Philosophy, particularly via the Wellcome-funded Centre for Chronic Disease and Disorders, an institution-wide virtual centre.

#### ***Inter-University institutional partnerships***

The University is part of a number of institutional partnerships which facilitate collaborations:

- *World-Wide University Network (WUN)* - collaborative health projects such 'as Early Life Opportunities for the Prevention of Noncommunicable Disease in Developing Countries' with universities in China, Australia, North America and other parts of Europe;
- *N8 group of research-intensive North of England Universities* - through which we are building new forms of trans-institutional collaboration e.g. the Northern Health Science Alliance and an asset register to promote sharing of research resources;

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- *White Rose Consortium of Universities* (Sheffield, Leeds and York) – supports collaboration in a number of relevant areas including the ESRC Doctoral Training Centre; the Yorkshire and Humber CLAHRC (2014 - 2019); the Leeds York Bradford CLAHRC (2008-13); the Health Innovation and Education Cluster (HIEC, 2010-2013). York has also played a lead role in developing the Yorkshire and Humber Academic Health Science Network.

**International research collaborations**

*World-wide collaborations on systematic reviews and evidence syntheses:*

- York hosts the Cochrane Collaboration (CC) Wound Care editorial group, helped develop CC policy on data sharing and co-authored the response from the CC and CRD to the Science and Technology Commons Select Committee inquiry into clinical trials and disclosure of data;
- Systematic Review Data Repository developed by the Evidence-based Practice Center at Brown University with support from the US Agency for Health Research & Quality;
- York led an MRC-funded collaboration with Oxford, Nottingham and Sydney developing Individual Patient Data methods of systematic review to facilitate wider use in decision making;
- IPD systematic reviews with trialists from around the world including: (i) Chemoradiotherapy for Cervical Cancer Meta-analysis Collaboration: involving 17 countries; (ii) non-small cell Lung Cancer Meta-analyses Collaborative Group, involving 13 countries and predicting infectious complications of neutropenic sepsis in children with cancer, involving 14 countries;
- CRD working with Yale in a proof of concept project exploring how IPD from controversial drug and medical device trials can be subject to independent academic scrutiny and re-analysis.

**Cancer epidemiology collaborations**

The York Epidemiology and Cancer Statistics Group actively participates in the:

- WHO International Association for Cancer Research (Lightfoot, senior visiting scientist);
- International Lymphoma Epidemiology Consortium - a group of international investigators who agree to pool data across studies or otherwise undertake collaborative research;
- Childhood Leukaemia International Consortium investigating rarer exposures, gene-environment interactions and subtype-specific associations through pooling study data.

**EU- funded collaborative research**

- European Myelodysplastic Syndromes Registry with data being managed and analysed at York;
- European Collaboration for Health Care Optimization (ECHO), analysing and mapping geographical variations and organisational quality indicators in six European countries;
- InterQuality, researching ways of financing quality in healthcare;
- EuroDRGs project, exploring the complexities of case payments for hospitals in national contexts and identifying pan-European issues in hospital case payment and performance;
- EuroVaQ project developing robust methods to determine the monetary value of a QALY across a number of European Member States;
- MedtechHTA project, investigating HTA methods across European countries.

**Other international collaborative projects**

- CHE works with the US Patient-Centered Outcomes Research Institute and Gates Foundation;
- CHE collaborates on issues related to competition with a team at the Melbourne Institute for Applied Economic and Social Research, funded by the Australian Research Council;
- Siddiqi is a collaborator on a Smoking Prevention in South Asia research programme;
- Pickett is member of the International Network for Research on Inequalities in Child Health, with a programme grant from the Canadian Institute for Health Research; and leads on Fair Distribution for the UN's International Expert Working Group for a New Development Paradigm;

**Collaborations with the NHS**

*Funding links and responsiveness to national priorities*

We have a strong track record of conducting high quality applied research that is methodologically robust whilst being timely and relevant to 'real life' decisions. We actively promote its dissemination and implementation through engagement with end users. Over the REF period, York successfully

**Environment template (REF5)**

responded to a number of tenders from the Department of Health, NICE, NIHR or NHS England for applied research programmes to generate knowledge relevant to policy and practice. These include funding of 2 new large research programmes in health economics; core funding of the Centre for Reviews and Dissemination; the contract to produce NICE Technology Assessment Reviews; funding of the Public Health Research Consortium. York was also a major partner in the Leeds, York, Bradford CLAHRC and is a partner in the new Yorkshire & Humber CLAHRC. York researchers have also been closely involved in the development of the Yorkshire & Humber AHSN. Jacobs is on Board of Governors of York Hospital Trust and helps play a role in co-ordinating research opportunities between the Trust and the University.

***Providing advice to the National Institute for Health and Care Excellence (NICE)***

York has contributed extensively to national NICE Committees; every major committee of NICE has had one or more panel members from York since it began. Examples include: Technology Appraisal Advisory Committee (Griffin, Manca, McKenna, Palmer, Sculpher, Soares, Woolacott), Public Health Interventions Advisory Committee (Cookson, Sculpher, Sowden), Diagnostics Advisory Committee (Sculpher) Guidelines Review Panels (Drummond), and NICE Decision Support Unit (Palmer, Sculpher, McKenna, Soares). We have also contributed to a large number of workshops for NICE on methods for evaluation, decision making and how to incorporate equity considerations. NHS Evidence Public Health Information Reference Group (Sowden) and NHS Evidence Advisory Committee (McGuire, Child Health Deputy).

***Participation in NIHR awards panels***

Programme Grants for Applied Research Board (Gilbody, Richardson); HTA Clinical Evaluation and Trials Board (Gilbody), HTA Commissioning Board (McGuire), HSRD Commissioning Board (Street) HSRD Prioritisation Board (Mason); RfPB regional advisory committee (Adamson, MacPherson, McMillan, Siddiqi, Spilsbury, Watt); Clinical Scientist Fellowship Panel (Goddard), Postdoctoral fellowship panel (Croudace); Knowledge Mobilisation fellowship panel (Sheldon).

***International and national research advisory Boards***

MRC Molecular and Cellular Medicine Board and the Population Health Sciences Group (Roman); Advisory Group for the National Collaborating Centre for Methods and Tools, Public Health Agency of Canada (Sowden); Collaboration for Environmental Evidence Advisory Committee (Higgins); Royal College of Paediatrics and Child Health Advisory Committee, Academic Board and Council (McGuire); Scientific Committee of the British Paediatric Surveillance Unit (Oddie), WHO Advisory Group on Clinical Trial Registration and Reporting (Stewart); WHO Expert Advisory Panel on Clinical Research Methods and Ethics (Stewart). WHO Panel on Research into Traditional Medicine (MacPherson); Strategic Skills Fellowship panel (Sculpher). The Children's Society, Unicef UK, High Pay Commission and Living Wage Commission (Pickett); Alberta Heritage Foundation for Medical Research (Sheldon); Irish Health Research Board (Gilbody, Sheldon); Scientific Committee of the British Paediatric Surveillance Unit (Oddie). Sculpher is the only European researcher on the US Cost-Effectiveness Panel a group of methodologists working on defining best practice in economic evaluation.

**Methodological contributions to the discipline**

York is also known for its significant methodological contributions in a number of areas (see also section b). Prominent examples include Health Economics and Systematic Reviews.

***Health Economics***

York is one of the leading world centres for health economics. Recent bibliometric analysis puts York as the only UK institution in the world top 10 in health economics alongside Harvard, Stanford, Berkeley (<http://elibrary.worldbank.org/content/workingpaper/10.1596/1813-9450-5829>). York led conceptual and methodological research on the estimation of the value of the NICE cost-effectiveness threshold and on modelling uncertainty and assessing the value of obtaining further evidence on technologies in order to improve decision-making (Value of Information), with implications for regulation and reimbursement decisions. Methodological research has also explored issues of heterogeneity, generalisability and transferability in economic evaluation, along with methods for utilising patient level data and for the incorporation of health inequalities into economic evaluation.

**Environment template (REF5)****Systematic Reviews**

York's methodological research includes: (i) optimising retrieval of research evidence, for example, adverse effects data and (ii) developing approaches to the synthesis of quantitative and qualitative data: e.g. the use of Individual Participant Data meta-analysis (development of one stage common-effect and mixed models, and Bayesian hierarchical approaches) and extending it for diagnostic and prognostic questions. We have also explored the limitations of Mixed Treatment Comparisons for heterogeneous, non-drug interventions. CRD recently co-launched a new BMC journal *Systematic Reviews* and co-convenes 4 Cochrane Methods Groups: Adverse Events, Economics, IPD MA and Multiple Interventions. CRD's *Guidance on Undertaking Reviews in Healthcare* is used widely, 30,000 pdfs of the 3<sup>rd</sup> edn and 1/4m page views have been downloaded.

**Training and building capacity**

York provides training, advice and promotes the disciplines externally. For example:

- York-delivers part of the NIHR Research Design Service and has achieved great success in translating applications from NHS staff into funded grants (over £53m in the last five years);
- CHE organises a range of training activities aimed at academics, policy makers, analysts from the public sector and industry in order to disseminate our methodological work and facilitate its use by others. 8 courses are offered, including workshops and courses related to themes in economic evaluation and analysing data for policy evaluation focusing on administrative data;
- CRD runs annual courses on systematic reviews (aimed at researchers funded via NIHR) and identifying the evidence for systematic reviews (aimed at information professionals);
- The York Trials Unit established and runs the annual Randomised Controlled Trials in the Social Sciences Conference at York, now in its 8<sup>th</sup> year.

**Awards, prizes and other recognition of contributions to the discipline**

- CHE received a Queen's Anniversary Prize for Higher Education in 2008. The citation reads "*The Centre for Health Economics is recognised as a global leader in developing new economic approaches for national health care systems. The Centre's methods are used around the world and it has made outstanding contributions in key areas of UK public health policy.*";
- Bland, Gilbody, Sculpher, Stewart held NIHR Senior Investigator Awards during the period;
- Drummond is one of only 27 UK citizens currently elected to the US Institute of Medicine and received the Eisenberg Award, in recognition of exemplary leadership in the application of medical decision-making research, by the Society for Medical Decision Making, USA, 2012;
- Goddard was elected Fellow of the Learned Society of Wales, in its inaugural year (2011);
- Griffin won the ISPOR Research Excellence Award, awarded in Washington D.C., 2012;
- Manca and Sculpher won the ISPOR Research Award for Methodology Excellence, 2008;
- Phillips was F1000 Faculty Member of the Year winner for Research Methodology 2011;
- Pickett was elected a Fellow by Distinction of the UK Faculty of Public Health, 2012 and won the 2013 Silver Rose Award for social justice. Her book, *The Spirit Level* won both the Political Studies Association Publication of the Year 2012 and Bristol Festival of Ideas Book Prize 2011;
- Sculpher was President of the International Society for Pharmacoeconomics Research (2011-13);
- Sheldon chaired the Academy of Medical Science's Sectional Committee 7 (2009-2012);
- Stewart elected President of the international Society for Research Synthesis Methods, 2013;
- Spackman won an American Foundation for Pharmaceutical Education award, 2009-10.

**Journal Editorships**

York hosts the two leading health economics journals: *Journal of Health Economics* (with Harvard) (Street and Chalkley) and *Health Economics*. The following staff edit other journals: *Cancer Epidemiology* (Roman), *Value in Health* (Drummond, Manca), *Scottish Journal of Political Economy* (Chalkley), *Systematic Reviews* (Stewart). Most of those submitted to this UoA are also associate editors, for example: *Applied Health Economics and Health Policy* (Palmer), *Archives of Disease in Childhood* (Phillips), *BMJ Open* (Chalkley), *BMC Health Services Research* (Goddard), *Bulletin of Economic Research* (Chalkley), *Ethnicity and Health* (Flemming), *International Journal of Nursing Studies* (Spilsbury), *Journal of Health Services Research & Policy* (Goddard, Sheldon), *Maternal & Child Health Journal* (Pickett), *Open Health Services and Policy Journal* (Jacobs), *Research Synthesis Methods* (Higgins), *Longitudinal and Life Course Studies* (Croudace).