Edinburgh Health Service Research Unit

Edinburgh Health Service Research Unit (HSRU) is an alliance between NHS Lothian and the University of Edinburgh, Edinburgh Napier University and Queen Margaret University, with NHS funding from Health Sciences Scotland. We focus on research that will “advance the planning, provision, effectiveness and efficiency of health care services with the overall aim of improving the healthcare of the public through enhanced clinical and organisational practices and (both) health and public policy.” *

What can HSRU offer? Our experienced staff aim to promote and nurture health services research by supporting and advising research teams and clinical services and by providing expertise in project planning, grant applications, research methods, statistics, record linkage and health economics.

HSRU will support the NHS to provide evidence-based health services by:

- working with service planners, providers and academic groups to identify opportunities for research in the context of service redesign;
- supporting initiatives to increase local capacity and capability in health services research;
- seeking funding from national and international sources for research relevant to health service redesign;
- developing and support a critical mass of projects with particular emphasis on studies which could be developed into substantive research areas;
- promoting collaborative research with other national and international partners sharing a common theme.

We aim to achieve these objectives through collaborating with NHS services and academic research groups, providing expert advice and input at the research planning and grant application stage, partnering with research teams and providing specialist services such as health economics, statistics or record linkage for particular studies on a fee for service basis following substantive grant awards.

HSRU is a dispersed organisation with contact and planning maintained with monthly teleconferences/meetings. Dedicated HSRU staff (marked below by *) are accommodated within departments which will give them appropriate academic or clinical service support. Other staff contribute to the development and running of HSRU on a sessional basis or as part of their wider roles.

Who does what in HSRU?

<table>
<thead>
<tr>
<th>Background/ role</th>
<th>Organisation/ link organisation</th>
<th>Role in HSRU</th>
</tr>
</thead>
<tbody>
<tr>
<td>Brian McKinstry</td>
<td>General Practice University of Edinburgh</td>
<td>Clinical Lead HSRU. Advice on trials design, recruitment, GP link</td>
</tr>
<tr>
<td>Janet Hanley</td>
<td>Nursing NHS Lothian R&amp;D/Edinburgh Napier University</td>
<td>Research Portal, mixed methods research, qualitative research, ethics, governance; leads NHS team</td>
</tr>
<tr>
<td>Chris Weir*</td>
<td>Statistician University of Edinburgh</td>
<td>Trial design, statistical methods</td>
</tr>
<tr>
<td>Rhona Hogg*</td>
<td>Public Health Nursing NHS Lothian/Edinburgh Napier University</td>
<td>Qualitative research, community nursing/public health nursing research, evidence based practice</td>
</tr>
<tr>
<td>Juliet MacArthur</td>
<td>Nursing NHS Lothian Nursing Directorate/University of Edinburgh</td>
<td>Leads the implementation of the NMAHP Research Framework, link with Nursing and NHS Quality Strategy</td>
</tr>
<tr>
<td>Andy Peters*</td>
<td>Clinical Psychology/Allied Health Professions NHS Lothian</td>
<td>Research capacity building in AHPs, leads and develops AHP research</td>
</tr>
<tr>
<td>Mome Mukherjee*</td>
<td>Senior Data Analyst University of Edinburgh</td>
<td>Advice on availability of routine data and possibility of data linkages.</td>
</tr>
<tr>
<td>Joel Smith*</td>
<td>Health Economist University of Edinburgh</td>
<td>Advice on health economics</td>
</tr>
<tr>
<td>Andy Stoddart*</td>
<td>Health economist University of Edinburgh</td>
<td>Advice on health economics</td>
</tr>
<tr>
<td>Lorraine Smith</td>
<td>Operational Lead Edinburgh Clinical Trials Unit</td>
<td>Leads operational and administrative team</td>
</tr>
<tr>
<td>Cheryl Sadler</td>
<td>Communications Officer Edinburgh Clinical Trials Unit</td>
<td>Co-ordinates promotion &amp; marketing of HSRU</td>
</tr>
<tr>
<td>Christine Campbell*</td>
<td>Administrator Edinburgh Clinical Trials Unit</td>
<td>Minutes, project database.</td>
</tr>
</tbody>
</table>
A key role for HSRU is to work with NHS staff and services at all levels to identify areas where research may help to improve service delivery. The following examples illustrate a range of ways in which HSRU has been supporting the NHS and social work partners over the past year:

- **Global Position Satellite Tracking for People with Dementia who Wander.** HSRU (Brian McKinstry and Janet Hanley) worked with social work colleagues in SE Scotland to develop this CSO funded feasibility study. Early results indicate that GPS tracking is useful in helping people maintain their usual activities for longer, but we need to identify people who may benefit at an earlier stage in their illness.

- **HSRU (Rhona Hogg, Janet Hanley, Chris Weir & Andy Stoddart) is working with infant feeding advisors in NHS Lothian to develop and evaluate interventions to help parents of babies who cry excessively.** They have formed a partnership with researchers in Brisbane, Australia where there are dedicated services and are discussing how some of their interventions can be modified and trialled in Scotland.

- **EuroHOPE is an EU funded project using routine data to assess the health system performance, outcomes and efficiency across 7 countries for 5 different health conditions.** The project is coordinated in Finland with Edinburgh as its UK site and has health economics support from HSRU (Joel Smith).

- **A Team led by Rachel Hardie (Public Health, NHS Lothian) have developed a primary care based record linkage study to identify factors associated with emergency admissions and repeat admissions for a cohort of patients with chronic obstructive pulmonary disease.** HSRU assisted with funding and provides statistics expertise through Chris Weir.

- **Rhona Hogg undertook a qualitative analysis of patient complaints relating to staff communication, attitudes and behaviour.** The results were fed back to NHS Lothian and provided useful insights which are currently being used to implement values development training and feedback mechanisms to support improved staff attitudes, behaviour and communication as part of NHS Lothian’s improving patient experience programme. The study is currently being written up for publication.

- **Developing an economic model for health improvement outcomes in Scottish prisons.** This work was commissioned by Health Scotland/Scottish Public Health Network in relation to the NHS assuming responsibility of health care within Scottish prisons. A micro simulation model was developed to estimate the costs of implementing a mental health screening assessment, physical health check and group-based cognitive behavioural therapy. It indicated a potential cost saving of £1,683 per prisoner which could represent a reduction in overall expenditure of over £10 million.

- **Secondary analysis of the BASIL (Bypass versus Angioplasty in Severe Ischaemia of the Leg) trial data.** This work aims to contribute to the National Institute for Clinical Excellence (NICE) Guidelines currently in development on severe leg ischaemia. HSRU were approached to carry out the analysis by the Royal College of Physicians on behalf of NICE.

- **Generic Patient Reported Outcome Measures (PROMs) for AHP Services.** A short life working group has been convened to explore the potential for adoption of generic PROMs for AHP services in NHS Lothian and the integration into TRAK of any routine outcome data thereby generated. This will facilitate both research and routine health economic evaluation of services. Andy Peters, Andy Stoddart and Mome Mukherjee from HSRU are supporting this work.

- **CYANS (Children and Young Peoples Allergy Network) has developed a national anaphylaxis clinical audit system supported by Mome Mukherjee with SNOMED-CT coding.**
Title: A pilot study on the feasibility of creating and using a Scottish Population Health Research Register (SHARE).
Main Contact: Frank Sullivan, University of Dundee,
Funder: CSO/ NHS Lothian/ NHS Tayside
HSRU Contacts: Brian McKinstry Janet Hanley
HSRU Contribution: Lead Lothian arm of pilot

Title: The Age of Blood Evaluation Study (ABLE).
Main Contact: Tim Walsh, University of Edinburgh
Funder: NIHR
HSRU Contact: Lorraine Smith
HSRU Contribution: ECTU management of HSR trial

Title: An exploration of patients’ perceptions of NHS24 and use of current NHS24 datasets.
Main Contact: Sarah Cunningham-Burley, U of Edinburgh
Funder: PhD funded NHS 24/ ESRC
HSRU Contact: Brian McKinstry
HSRU Contribution: Clinical advice

Title: Assessing the Validity and Reliability of The Glasgow Inpatient Outcome Scale for Head Injury.
Main Contact: Tom McMillan, University of Glasgow
Funder: CSO
HSRU Contact: Chris Weir
HSRU Contribution: Statistics

Title: Bronchiolitis of Infancy Discharge Study (BIDS).
Main Contact: Steve Cunningham, RHSC
Funder: NIHR
HSRU Contact: Lorraine Smith
HSRU Contribution: ECTU management of HSR trial

Title: Biomarker based cellular analysis to predict stages of infection and sepsis.
Main Contact: Andrew Conway Morris, University of Edinburgh
Funder: Technology Strategy Board/ Becton Dickinson Science
HSRU Contact: Chris Weir
HSRU Contribution: Statistics

Title: Collaborative action research study to further develop pathways within Children’s Services in NHS Lothian.
Main Contact: Kirsty Forsyth, QMU, Occupational Therapy
Funder: Knowledge transfer partnership
HSRU Contacts: Andy Peters
HSRU Contribution: Facilitating liaison between academic and clinical colleagues/advice on research design

Title: Effectiveness of mindfulness in managing long-term conditions.
Main Contact: Gill Matthews, Edinburgh Napier University
Funder: Queens Nursing Institute for Scotland
HSRU Contacts: Rhona Hogg, Janet Hanley
HSRU Contribution: Qualitative research support

Title: Telemetry Supported Self Monitoring in Long term Conditions (TELESCOT)
Main Contact: Brian McKinstry, University of Edinburgh
Funder: CSO
HSRU Contact: Andy Stoddart
HSRU Contribution: Health economics

Title: Development and Evaluation of Strategies to Improve Sedation Quality in Intensive Care (DESIST study).
Main Contact: Tim Walsh, University of Edinburgh
Funder: CSO/ GE Healthcare
HSRU Contacts: Janet Hanley, Chris Weir
HSRU Contribution: Design, qualitative research support, statistics, partnership

Title: GPS tracking for people with dementia
Main Contact: SE Scotland GPS team, Social work
Funder: CSO
HSRU Contacts: Brian McKinstry, Janet Hanley
HSRU Contribution: Research design, building a research team, leading the research

Title: Prevention of Type 2 Diabetes and Obesity in South Asians (PODOSA).
Main Contact: Raj Bhopal, University of Edinburgh
Funder: MRC
HSRU Contact: Joel Smith
HSRU Contribution: Health Economics

Title: Effects of a Mediterranean Diet (MD) in pregnant women to reduce probability of their child developing asthma and other allergic problems.
Main Contact: Dean Sewell, Heriot-Watt University
Funder: CSO
HSRU Contact: Andy Stoddart
HSRU Contribution: Health economics advice

Title: EuroHOPE - European Health Care Outcome, Performance and Efficiency.
Main Contact: Harry Campbell, U of E/ Alison McCallum, NHSL
Funder: European Union, FP7
HSRU Contact: Joel Smith
HSRU Contribution: Health economic advice and data analysis

Title: Fractures occurring in hospital in osteoporosis patients.
Main Contact: Margaret Smith, Queen Margaret University,
Funder: Private donation
HSRU Contact: Mome Mukherjee
HSRU Contribution: Identifying relevant routinely acquired data

Title: Integrating patient acquired telehealth care generated data with GP’s electronic health record.
Main Contact: Colin Simpson, University of Edinburgh
Funder: CSO
HSRU Contact: Brian McKinstry
HSRU Contribution: Advice, partnership

Title: High-Sensitive Troponin in the Evaluation of patients with Acute Coronary Syndrome (HighSTEACS).
Main Contact: Nick Mills, University of Edinburgh
Funder: British Heart Foundation
HSRU Contact: Chris Weir
HSRU Contribution: Statistics, trial design

Title: Health Improvement Outcomes for Prisoners.
Funder: ScotPHN, Health Scotland
HSRU Contact: Joel Smith
HSRU Contribution: Health economics
<table>
<thead>
<tr>
<th>Title</th>
<th>Main Contact</th>
<th>Funder</th>
<th>HSRU Contact</th>
<th>HSRU Contribution</th>
</tr>
</thead>
<tbody>
<tr>
<td>Factors associated with emergency admissions and repeat admissions for a cohort of patients with chronic obstructive pulmonary disease.</td>
<td>Rachel Hardie, NHS Lothian</td>
<td>CSO</td>
<td>Chris Weir</td>
<td>Statistics</td>
</tr>
<tr>
<td>Transition from active to palliative care for children with cancer.</td>
<td>Pam Smith, University of Edinburgh</td>
<td>Edinburgh &amp; Lothian Health Foundation</td>
<td>Juliet MacArthur</td>
<td>Research governance, recruitment</td>
</tr>
<tr>
<td>Tele-pulmonary rehabilitation as effective as standard pulmonary rehabilitation?</td>
<td>Lilin Zheng, University of Edinburgh</td>
<td>NHS 24</td>
<td>Brian McKinstry</td>
<td>Advice</td>
</tr>
<tr>
<td>Long Term Survival after Admission to Hospital with a Mild Head Injury: 15 year Follow-up.</td>
<td>Tom McMillan, University of Glasgow</td>
<td>CSO</td>
<td>Chris Weir</td>
<td>Statistics</td>
</tr>
<tr>
<td>Orphans Unite: ChILD better together - European Management Platform for Childhood Interstitial Lung Diseases.</td>
<td>Dr Steve Cunningham, NHS Lothian</td>
<td>European Union</td>
<td>Chris Weir</td>
<td>Statistics</td>
</tr>
<tr>
<td>Phased Implementation Project, Older People’s Services.</td>
<td>Jamie Hetherington, NHS Lothian</td>
<td>NHS Lothian</td>
<td>Andy Peters</td>
<td>Assistance with design and analysis</td>
</tr>
<tr>
<td>Experience of patients undergoing liver resection following resection for colorectal cancer.</td>
<td>Linda Sherwood, NHS Lothian</td>
<td>Edinburgh &amp; Lothian Health Foundation</td>
<td>Rhona Hogg</td>
<td>Protocol development</td>
</tr>
<tr>
<td>Clinical efficacy of functional strength training for upper limb motor recovery early after stroke: neural correlates and prognostic indicators.</td>
<td>Val Pomeroy, University of East Anglia</td>
<td>MRC</td>
<td>Chris Weir</td>
<td>Clinical Trial Methodology</td>
</tr>
<tr>
<td>Wheelchair-bound MS patients' and carers' views on a proposed community based postural management service.</td>
<td>Anne Milne, City of Edinburgh</td>
<td>MS Society small grant</td>
<td>Andy Peters</td>
<td>Advice on study design &amp; governance, analysis, report writing.</td>
</tr>
<tr>
<td>The use of synthetic speech in telephone reminders to elderly patients with hearing difficulties.</td>
<td>Maria Wolters, University of Edinburgh, Informatics</td>
<td>CSO</td>
<td>Brian McKinstry, Chris Weir</td>
<td>Clinical partnership, statistical advice</td>
</tr>
<tr>
<td>The relationship between premature birth and subsequent development of asthma in childhood.</td>
<td>Jasper Been, University of Edinburgh</td>
<td>NHS Lothian, Challenge Investment Fund</td>
<td>Mome Mukherjee</td>
<td>Record linkage</td>
</tr>
<tr>
<td>Use of speckled computing in post-surgical monitoring (pilot)</td>
<td>Sheila Rodgers, Gordon Drummond, University of Edinburgh</td>
<td>University of Edinburgh, Challenge Investment Fund</td>
<td>Chris Weir, Juliet MacArthur, Joel Smith</td>
<td>Study design, Statistics, Health economics</td>
</tr>
<tr>
<td>Future of Health Visiting - investigating current and future investment in health visiting training, and views about future of health visiting in Scotland.</td>
<td>Claire Mayo, Royal College of Nursing</td>
<td>Parenting Across Scotland</td>
<td>Rhona Hogg</td>
<td>Design and analysis</td>
</tr>
<tr>
<td>The keystone Medical Device Replacement Project</td>
<td>Patricia Brooks-Young, Edinburgh Napier University</td>
<td>Scottish Government</td>
<td>Rhona Hogg, Janet Hanley</td>
<td>Advice on design</td>
</tr>
<tr>
<td>Time-series analysis for suicides within Scotland from 1978-2010</td>
<td>Steve Platt, University of Edinburgh</td>
<td>Scottish Government Health Department</td>
<td>Joel Smith</td>
<td>Data analysis</td>
</tr>
<tr>
<td>Developmental clinical study: Reversing endometrial glucocorticoid deficiency in heavy menstrual bleeding.</td>
<td>Hilary Critchley, University of Edinburgh</td>
<td>MRC</td>
<td>Chris Weir</td>
<td>Statistics, trial design</td>
</tr>
</tbody>
</table>
Developing Research Capacity and Capability

Building Research Capacity and capability in the Nursing, Midwifery and Allied health Professions (NMAHPs) HSRU has been supporting this work in close collaboration with the NHS Lothian Nursing Directorate and representatives of the University of Edinburgh (UoE), Queen Margaret University (QMU) and Edinburgh Napier University (ENU). This grouping has developed the Lothian NMAHP Research Framework. This partnership approach offers cross-institutional coherence and strategic direction for NHS Lothian and the three universities and specifies goals for capacity and capability work within Lothian over a five year period. This includes:

- **Monitoring NMAHP Research Activity:** Preliminary analysis of baseline data from the clinical research database (as of Dec 2011) showed 381 active studies involving a NMAHP investigator, 259 NMAHP investigators, 31 NMAHP Principal Investigators.

  Contact: Andy Peters, Janet Hanley

- **Building a NMAHP Research Community:** A range of activities to promote networking, share priorities and build a thriving NMAHP research community in Lothian, including:
  - Email distribution list across the four institutions (approximately 110 members)
  - Bi-annual newsletter
  - Establishment of the NMAHP Research Community Networking Portal on the HSRU website
  - Annual NMAHP research Community networking event (2nd meeting in April 2012 with 45 attendees)

  Contact: Juliet MacArthur

- **Research Clusters:** comprise assemblies of clinicians, managers and academics in broad service areas seeking to establish strategic direction/priorities, and engage staff in collaborative research activity. Over the past year clusters have been developed in Mental Health, Cancer & Palliative Care, Falls Prevention & Bone Health, and Dementia. Plans are in train to establish a further cluster in Child Health & Development, and to work with other organisations to set up a Scotland-wide cluster for Community Nursing/Public Health.

  Contacts: Juliet MacArthur, Andy Peters, Rhona Hogg

- **Clinical Academic Research Careers**
  - HSRU continues to play a central role in the management of NHS Lothian’s NMAHP Clinical Academic Research Careers (CARC) Scheme. Demonstration sites have been funded in Critical Care/UoE (commenced Jan 2011) and Substance Misuse/ENU/UoE (Dec 2011) resulting in the appointment of four nurses on part-time research contracts (two at post-doctoral fellow level and two studying for a PhD). A number of submissions for grant funding have been made and four journal publications achieved by the CARC Fellows. An application for funding to become the third demonstration site recently submitted by a collaboration comprising representatives of Dietetics/QMU/ENU/NHS24 is currently being reviewed.

  Contact: Andy Peters

  - ‘Research Futures’ Approval is being sought for a new proposal outlining an initiative which would support the formal training of early career NMAHP researchers (postgraduate level). This initiative would sit alongside the CARC and NRS Fellowship Schemes thereby establishing a suite of research training support opportunities across the career span for NHS Lothian NMAHP staff.

  Contact: Juliet MacArthur

- **Clinical & Academic ‘Homes’** Clinical and academic ‘homes’ are honorary contractual arrangements for employees of NHS Lothian and the three universities intended to promote research collaboration, knowledge exchange, and skills development across the clinical-academic interface. Two clinical ‘homes’ have been established in the Mental Health Service for Dr. Deborah Ritchie (UoE) and Professor Thanos Karatzias (ENU) and two within Critical Care for Dr. Sheila Rodgers and Dr. Jenni Tocher (UoE). An academic ‘home’ for an AHP consultant at QMU is currently being discussed.

  Contacts: Juliet MacArthur, Andy Peters, Rhona Hogg

- **Teaching and Mentoring** Research and evidence-based practice skills teaching and mentoring opportunities for NMAHP staff continue to be provided in the form of ‘Research Boot camp’ (on an annual basis focusing on grant application and journal publication writing skills) and the ‘Evidence-Based Practice Course for AHPs’ (bi-annual and focusing on literature searching and critical appraisal skills). NHS Lothian is also a partner in a year long ESRC Practitioner Research Older People (PROP) Programme hosted by UoE which has three nurse participants.
Lothian Records Research Portal and Safe Haven

Work is underway within Scotland to create a network of Safe Havens for the linkage and analysis of health care and non-health care datasets. They aim to provide access to linked, anonymised patient data in a safe environment, with robust governance and disclosure arrangements. In NHS Lothian the research safe haven will be jointly managed by HSRU and the Health Intelligence Unit which provides linkage and analyses of multiple data sources for both service monitoring and research use. The feasibility of analysing more complex datasets is being explored. This includes novel analysis of primary and community care data and partnership with the University of Edinburgh. Contact: Janet Hanley.

Staff from HSRU (Brian McKinstry and Janet Hanley) have worked with colleagues in Dundee and the Scottish Primary care Research Network to develop and pilot SHARE, initially in Lothian and Tayside. Brian McKinstry is a director of this initiative which was launched nationally in August 2012. SHARE is an NHS Scotland-backed initiative to establish a register of people interested in participating in health research and who agree to allow SHARE to use the coded data in their various NHS computer records to check whether they might be suitable for health studies. See http://www.registerforshare.org/index.php for more details.

A researcher interested in working with SHARE would first open a research account. When a research team has a project, SHARE will carry out a feasibility forecast to determine if an appropriate number and distribution of recruits are available. If this looks satisfactory SHARE volunteers will be contacted directly by the SHARE office to advise of the research opportunity. This contact uses brief materials developed and approved by the research team. Researchers can use the SHARE approach in combination with more traditional direct from clinician contact. SHARE is based on the patient data of people residing in Scotland but available to researchers based in the rest of the UK or as part of an international project.

IT services

Use of OpenClinica to support clinical studies.

What is it?: OpenClinica is open source clinical trial software which enables the capture, storage, audit and dissemination of trial data via an electronic Case Report Form (CRF). The software can provide an easily implemented, robust and regulatory-compliant solution for fairly small, data-capture studies. The data is stored on a central server, providing the necessary security and back-up requirements. The user-interface to the system is web-based, allowing secure access from any computer with a web browser and not requiring the installation of any additional software. The CRFs are reasonably easy to construct as they are built using the familiar Excel spreadsheet. The software allows for easy implementation of such features as data queries and double data entry. Data can be extracted for analysis and can be downloaded in various formats including Excel and SPSS.

Uses and limitations: OpenClinica is a useful tool for providing a quick to implement, robust and regulatory-compliant database for uncomplicated studies. It cannot support trials requiring additional functionality e.g. event-driven applications where an action is triggered by the entry of certain data.

How we can help?: We can provide you with access to our OpenClinica servers (separate test and production environments) where you can build, test and deploy your OpenClinica study. We can offer various levels of advice and technical support to help you get your OpenClinica implementation working the way you want. For more information and advice please contact: Garry Milne Senior Software Developer, Western General Hospital, Edinburgh.


