

Institution: University of Sheffield

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

a. Overview

- **Background** - The School of Health and Related Research (SchARR) (<http://www.shef.ac.uk/scharr>) is the focus for a large, diverse and internationally recognised programme of Health Services and Public Health Research (HSPHR) in the University of Sheffield. It is collaborative and inter-disciplinary, and contains the core disciplines of HSPHR along with clinical expertise in Public Health, Emergency Medicine, Rehabilitation and Mental Health. We have close working relationships with clinical Primary Care colleagues in the School of Medicine who are included in this submission, as they were in our submission to RAE2008.
- Research themes within our research programme are strategically aligned in 3 main groups described below: a) Health Services Research including primary care, b) Health Economics and Decision Science, and c) Public Health. These three groups equate broadly to administrative sections in the School.
- SchARR's distinctive contribution in HSPHR is its combination of internationally recognised strengths in both primary and secondary research focused on practice and policy evaluations to provide decision-makers and end-users with timely and relevant evidence, and a broad spectrum of qualitative and quantitative methodological research. It has internationally recognised methodological strengths in health economics, cost-effectiveness modelling, health measurement and valuation, clinical trials and evaluation of interventions, medical statistics and study design, as well as in mixed methods research. Our methodological research is a fourth, cross-cutting, theme described below.
- **Research awards of £53.9m** have been won during the REF period, with a further £6.4m notified as successful, and income spent has been £40.5m. Average annual research awards have increased by 65% from the RAE period (£5.8m) to the REF period (£9.6m), and annual research spend increased by 37% from 2008 to 2012. Our research 'order book', a key measure of sustainability as it represents grants and contracts secured, but not yet spent, grew by 49% from £13.3m in March 2009 (start of records) to £19.8m in July 2013.
- SchARR consistently performs well in national competitions, winning **major grants for programmes of research** such as: the NIHR School for Public Health Research (SPHR) (total: £20m, SchARR: £2.6m); a DH Policy Research Unit in Economic Evaluation in Health and Care Interventions (EEPRU) (total: £4.8m, SchARR: £2.7m); and an NIHR Collaboration for Leadership in Applied Health Research and Care for South Yorkshire (CLAHRC SY) (total: £10.2m research income, SchARR: £2.7m). SchARR also has a UKCRC registered Clinical Trials Research Unit (CTRU) supported by NIHR (£2.8m). Grant renewals have included our NIHR Technology Assessment Reviews group (SchARR-TAG) (£6m), the Research Design Service for Yorkshire and Humber (RDS YH) led by SchARR (total: £5.2m, SchARR: £2.8m), the NICE Decision Support Unit (DSU) (total: £1m, SchARR: £912k), and the new CLAHRC for Yorkshire and Humber (YH) which will again be led by SchARR (total: £10m, SchARR: £3.37m).
- SchARR has been the largest recipient of funding from the NIHR's flagship HTA programme since its inception, and one of the most successful with other NIHR programmes such as HSDR. We have also won substantial RCUK income – leading successful bids totalling £9.3m (SchARR: £5m) in the REF assessment period.

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- We continue to **expand existing areas** of work (for example the Emergency Care research programme has doubled in size), and to **develop new areas** of strategic importance, most notably a new Centre for Assistive Technology and Connected Healthcare (CATCH) which has recently been established with £3m seedcorn funding from the University.
- Since 2008 we have **published over 1,000 papers** in a wide variety of peer-reviewed journals including 43 in the BMJ, the Lancet or NEJM, 9 Cochrane Reviews and 55 HTA monographs. A quarter of these papers have been co-authored with overseas collaborators from 43 different countries.
- The School and University have invested in research leadership with an increase in the number of professors from 10 in 2008 to 25 in 2013, including 6 new appointments. The number of **students** in SchARR **awarded a Research Degree has risen by 67%** since 2008.
- SchARR has continued its long-standing commitment to **public and patient involvement** (PPI) in research and has appointed a PPI lead to champion PPI with resources, training and support available to projects.
- **Major plans** include: developing Assistive Technology research including a more sophisticated Home Laboratory in close collaboration with the Faculty of Engineering; expansion of Public Health research through SPHR/NICE with plans for new chairs in Public Health; and further development of Emergency Care research, particularly in the fields of Trauma, Pre-hospital care and Ageing. We shall be applying to join the NIHR School for Primary Care Research.

b. Research Strategy

i. ACHIEVEMENT OF STRATEGIC AIMS: 2008-2013

The last 6 years have seen a large and sustained growth in HSPHR at Sheffield across the 3 main sections of Health Services Research, Health Economics and Decision Science and Public Health. This has been assisted by the appointment of a new Dean (Nicholl) with a strong research brief. Developments are detailed below with the extent to which specific strategic aims in RAE2008 have been met.

Health Services Research (HSR) (Director: O’Cathain)

This section provides the strategic focus for large scale primary evaluative research of health services and health care interventions. The larger sub groups include Emergency and Immediate care (Leads: Mason, Goodacre), CTRU (Director: Cooper), Rehabilitation and Assistive Technology (Lead: Hawley) and the Medical Care Research Unit (MCRU) (Director: O’Cathain).

The Emergency Medical Research in Sheffield (EMRiS) group undertakes research into emergency health care, the organisation of emergency services and staffing, emergency department and ambulance targets, and policy initiatives like the new regional trauma networks. It has won a total of £5.0m of research grants since 2008 and is led by 2 clinical professors and has been further strengthened by the addition of a third clinical professor, Lecky, the Research Director of the national Trauma Audit Research Network (TARN). EMRiS works closely with the MCRU, a multidisciplinary health service policy research group founded in 1966, which focuses on mixed methods evaluations of new services such as NHS111, practice variation such as in emergency admissions, and developing new methods for evaluating policy innovations.

A key strategic aim set out in RAE2008 was to develop our applied clinical research programme. This has been achieved with active grants to the University involving SchARR’s Clinical Trials Research Unit (CTRU) growing from £2.1m in 2008 (CTRU funding: £631k) to a current £10.4m (CTRU: £6.7m), and staff increasing from 6 to 35. Total CTRU awards of £13m during the REF period have supported 40 studies including 13 CTRU-led trials funded from NIHR HTA, PHR, RfPB

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and the MRC. The NIHR-funded and registered CTRU, an integral part of ScHARR, provides expert support for the development and conduct of clinical trials to international regulatory and scientific standards. It also provides support for other study designs such as observational studies, patient registers and cohort studies requiring significant levels of data management. It will be the focus for continued internal investment.

The Rehabilitation and Assistive Technologies Group, which started at the time of RAE2008, focuses on support for people with long-term conditions to enable them to live with independence and dignity in their own homes and communities. This highly interdisciplinary group has won several large grants since 2008 from a wide range of sources including NIHR, MRC, EPSRC, and the EU (total: £11.4m, ScHARR: £5.7m), allowing it to grow from 7 research staff in 2008 to 26 in 2013. It leads the NIHR CLAHRC SY (£10.2m over 5 years with another £10m for the next 5 years recently awarded) and the national EPSRC Knowledge Transfer for Extending Quality of Life (KT-EQUAL) Network (£1.9m, ScHARR: £454k). The University is investing £3m in the development of the new cross-faculty and cross-discipline Centre for Assistive Technology and Connected Healthcare (CATCH). Led by ScHARR, it brings together over 30 clinical scientists to focus on research for people with age-related disability and/or illness and those with long-term conditions. As part of this, we have developed a Home Laboratory in South Yorkshire.

Health Economics and Decision Science (HEDS) (Director: Dixon)

This section brings together the skills needed for conducting economic evaluations including health economics, operational research, systematic reviewing, information science and statistics. This was another key area for development in our RAE2008 strategy. Since 2008 HEDS has grown from 51 to 92 staff, with grant capture growth of 94% from £1.9m in 2008 to £3.7m in 2012. Since 2008 it has secured large programmes of work for NICE (with a total value of £8.2m, ScHARR: £7.8m), and for the DH EPRU (total: £4.8m, ScHARR: £2.7m). HEDS conducts economic evaluations alongside trials and other studies, all major CTRU trials having an economics component; it has also won 4 MRC methodological grants.

ScHARR has the largest UK group providing economic evaluations for NICE and, since 2008, has published 60 Technology Assessment Reviews, 22 NICE public health evaluations and 16 technology appraisal topics by the DSU which addresses complex technical problems and advances in methods. EPRU's work includes evaluations of the cost-effectiveness of patient-level treatments (e.g. drug comparisons), whole pathways of care, national programmes (e.g. cancer screening) and policy interventions (e.g. alcohol pricing). These studies integrate the health valuation and evidence synthesis methods work of HEDS. EPRU also led to, and has benefitted from, important methodological research into problem structuring (NIHR fellowship), whole pathway modelling (e.g. CLAHRC funding for modelling long-term depression), analysis of cross over trials (NIHR Fellowship) and extrapolation for modelling using frequentist and Bayesian methods.

Public Health (Director: Bissell)

Public Health is a strategic priority in the Faculty of Medicine, Dentistry and Health in the University of Sheffield, and ScHARR has led on this, with total funding growing to £10.2m (ScHARR: £7m), over the REF period, and staff growing from 23 to 61 since 2008. Much of this growth has related to evaluating public health interventions including the establishment of the NICE Public Health Collaborating Centre (PHCC), a major programme of evidence synthesis and cost-effectiveness modelling. Having developed and piloted the use of new methods of synthesis of a wide range of evidence types (e.g. using logic models and developing evidence-based frameworks based on the synthesis of mixed-methods findings) in supporting the development of national public health guidance, ScHARR is now applying these methods to a range of funded evidence synthesis projects and contributing to a major EU funded European methodology programme (INTEGRATE-HTA. Total: approx. €2.98m, ScHARR: €406k).

This is also important in enabling ScHARR's unique contribution to the NIHR School for Public Health Research (SPHR) (total: £20m, ScHARR: £2.6m) with ScHARR's Dean (Nicholl) as

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National Director. The new School provides an opportunity over the next 4 years to develop a major collaborative programme to expand the public health evidence base in the priority areas of alcohol, older people and inequalities (all areas in which ScHARR has topic-specific and methodological expertise) in partnership with public health groups in the other 7 HEIs and consortia making up SPHR.

Primary evaluation is a key part of ScHARR's public health research programme through the application of rigorous mixed methods including both randomised trials of complex public health interventions, such as the Booster exercise intervention trial (HTA total: £1.2m, ScHARR: £503k) and the MRC breast feeding incentives intervention trial (MRC total: £1m, ScHARR: £820k), and observational evaluations such as the MRC alcohol policy modelling and evaluation project (total: £1m, ScHARR: £879k).

Methods Research

ScHARR works in a highly applied area of research, using methods at the cutting edge in order to enhance the relevance and usefulness of research to research users. To support this, we have a major programme of methodological research which cuts across all our substantive research themes. One important area is the measurement and valuation of health. Specific projects have included the development of the 5 level version of the EQ-5D (MRC PRET study on methods of valuation and DH funded main study); application of ordinal valuation methods (MRC PRET); use of generic and condition specific measures (COSMeQ and NICEQoL) and measures for more vulnerable groups (e.g. the MRC funded CHU-9D measure in children and the MRC funded validation of generic measures in mental health); and development of new measures and methods for mapping between measures (NICEQoL). More recently, the group's work has extended to measuring the wider impacts of health care (e.g. value based pricing for DH) and using well-being in economic evaluation (DH funded).

ScHARR's medical statistics group has been active in methodological issues surrounding the design of clinical trials of complex interventions; the use of Bayesian statistics in health economics (MRC extrapolation study); and the analysis of very large data sets to examine hospital mortality (e.g. DH funded work on the Summary Hospital Mortality Index). Another key area has been to integrate more closely the social science and technology evaluation strands to develop a mixed methods approach. Achievements here include the development of public health cost-effectiveness models; modelling the impact of alcohol legislation and an MRC methods grant in mixed methods trials research.

ii. CHANGES TO RESEARCH ENVIRONMENT SINCE 2008

The last 6 years have seen many changes in the external research environment, with the roles and funding opportunities in NIHR, MRC, and other health funders evolving. ScHARR has responded successfully to these changes, regarding them as opportunities to grow and diversify its research portfolio: increasing MRC funding over the period to £4.8m (ScHARR: £3.55m) through Public Health and Methodology grants; increasing EPSRC funding mainly for research into Assistive Technology; winning infrastructure support and major grants for programmes of research such as the CLAHRCs and EEPRU; becoming a founder member of the national NIHR SPHR; and winning 15 training fellowships from NIHR, 3 Placement Fellowships from ESRC, an Early Career Fellowship from both MRC and EPSRC, and a Pharmacy Practice Research Fellowship. We also attract significant commercial funding for research and KT activities, and from the EU (£1.8m over the REF period).

ScHARR's internal research environment continues to flourish, with the appointment of a new Dean (Nicholl) with a strong research brief and 17 new professors since 2008 (11 promotions and 6 appointments). ScHARR's on-going success has meant that we have expanded into new, high quality research space in an adjacent building.

Environment template (REF5)**Responsiveness to National and International Priorities and Initiatives**

Key to SchHARR's success has been an ability to respond to national priorities and initiatives and an increasingly international agenda. Policy directed research is at the core of our activities while ensuring appropriate methodological standards are maintained. SchHARR has been very successful in renewing large programmes of work for decision makers in NICE and DH, and also in winning new ones. It has responded successfully to key policy initiatives, for example in alcohol, modelling and evaluating policies with funding from MRC, DH and the Scottish Office. Much of our emergency and immediate care research responds to national priorities and initiatives, such as evaluation of NHS Direct and NHS 111; primary angioplasty for heart attacks; the 4-hour target in emergency departments; response time targets for ambulances; and emergency admissions. The rapid expansion of both primary public health evaluation research and public health evidence synthesis, leading to the award of a major grant to support NICE public health guidance development and involvement in the NIHR School for Public Health Research (SPHR), reflects the way SchHARR's skills and energy have been able to respond to policy needs and research opportunities. Our interdisciplinary Centre for Assistive Technology and Connected Healthcare (CATCH) is a response to another important priority area.

SchHARR has also led the way in promoting the integration of patient and public involvement (PPI) in all its research through the appointment of a PPI lead and the development of a strategy with web-based resources to ensure staff can incorporate PPI into all aspects of research including topic selection and scoping, design, conduct, analysis, and interpretation and dissemination. It shares this expertise with other University departments.

iii. VISION - FUTURE STRATEGY (2014-2019)

SchHARR is committed to developing its HSPHR programme, building on its skills and interests in line with the research needs of health services, patients and the population at large. SchHARR's approach is to continue to develop research capacity to study and evaluate health, healthcare, health services, public health and health policy from the broadest possible range of clinical, economic and social perspectives. Past success has depended on being flexible while at the same time anticipating developments, including advances in methods to address applied problems. The key strategic aims listed below seek both to consolidate and to grow existing areas and to strengthen, develop and promote new areas of research in response to the changing environment.

Aim 1: To Continue to Grow SchHARR's Applied Clinical Research Programme

We intend to build on the growth in our Clinical Trials Research Unit (CTRU) through the further development of links with local and national clinicians and Trusts, and to begin to develop an international trials portfolio. We also aim to develop the resource of the South Yorkshire cohort, which includes over 20,000 well characterised patients (recruited through general practices) who have consented to be approached to take part in research, to facilitate recruitment into trials. In addition, we shall continue to increase the number of general practices in our local primary care research network (the CUTLER group) and the number of patients recruited to primary care trials.

Aim 2: To Develop Research into Rehabilitation and Assistive Technologies

We shall develop and grow the new Centre for Assistive Technology and Connected Health Care (CATCH) through the University's £3m investment, appointing 2 new chairs and drawing on a cross university network of clinical and other scientists alongside SchHARR's applied health expertise. As part of this, we plan to build a more sophisticated Home Laboratory to help us study how assistive technologies work in practice. This initiative will build on our international profile and industry links and stimulate cross-faculty working.

Aim 3: To Develop the Profile and Impact of our Public Health Research

We shall maximise the opportunity provided by the NIHR School for Public Health Research (SPHR) to consolidate our programme of evaluating public health interventions. A key priority for 2013-16 is to establish close relationships with Sheffield City Council and other local authorities

following the transfer of responsibility for public health and health inequalities. Sheffield is one of 3 members of the £30m National Centre for Sport and Exercise Medicine (NCSEM) (an Olympic legacy project). The Sheffield centre focuses on the public health dimension and we plan to exploit this opportunity by working in partnership with Sheffield collaborators in NCSEM to develop and evaluate activity interventions. We also plan to develop our public health research programmes through new appointments and further developments in methods for assessing the broader impact of public health interventions.

Aim 4: To Internationalise our Research

SchHARR has research projects involving over 60 international partners, and we are developing a detailed strategy for further internationalising our research profile to increase the global impact of our research. A key development area will be the application of HTA and health service and public health evaluation methods in the EU (where last year we submitted 5 new applications – 2 successful, including collaboration on a €30m grant.) and emerging economies, such as in Asia and South America.

Aim 5: To Continue to Develop Methods of Research

We shall continue to develop methodological research in order to improve the relevance and usefulness of our work and to provide opportunities for staff to develop their interests and expertise. The areas we currently intend to work on include: identifying and reviewing evidence for populating cost-effectiveness models; development of methods for incorporating wider societal effects including informal care, productivity and wellbeing; adaptive trial designs for publicly funded trials; analysis of cross over trials; modelling of utility data; measuring health service performance and mixed methods research.

iv. PROMOTING THE IMPACT OF OUR RESEARCH

We undertake applied Health Services and Public Health Research to inform decision making in the NHS and beyond as part of our 'Making a Difference' agenda. To help achieve this, research users are involved in choosing questions, scoping studies, and designing studies to ensure that the research undertaken meets their needs. On-going stakeholder engagement is achieved by having end users on project steering groups, participation as co-investigators where appropriate, and the careful dissemination of our research to users.

The range of users targeted by our research is diffuse and requires that researchers use an extensive range of mechanisms to promote impact. Traditional academic outlets (publishing in high impact journals and making conference presentations) will continue to be supported by writing groups, courses, and writing weeks, and by funding for conference attendance. These outlets are not sufficient to reach non-academic users, so SchHARR has a publicly downloadable working paper series. In line with guidance from the Research Councils, the School is funding online versions of published papers to improve access. Staff also present at non-academic conferences and meetings to disseminate their findings to research users. SchHARR regularly organises meetings of research users to promote impact. Increasing use is also being made of Social Media (e.g. Blogs and Twitter) and use of video to ensure those searching for research can find and share it easily.

SchHARR encourages its staff to engage in Knowledge Transfer (KT) activities to increase the impact of our research and we have worked productively with pharmaceutical and technical devices industries as well as other healthcare organisations, earning some £6m in KT activities over the REF period. SchHARR has also appointed an Impact Champion and our strategy for improving the impact of our research is set out in detail in the impact template.

c. People, including:

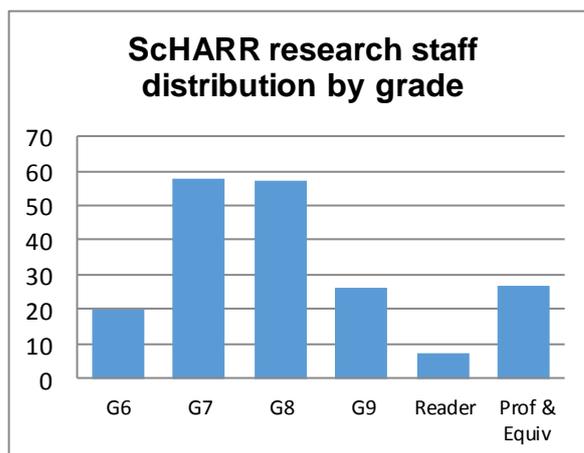
i. STAFFING STRATEGY AND STAFF DEVELOPMENT

1.1 Staffing Strategy

SchHARR's staffing strategy focuses on recruiting high calibre staff, their support and development, and the provision of an excellent, fair and equal environment in which to flourish. Maintaining the School's research culture and quality standards ensures a self-motivated, mutually supportive and committed workforce. Total research staff numbers have risen by 80% (from 108 to 194) between 2008 and 2013. Considerable progress has been made in moving research contract staff to open-ended contracts, and 50.5% of those staff are now employed on this basis.

Since 2008 a thriving research environment and successful career development have led to 11 promotions to personal chairs and 11 to readerships in SchHARR (with 2 to chairs elsewhere). SchHARR accords priority to recruiting to its major research themes or those identified for strategic development. There have also been 7 appointments to new chairs in Public Health (1, in post November 2013), Emergency Medicine (1), Rehabilitation and Assistive Technology (3), and Health Economics (2). We are in the process of recruiting to a chair in Mental Health and we also plan to recruit to a chair in Primary Care research. The School now has a well-balanced distribution of senior and junior research staff, and, with 33 professors and readers, has the capacity to expand its research portfolio further. The age profile of senior staff, with 54.5% of professors and readers under 50, ensures sustainability.

We aim to ensure that the principles of equality and diversity in the Equality Act 2010 and the University's 'Excellence through Inclusion' are reflected in all our activities, including recruitment. We have a SchHARR Equality and Diversity Group, and an Equal Opportunities contact and regularly monitor our staff profile with the Dean who is responsible for ensuring the profile is a fair reflection of applicants. Our Flexible Working Policy, in place for a number of years, helps staff to achieve a satisfactory balance between work and personal life, and in our 2012 staff satisfaction survey 73% agreed or strongly agreed that they were able to strike a reasonable balance between work and home life, an increase of 15% since 2008. The proportion of female staff grade 9 and above rose from 38.2% to 53% between 2008 and 2013 and, in recognition of our good employment practices, SchHARR has an Athena SWAN bronze award and is working towards a silver. Nine SchHARR staff benefitted from the University's flagship Women Academic Returners Programme (WARP), which funds female researchers returning from a career break to allow them to concentrate on research for their first semester.



Fostering Good Research Practice (GRP)

Amongst the Russell Group the University is a leader in fostering GRP, recognising that excellence requires intellect and integrity and that research environments must be underpinned by cultures of integrity. The University's *Good R&I Practices Policy* (published in 2011 and reflecting world-wide best practice) sets the tone and clarifies that GRP is as much about how people are respected as about the rigour of doing research; Mountain was on the group that designed the policy. Sheffield is the only Russell Group university to deliver compulsory GRP training for all its research students (PGRs) and this training is delivered along 5 cognate discipline lines by academics and Early Career Researchers (ECRs) in the disciplines. 84% of PGRs who completed PRES 2013 agreed that their understanding of integrity had developed. SchHARR continues to take a lead role in supporting the University's approach to governing health care research: in 2012 the University appointed Cooper CL to Chair the University's new *Health and Human Interventional Studies Research Governance Committee*; in 2009/10 Nicholl led the pilot of the University's approach to

quality assure University-sponsored clinical trials.

1.2 Staff Development

In 2012 the University was given the *HR Excellence in Research* award by the European Commission and we are committed to applying the 7 principles of the *UK Concordat for the Career Development of Researchers* and supporting the University's action plan. SchARR supports staff through all career transition points. Its Director of Staff Development (Salway) ensures that appropriate training is available throughout the year to meet identified staff training needs. Other support mechanisms include: individual career planning through annual appraisal, research writing weeks preceded by writing courses, writing groups, grant writing support, an annual research day and annual staff development day, as well as various academic development groups. Particularly innovative is a programme of weekly 20 minute 'Bite Size' professional development sessions.

A cross-faculty mentoring scheme (GROW Programme) exists for all professional staff, principal investigators and contract research staff. Many staff participate in the Sheffield Leader development programme. Specialised training is also available for women. The '[Think Ahead](#)' framework of support (nominated for a Times Higher award in 2011) supports the career development of PGRs and ECRs and includes tailored inductions, professional development career training programmes, a suite of career support and a tailored researcher mentoring programme which inculcates independence amongst junior researchers. 'Think Ahead' maps onto the Researcher Development Framework and the Concordat. The University's European Commission HR Excellence in Research award is evidence of the high quality research environment for ECRs. In SchARR junior staff are also encouraged to register for higher degrees, with time set aside for staff to complete their degrees. SchARR encourages and supports junior staff in developing successful bids with the use of a '*bid kit*', and training on writing and costing grant applications.

In SchARR, research contract staff enjoy the same development opportunities and rights as established staff, including study leave, undertaking personal consultancy, travel, training, and staff development funds. Since 2008, 18 staff (including 3 research staff) have taken study leave and staff are also supported so they can take up positions with external professional and advisory bodies to enhance their professional standing.

ii. RESEARCH STUDENTS

SchARR has a large and vibrant research student community, with nearly 100 PGRs from a wide variety of disciplinary backgrounds, working across all areas of HSPHR and research methods, and including 11 members of staff. Since 2008 we have won 15 training fellowships from NIHR (8 doctoral, 3 Research Methods, 4 In-Practice), an early career fellowship from each of MRC and EPSRC, 3 placement fellowships with ESRC, and a Pharmacy Practice Research Fellowship. There have also been 12 PhD studentships awarded by MRC (4), ESRC (7) and EPSRC (1). The University and Faculty have funded a further 9 studentships in open competition and SchARR has supported another 15 plus 7 fee waivers. A new SchARR funded competitive post-doctoral fellowship will be offered to a completing PhD student to write publications and submit an application for a prestigious fellowship. The number of students successfully awarded a research degree rose by 67% between 2008 and 2012. Research students produced 30 publications and made 73 presentations at national and international conferences during the REF period.

O'Cathain helped to develop the University's *Research Student Proposition (2012)* used for benchmarking and outlining reasonable expectations for staff and the University. The 2012 QAA praised Sheffield, highlighting provision for PGRs as good practice. SchARR has its own additional and long-standing policies for the support and development of PGRs and doctoral training fellows. Support includes a personal workstation for all full-time training fellows and PGRs, state-of-the-art information services, IT support, training resources, access to specialist research advice (e.g. in health economics and statistics), personal mentoring and regular review and development appraisal. We are committed to integrating the work of researchers into the School's research programmes so that from the outset researchers are accustomed to a team approach to meeting

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shared research objectives and learn the importance of collaboration and mutual support. Support available through this system is wide-ranging and responsive, including: career planning; personal coaching for viva or interviews; support through the research governance process; and provision of development opportunities. Professional development is an integral part of doctoral study and supervisors of PGRs are responsible for undertaking a personalised research training needs assessment for every PGR they supervise to identify training needs. The Faculty's Graduate School coordinates a Doctoral Development Plan (DDP) to deliver this. A wide variety of courses is available, delivering generic, transferable and specific research training skills, including modular courses given through SchHARR's extensive Masters programmes. 86%/49 PGRs completing PRES 2013 thought their skills in applying research methods, tools and techniques had developed during their programme.

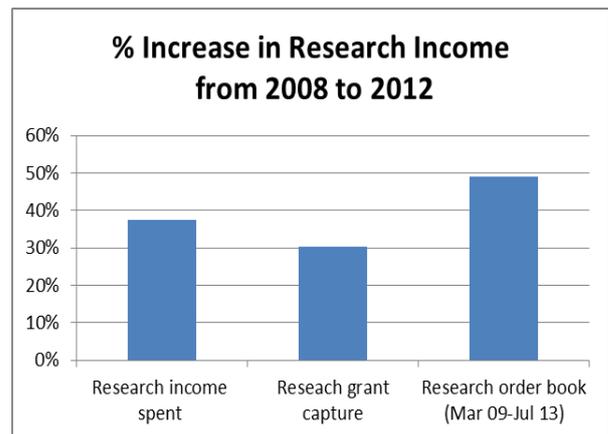
SchHARR's PGR Committee meets every 6 weeks to oversee the welfare of students (Chair: Campbell and including 3 student representatives). Junior research staff are encouraged to apply for fellowships and are given advice in preparing applications, with protected time. SchHARR staff studying for a PhD whilst working have their tuition fees paid by the School on completion. SchHARR has strongly supported the University's introduction of a PhD by Publication to widen access to those who have entered a research pathway following clinical or non-clinical professional careers; 2 staff have successfully completed this to date.

PGR supervisors attend a rolling programme of training. Each student is supervised by 2 staff members. Progress review meetings are held every 4-6 weeks, with a report including agreed future work/training targets. The supervisory teams report 6-monthly milestone targets to the SchHARR PGR Committee and people falling behind target are followed up. 93% of PGRs expressed satisfaction with supervision in our latest survey. All students are invited to the weekly SchHARR seminar and hold an annual conference to disseminate their work internally. 78% of PGRs responding to a survey thought SchHARR provided a good seminar programme.

d. Income, Infrastructure and Facilities

i. INCOME

There has been a **rapid expansion of research income**. £53.9m has been generated in research awarded to our staff during the REF period and income spent has been £40.5m. Mean annual grant capture increased by 65% between the RAE period (£5.8m) and the REF period (£9.6m) and our research 'order book', reflecting awarded, but unspent, income grew by 49% from £13.3m in March 2009 (start of records) to £19.8m in July 2013. Research income spent increased by 37% from 2008 to 2012, with major increases in EU project spend (227%), NIHR (252%), and RCUK (87%).



A large part of SchHARR's income derives from major, usually 5-year, grants for programmes of research, including:

NIHR:

- School for Public Health Research (total: £20m, SchHARR: £2.6m).
- CLAHRC SY (total: £10.2m, SchHARR: £2.8m).
- New CLAHRC YH (total: £10m, SchHARR: £3.37m).

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- Technology Assessment Reviews - contracts held since 2001. Renewed again for 2011-16 (£6m).
- NICE Decision Support Unit renewed 2012-2017 (total: £1m, ScHARR: £912k)

DH:

- Policy Research Programme Unit in Economic Evaluation in Health and Care Interventions (EEPRU) (total: £4.8m, ScHARR: £2.7m).

Other major awards during the period include two NIHR programme grants for applied research led by ScHARR staff relating to i. ambulance services (total: £2m, ScHARR: £1.28m), and ii. vascular services (total: £1.9m, ScHARR: £1.7m) and 3 MRC project grants with a total value of £3.3m (ScHARR: £2.51m). We have won a total of £40.9m from NIHR for projects led from ScHARR (with £28.6m coming in to ScHARR), including major trial grants from the HTA programme, the public health programme, and the SDO/HSDR programme. We also collaborate extensively with other lead investigators, contributing to 9 other NIHR programme grants for applied research led from elsewhere and supporting, through the Clinical Trials Research Unit (CTRU), 27 clinical trials and studies led from elsewhere.

ii. RESEARCH INFRASTRUCTURE

The NIHR-funded and registered **Clinical Trials Research Unit** (Director: Cooper), based in ScHARR, provides expert support for the development and conduct of clinical trials to the highest regulatory and scientific standards; it is a pivotal focus for the development of clinical trials within the South Yorkshire research community. The CTRU has been supported by NIHR infrastructure grants worth £1.1m, with a further extension of £1.4m to 2018.

ScHARR houses the hub of the NIHR **Research Design Service for Yorkshire and Humber** (RDS YH), a White Rose collaboration with Leeds and York, which supports researchers to develop and design high quality research proposals for submission to the NIHR and other national, peer-reviewed funding competitions. The NIHR RDS YH **PPI forum** is led by ScHARR.

We are actively exploiting opportunities provided by the **South Yorkshire Population Cohort** of 20,000 well-characterised people who have agreed to follow-up and be approached to take part in future health services and public health research studies. We are in the application process of linking the South Yorkshire Cohort dataset to both national and local health related datasets. Already 5 studies have quickly and efficiently recruited participants using this innovative research facility.

We organise our local **primary care research network** (the CUTLER Group) and plan to increase the number of practices involved.

With funding from ScHARR resources, our research teams enjoy access to specialist HSPHR **information resources** in addition to University library and computing facilities. 3 internally funded and 4 externally funded posts combine to provide a full-time research support service, intensive input to projects and systematic reviews, and advice on publication. The internationally known ScHARR library offers specialist resources to support HSPHR.

ScHARR funds two **research administrators** to support the process of applying for research grants, including costing applications, and is planning to appoint a third administrator to support applications for governance and ethics permissions.

Research Ethics and Governance - ScHARR has a comprehensive research ethics review process for all students and staff conducting research involving human participants. We manage research governance procedures for all health research within the School, with the exception of clinical trials where the process is managed through the University. We have a strict data security policy, involving the encryption of all portable data and devices.

iii. FACILITIES

SchHARR staff work in **2 adjacent modern buildings** in the centre of the University, fostering communication and collaboration.

A temporary '**Home Laboratory**', developed in the BSI building, will transfer to new facilities planned for the Centre for Assistive Technology and Connected Healthcare (CATCH), including workshops and office space. This innovative Laboratory will support CATCH's research, to enable research teams to study in detail how technologies being developed to support independent living are used and perform in real life settings.

Staff have access to the usual university computing facilities, and SchHARR is currently developing a business plan for investing in its own Unix **super computer** to facilitate the secure processing of Big Datasets.

e. Collaboration or Contribution to the Discipline or Research Base

i. COLLABORATION

SchHARR is currently working with over 100 other research groups in the UK and 60 overseas. Our collaborations include the following:

International – SchHARR supports statutory health bodies overseas undertaking HTA and has partnership arrangements with other leading universities and institutions in Europe, Australia, North America and Asia. There have been 258 publications with a co-author from overseas over the REF period. SchHARR supports staff spending study leave in overseas centres of international importance and welcomes overseas visitors.

National – SchHARR has pursued important strategic alliances with other UK universities to deliver programmes such as the NICE DSU (York and Leicester), DH EPRU (York), the RDS YH (White Rose - York and Leeds), SPHR (Cambridge, Bristol, LSHTM, UCL, Exeter, the FUSE collaboration in the NE and the LiLac collaboration in the NW), and the new CLAHRC YH (Leeds, Bradford, York).

Local:

- Within the University – We work closely with other departments: Medicine, Dentistry, Economics, Statistics, Geography, Psychology and Sociology and through CATCH with the Faculty of Engineering.
- NHS – Our clinical and health services research is embedded in the NHS nationwide. We work with numerous NHS organisations, including hospital, community and ambulance service Trusts, NHS Direct and other urgent care providers on national programmes and multi-centre trials and collaborations. SchHARR's contribution to NICE's work provides an important link to the NHS. The CTRU offers expertise to NHS collaborators in the feasibility assessment, design and conduct of trials in clinical, community and general practice settings. The RDS supports NHS researchers in developing and designing high quality research proposals. The CLAHRC provides a forum for developing research jointly with local providers, clinicians and service users. NHS staff are regularly seconded to SchHARR for research, training and career development.
- Local Authority – Consolidating and improving relationships with Sheffield City Council and other local authorities following the transfer of responsibility for Public Health is a key strategic priority for 2013-16.

Environment template (REF5)

- Research Users – Co-production is central to most research in SchARR and involves such users as DH, NICE, NHS, patients, the public and industry. Mechanisms for on-going stakeholder engagement include having end users on project steering groups, participation as co-investigators and careful dissemination of research to users.
- Patients and the Public – SchARR's expertise and track record of publications on user and carer involvement in research date back for more than 10 years. A PPI group leads our PPI strategy.
- Industry – Our translational research agenda is facilitated by links with industry as well as hospitals, practitioners, health agencies, policy makers and patients locally and nationally. Continuing work with the devices and pharmaceutical industry helps to inform our research with particularly strong links with Novartis, Tunstall Healthcare and Toby Churchill Ltd.

ii. CONTRIBUTIONS TO THE DISCIPLINE DURING THE REF PERIOD ARE DEMONSTRATED BY THE FOLLOWING EXAMPLES:

- Awards include: 3 NIHR Senior Investigators (Brazier, Goodacre, Nicholl), Association for the Advancement of Assistive Technology in Europe Diamond award (Cudd), Cyril Barnard prize for outstanding contribution to health librarianship (Booth), College of Emergency Medicine's Maurice Ellis award (Mason), Robin Tavistock Award for contribution to Aphasia (Enderby), Senior Scientist British and Irish Group for the Study of Personality Disorder (Parry).
- Nicholl has been elected a Fellow of the Academy of Medical Sciences and is Chair of the REF2014 panel. Mawson is President of the Association of Neurological Physiotherapists and the Chartered Society of Physiotherapy. Other roles include: Vice-President, British Association of Counselling and Psychotherapy (Parry); Vice-Chair of the Royal College of General Practitioners; Mackenzie Lecturer and Chair of the RCGP Clinical Innovation and Research Centre (Mathers); Clinical Director, South Yorkshire CLRN (Enderby).
- International Advisors: FIK Research Institute, San Sebastian, (Hawley), Ministry of Health, Spain (Holdsworth), World Health Organisation (Holdsworth), Government of Nepal (Simkhada), Western Australia Health Committee (Meier), Region Zealand Health Board, Denmark (Turner). Two staff have appeared as expert witnesses to the House of Commons Health Select Committee (Meier, Nicholl).
- 5 people have been chair, 3 have been deputy chair and 22 have been members of external research funding panels since 2008. 6 have been members of overseas government research commissioning panels.
- 20 people have had editorial roles on journals, and 12 have been members of journal editorial boards.
- 6 people have been members of NICE Technology Appraisal Committees, 2 of the NICE Public Health Interventions Advisory Group, 11 of other NICE Advisory Groups and 4 of NICE Methods Working Parties.
- SchARR staff have chaired 12 trial steering committees and 9 trial data monitoring committees and have been members of 17 other TSCs and 20 other DMECs.
- Staff have chaired 8 Conference Scientific Committees and given 223 keynote or invited lectures at national or international research conferences.