**Publications:**


**Other Dissemination Activities:**

–
Project No: HBI3.2  In Progress

Project Title: Feasibility study of how to best engage obese men in narrative SMS (short message system) and incentive interventions for weight loss, to inform a future effectiveness and cost-effectiveness trial.

Grant Applicants / Principal Investigators (place of work): Hoddinott, P., Williams, B., Dombrowski, S., Grindle, M. (University of Stirling); Avenell, A. (HSRU, University of Aberdeen); Gray, C. (University of Glasgow); Kee, F., McKinley, M. (The Queen's University of Belfast); Pol, M. van der (HERU); Jones, C. (University of Dundee); Elders, A. (Glasgow Caledonian University); Carroll, P. (Waterford Institute of Technology).

HERU Investigators: Pol, M. van der, Collacott, H.

HERU Research Theme: Health Behaviour and Inequality – Design and Evaluation of Interventions

Source of Funding and Total Awarded: National Institute for Health Research (NIHR), Health Technology Assessment (HTA) Programme (via University of Stirling) – £490,970 and University of Aberdeen

Amount of HERU Funding: £83,077

Objectives: To produce an acceptable and feasible RCT design with wide reach to test a narrative short message service (SMS) intervention, with and without an endowment incentive, compared to waiting list. This will inform a future pragmatic full trial.

Outline: Being obese causes 5% of deaths worldwide and puts people at greater risk of diseases like diabetes or some cancers. In 2013, 26% of UK men were obese, but men rarely participate in weight loss programmes. This project is a two-phase feasibility study. Phase 1 will (i) build on an existing narrative SMS intervention with embedded behaviour change techniques for men using qualitative co-design, and (ii) develop an endowment incentive drawing on insights from behavioural economics, existing evidence and men's preferences for delivery based on survey/DCE evidence. An iterative mixed-methods approach will use systematic review evidence, theory and learning from recent UK behaviour change trials to refine the interventions through PPI and user testing. Phase 2 is a 12-month feasibility RCT with three arms: SMS only; SMS and incentive; usual practice with waiting list for SMS intervention. Iterative mixed-method data collection and analysis will help to refine the intervention parameters, design and processes in preparation for a potential, full, pragmatic effectiveness and cost-effectiveness RCT.

Start Date: June 2016

Duration of Project: 27 months

Project Phase: –

Publications: –

Other Dissemination Activities: –

HERU SCIENTIFIC REVIEW 2010 - 2016
Project No: HBI3.3

Project Title: LIFT: Lessening the Impact of Fatigue: Therapies for inflammatory rheumatic diseases.

Grant Applicants / Principal Investigators (place of work): Basu, N. (NHS Grampian); McNamee, P. (HERU); Siebert, S. (NHS Greater Glasgow & Clyde); Wearden, A. (Central Manchester University Hospitals Trust); Kumar, V. (NHS Tayside).

HERU Investigators: McNamee, P.

HERU Research Theme: Health Behaviour and Inequality – Design and Evaluation of Interventions

Source of Funding and Total Awarded: Arthritis Research UK (ARUK) – £735,536 and University of Aberdeen

Amount of HERU Funding: £41,124

Objectives: To test whether remotely delivered cognitive behavioural therapy and exercise interventions are effective in alleviating the impact of fatigue amongst patients with inflammatory rheumatic diseases, and to estimate the costs, effectiveness and cost-effectiveness of the interventions versus usual care.

Outline: Despite major advances in the management of inflammatory rheumatic diseases, fatigue continues to be a major problem for patients in day-to-day management of the condition. In rheumatoid arthritis, for example, as many as 80% of patients report significant fatigue and over 70% consider fatigue to be equal to pain. Moreover, fatigue is a crucial determinant of impaired quality of life and a predictor of work disability. There is now evidence that non-pharmacological interventions, specifically cognitive behavioural approaches and exercise therapies, are effective treatments for significant fatigue. However, it is difficult to access these therapies. This study tests whether remote delivery is effective and cost-effective, and will explore the factors that predict treatment success.

Start Date: August 2016

Duration of Project: 42 months

Project Phase:

Publications: –

Other Dissemination Activities: –
Assessment of Technologies (AOT)

We produce high quality evidence on the value of new and in-use health technologies. We lead research on using a person-centred approach to economic evaluations.
## AOT1 Technology Design Phase

<table>
<thead>
<tr>
<th>Project No:</th>
<th>AOT1.1</th>
<th>Completed</th>
</tr>
</thead>
<tbody>
<tr>
<td>Project Title:</td>
<td>Development of practice-based, pharmacist-led management of chronic pain in primary care for evaluation by a randomised controlled trial.</td>
<td></td>
</tr>
<tr>
<td>Grant Applicants / Principal Investigators (place of work):</td>
<td>Bond, C., Smith, B., Watson, M., Elliott, A. (Academic Primary Care, University of Aberdeen); Hannaford, P. (Research &amp; Knowledge Exchange, University of Aberdeen); McNamee, P. (HERU); Lee, A. (Population Health, University of Aberdeen); Holland, R., Wright, D. (University of East Anglia).</td>
<td></td>
</tr>
<tr>
<td>HERU Investigators:</td>
<td>McNamee, P., Neilson, A.</td>
<td></td>
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<tr>
<td>HERU Research Theme:</td>
<td>Assessment of Technologies – Technology Design Phase</td>
<td></td>
</tr>
<tr>
<td>Source of Funding and Total Awarded:</td>
<td>Medical Research Council (MRC) (Strategic Grant) – £337,123 and University of Aberdeen</td>
<td></td>
</tr>
<tr>
<td>Amount of HERU Funding:</td>
<td>£10,423</td>
<td></td>
</tr>
<tr>
<td>Objectives:</td>
<td>To complete Phase I (modelling) and Phase II (exploratory trial) development stages of a complex intervention to evaluate general, practice-based, pharmacist-led, management of chronic pain.</td>
<td></td>
</tr>
<tr>
<td>Outline:</td>
<td>The project developed and tested a training package for pharmacists to ensure standardisation of the intervention; tested recruitment methods; estimated consent and participation rates; calculated response rates and effect sizes to inform future sample size calculations; confirmed the most appropriate outcome measures and unit of randomisation; interviewed pharmacists and GPs to ascertain feasibility and acceptability and gain feedback for modifications; and determined the acceptability of the proposed intervention to participants.</td>
<td></td>
</tr>
<tr>
<td>Outcome and Translation:</td>
<td>Findings from the work were used to redesign the intervention and outcomes measures for a future definitive Phase III RCT.</td>
<td></td>
</tr>
<tr>
<td>Start Date:</td>
<td>June 2009</td>
<td></td>
</tr>
<tr>
<td>Duration of Project:</td>
<td>4 years</td>
<td></td>
</tr>
</tbody>
</table>
**Other Dissemination Activities:**


### Project No:
**AOT1.2**

### Completed

### Project Title:
The Glaucoma Screening Platform Study (GPS): Developing the intervention and outcome components for a proposed RCT on screening for open angle glaucoma.

### Grant Applicants / Principal Investigators (place of work):
- Azuara-Blanco, A., Campbell, M., Francis, J., Green, A., Norrie, J.D., Ramsay, C. (HSRU, University of Aberdeen);
- Burr, J. (University of St. Andrews);
- Vale, L. (University of Newcastle);
- Wormald, R.P.L. (Moorfield Eye Hospital);
- Crabb, D. (City University);

### HERU Investigators:
- Hernández, R.

### HERU Research Theme:
Assessment of Technologies – Technology Design Phase

### Source of Funding and Total Awarded:
Medical Research Council (MRC), Research Council UK (RCUK) – £408,886 and Chief Scientist Office (CSO) CORE

### Amount of HERU Funding:
£21,597

### Objectives:
This project developed the design for a randomised controlled trial (RCT) of screening for open angle glaucoma (OAG).

### Outline:
OAG is a common cause of blindness. Many people do not know they are developing OAG and miss out on the potential benefit of early treatment. Screening may be a good way to find and treat more people, but further knowledge is needed on whether it reduces the number of people losing vision compared with the current system of people choosing to attend for a sight test. To answer these questions we need a large, high-quality research study, i.e. a randomised controlled trial (RCT).

Before we could conduct a screening RCT we had to determine which screening tests should be evaluated, where testing should take place and who to include. We also needed to know how best to measure benefits and harms of screening. We sought the views of people who do and do not have glaucoma, as well as views of healthcare professionals involved in providing eye-care services.

The project included the update of an economic model and a full cost-effectiveness analysis.

### Outcome and Translation:
To make an evidence-based decision on screening for OAG a large RCT appears necessary. This study evaluated the feasibility of such a large study and identified the characteristics that successful screening strategies should have. It also addressed the question of whether such a proposed service could be evaluated. To our knowledge this is the first study using cost-effectiveness analysis to help in the definition of a complex intervention.
| Start Date: | September 2008 |
| Duration of Project: | 2 years |
**Project No:** AOT1.3  
**Completed**

**Project Title:** FEST: feasibility study for a trial of proactive telephone support for breastfeeding women in disadvantaged areas provided by a specialised FEeding Support Team.

**Grant Applicants / Principal Investigators (place of work):** Craig, L. (Population Health, University of Aberdeen); Boyers, D. (HERU); Hoddinott, P., MacLennan, G. (HSRU, University of Aberdeen).

**HERU Investigators:** Boyers, D.

**HERU Research Theme:** Assessment of Technologies – Technology Design Phase

**Source of Funding and Total Awarded:** NHS Grampian – £28,332 and Chief Scientist Office (CSO) CORE

**Amount of HERU Funding:** £1,882

**Objectives:** The aim of this project was to assess the feasibility of implementing a dedicated feeding support team on a postnatal ward and pilot the effectiveness and cost-effectiveness of continuing proactive or reactive telephone support after discharge.

**Outline:** There is increasing evidence that breastfeeding improves maternal and infant health outcomes and many governments support the World Health Organization recommendation to breastfeed exclusively for the first six months after birth. International evidence syntheses report that additional professional or lay support, particularly if it spans before and after birth, can increase the exclusivity of breastfeeding and to a lesser extent its duration.

This study tested the feasibility of conducting a larger randomised controlled trial of proactive telephone support to encourage breastfeeding among women from low-income areas in Scotland. Eligible women were randomised after hospital discharge to intervention: daily proactive telephone calls for ≤14 days or control: women could phone the feeding team ≤ day 14. Intention-to-treat analysis compared the randomised groups. The framework approach to analysis was applied to mixed-method data.

**Outcome and Translation:** The intervention and data collection methods were found to be acceptable to the women, therefore it is feasible to continue and develop a further multicentre randomised controlled trial to collect definitive evidence of the outcomes and cost-effectiveness of breastfeeding in Scotland and further afield.

**Start Date:** March 2010

**Duration of Project:** 1 year
**Publications:**


Hoddinott, P., Craig, L., MacLennan, G., **Boyers, D.** and Vale, L. (2012) 'The FEeding Support Team (FEST) randomised, controlled feasibility trial of proactive and reactive telephone support for breastfeeding women living in disadvantaged areas', *BMJ Open*, 2(2), e000652.

Hoddinott, P., Craig, L., MacLennan, G., **Boyers, D.** and Vale, L. (2012) 'Process evaluation for the FEeding Support Team (FEST) randomised controlled feasibility trial of proactive and reactive telephone support for breastfeeding women living in disadvantaged areas', *BMJ Open*, 2(2), e001039.

**Other Dissemination Activities:**


Project No: AOT1.4
Completed

Project Title:
Help for hay fever: can a goal-focussed intervention delivered in Scottish community pharmacies improve outcomes for people with intermittent allergic rhinitis? A pilot randomised controlled trial.

Grant Applicants / Principal Investigators (place of work):
Porteous, T., Bond, C. (Academic Primary Care, University of Aberdeen); Thomas, D.M. (Southampton University); Scotland, G. (HERU/HSRU); Francis, J. (HSRU, University of Aberdeen); Sheikh, A. (University of Edinburgh); Smith, L. (University of Sydney); Wyke, S. (University of Glasgow); Lowrie, R. (NHS Greater Glasgow and Clyde).

HERU Investigators:
Scotland, G.

HERU Research Theme:
Assessment of Technologies – Technology Design Phase

Source of Funding and Total Awarded:
Chief Scientist Office (CSO) Health Services and Population Health Research Committee – £145,745 and the Chief Scientist Office (CSO) CORE

Amount of HERU Funding:
£15,977

Objectives:
A pilot cluster randomised trial (CRT) was undertaken of a community pharmacy-delivered, goal-focussed intervention for the self-management of intermittent allergic rhinitis (AR) in Scotland, in order to inform plans for a future definitive trial.

Outline:
Despite availability of evidence-based clinical guidelines for primary healthcare professionals, UK management of AR remains sub-optimal. High prevalence, coupled with the negative effects of AR on quality of life, school performance, productivity and co-morbid respiratory conditions (in particular, asthma), and high NHS and societal costs, makes this a priority area for developing novel models of care. This project built on recent Australian work which demonstrated the potential of a community pharmacy-based ‘goal-setting’ intervention to help AR patients better self-manage their condition, reduce symptom severity and improve quality of life. Further methodological work was undertaken to assess its applicability to a UK context and to assess the feasibility of a full-scale CRT (with accompanying economic evaluation). Patient recruitment, outcome measurement and data collection methods were tested in this pilot CRT involving 124 participants recruited from 12 community pharmacies in Grampian and Greater Glasgow.

Outcome and Translation:
The pilot found the intervention, delivered in UK community pharmacies, to be feasible and acceptable to customers and pharmacy staff. Consideration is being given to designing and conducting a future substantive CRT based on experience from the pilot and estimates of effect size.
Start Date: April 2011

Duration of Project: 12 months

Publications:


Other Dissemination Activities: –
Project No: AOT1.5  
Completed

Project Title: Can eliciting and addressing health-related goals improve asthma control and asthma related quality of life? Feasibility phase II randomised controlled trial of a brief intervention.

Grant Applicants / Principal Investigators (place of work): Hoskins, G., Williams, B., Duncan, E. (University of Stirling); Donnan, P.T. (University of Dundee); Sheikh, A., Pinnock, H. (University of Edinburgh); Pol, M. van der (HERU).

HERU Investigators: Pol, M. van der

HERU Research Theme: Assessment of Technologies – Technology Design Phase

Source of Funding and Total Awarded: Chief Scientist Office (CSO) Health Services and Population Health Research Committee – £176,956 and University of Aberdeen

Amount of HERU Funding: £7,409

Objectives: To conduct a feasibility study to assess and inform the design and process of a large RCT designed to test the effectiveness and cost-effectiveness of the asthma goal-eliciting tool for identifying patient goals in the management of asthma.

Outline: An integral step in developing and agreeing a tailored self-management plan depends on individuals being able to identify and prioritise their own goals. Assisting patients to elicit their asthma goals acknowledges their expertise on the ways in which asthma impacts on their life and their preferences for managing their disease. A feasibility pilot clustered randomised controlled trial (RCT) of an asthma goal-eliciting tool on patients managed within primary care was conducted. The intervention aimed to encourage health professionals to initiate conversation that will facilitate change in patient attitude and management strategy and through so doing help patients identify/set their asthma goals. The results showed that the goal-eliciting tool gave people with asthma an opportunity to raise issues that might not otherwise have been addressed. However, despite perceived value there are practical issues which need to be addressed before progressing to a full trial.

Outcome and Translation: The study provided health professionals within primary care with information on how patient goals for asthma can be elicited, providing the base for an individual self-management plan. Improvements in clinical outcome, quality of life and reduction in cost to the NHS through reduced use of primary and secondary services, are dependent on this process. The study provided information for the design of a RCT to evaluate the use of the intervention within routine clinical practice.
Start Date: May 2012
Duration of Project: 15 months
Publications:


Other Dissemination Activities: –

*Denotes published after end of Review period on 31 October 2016.
Project No: AOT1.6 Completed

Project Title: PETER-FEST: Proactive TElephone caRe for breastfeeding women delivered by a dedicated FEeding Support Team in a rural community.

Grant Applicants / Principal Investigators (place of work): Hoddinott, P. (University of Stirling); Humphreys, T., Lau, A. (Robert Gordon University); Penman, K., Bellizzi, M. (Aberdeenshire Community Health Partnership); Boyers, D. (HERU).

HERU Investigators: Boyers, D.

HERU Research Theme: Assessment of Technologies – Technology Design Phase

Source of Funding and Total Awarded: NHS Grampian (Endowment Funds) and the Chief Scientist Office (CSO) CORE – £28,332

Amount of HERU Funding: £1,318

Objectives: The objective of this project was to design and evaluate a proactive, dedicated telephone care intervention for breastfeeding women in a rural community setting. The project included an assessment of staffing costs required to deliver the intervention.

Outline: The study took the form of a mixed-methods feasibility, before and after, evaluation of the proactive telephone care intervention delivered to women who were breastfeeding at the point of postnatal transfer home. The implementation, data collection and analysis were informed by the principles of realist evaluation.

A cost analysis was undertaken to determine the feasibility of delivering the intervention in a rural community where staff resource was limited. The research was used to help determine whether the intervention was sustainable within current resources.

Outcome and Translation: The data analysis suggested that it may be possible to implement proactive telephone breastfeeding care for women within existing resources at a minimal cost to the service. The feasibility and acceptability of implementing this intervention was also evidenced with qualitative data. The findings from the study should however be treated with caution owing to the small sample size. Further large-scale evaluation is required.

Start Date: July 2012

Duration of Project: 12 months


Other Dissemination Activities: –
Project No: AOT1.7  Completed

Project Title: Is utilisation of a community pharmacy for provision of direct acting antivirals a feasible delivery model for hepatitis C treatment in substance misusers?

Grant Applicants / Principal Investigators (place of work): Radley, A. (NHS Tayside); Dillon, J. (University of Dundee); Pol, M. van der (HERU).

HERU Investigators: Pol, M. van der

HERU Research Theme: Assessment of Technologies – Technology Design Phase

Source of Funding and Total Awarded: Gilead Sciences (UK and Ireland Fellowship Programme) – £49,928 and University of Aberdeen £4,000

Amount of HERU Funding: £4,000

Objectives: To evaluate the feasibility and desirability of a community-pharmacy pathway of care that incorporates dried blood spot testing for blood-borne viruses and supervised administration of novel oral treatment of hepatitis C infection in a cohort of substance misusers.

Outline: The need to improve access to care and treatment for chronic hepatitis C virus infection is receiving increasing attention. Current care pathways for patients receiving treatment for hepatitis C involve initiation by a specialist in a hospital setting. However the routes by which clients on these treatments receive supplies of medication are overly complex and have been shown to disadvantage specific cohorts of the population. This study tested the feasibility and desirability of a community pharmacy pathway of care in a cohort of substance misusers from Dundee. A discrete choice experiment was undertaken to inform design of an optimum service model. The results showed that methadone users preferred to be tested in pharmacy. Being treated with dignity and respect was the most important attribute.

Outcome and Translation: The spread of hepatitis C is a growing public health concern in Scotland. Tackling the spread of hepatitis C infection amongst substance misusers is a priority for NHS Tayside Board. A community care pathway is likely to increase treatment uptake and therefore reduce the prevalence of hepatitis C.

Start Date: August 2013

Duration of Project: 16 months

Publications: –

### Project No:
AOT1.8  
**Completed**

### Project Title:
A model-based cost-effectiveness analysis of opportunistic screening for identifying (undetected) atrial fibrillation (AF).

### Grant Applicants / Principal Investigators (place of work):

### HERU Investigators:
Neilson, A., Scotland, G., Tassie, E.

### HERU Research Theme:
Assessment of Technologies – Technology Design Phase

### Source of Funding and Total Awarded:
Digital Health Institute – £33,476, University of Aberdeen and Chief Scientist Office (CSO) CORE

### Amount of HERU Funding:
£33,476

### Objectives:
The aims of this study were to: (1) assess the implementation costs of introducing opportunistic atrial fibrillation screening for the primary care chronic disease cohort in Scotland, using a single-lead ECG monitor; (2) inform potential for cost-effectiveness by making projections of the impact of screening on the appropriate uptake of OAC treatment among those found to have previously undiagnosed AF, and the subsequent impact of this on the incidence of stroke and adverse bleeding events.

### Outline:
A model-based cost-effectiveness analysis was undertaken of opportunistic screening for identifying (undetected) atrial fibrillation (AF) with a single-lead handheld electrocardiogram (ECG) monitor compared to standard practice (i.e. usual case finding) in general practitioner practices in Scotland.

### Outcome and Translation:
The results of this study will help inform the potential cost-effectiveness of opportunistic AF screening (using a hand-held single-lead ECG device) versus alternative scenarios of standard case finding. Whilst conclusions are subject to uncertainty owing to a lack of comparative data on case finding under routine clinical practice, ultimately the results may help inform the decision on whether or not to roll out a national AF screening programme in primary care in Scotland (using a single-lead ECG monitor screening strategy/technology) in a QOF chronic disease population.

### Start Date:
January 2016

### Duration of Project:
9 months

### Publications:

### Other Dissemination Activities:
–
**Project No:** AOT1.9  
**Project Title:** Vitamin K supplementation to reduce falls in older people – a multicentre trial.

**Grant Applicants / Principal Investigators (place of work):** Witham, M., McMurd, M., Donnan, P. (Ninewells Hospital); McNamee, P. (HERU); Soiza, R. (Applied Medicine, University of Aberdeen); Cvor, V. (Department of Geriatric Medicine, Victoria Hospital).

**HERU Investigators:** McNamee, P.

**HERU Research Theme:** Assessment of Technologies – Technology Design Phase

**Source of Funding and Total Awarded:** Chief Scientist Office (CSO) Health Services and Population Health Research – £213,493 and University of Aberdeen

**Amount of HERU Funding:** £22,483

**Objectives:** To establish the optimum vitamin K dose, recruitment strategy and likely effect size, in order to plan a large, multicentre trial of vitamin K to reduce falls in at-risk older people. To estimate the cost of the intervention, the magnitude of potential cost offsets, and differences in health-related quality of life and well-being, relative to the placebo treatment.

**Outline:** Vitamin K is involved in a wide range of biological processes, including vascular, bone, neurological and muscle function. Studies in osteoporosis suggest beneficial effects on bone mineral density, and pilot data suggest that vitamin K supplementation may be able to reduce postural sway in older people – a key risk factor for falls.

This pilot randomised controlled trial will: test the optimum dose (200mcg and 400mcg vs placebo) of vitamin K given for one year to improve postural sway in a group of 96 older people at high risk of falls; test recruitment rates for a large, community-based falls trial; and collect preliminary data on falls rates to inform the sample-size calculation for a full-scale trial. Recruitment will take place across three sample centres to test the generalisability of the recruitment strategy. The economic analysis will focus on the estimation of the worth of future additional research to reduce decision uncertainty, using pre-trial modelling. Pre-trial modelling will involve estimation of expected Value of Information (VOI), to determine the optimal sample size for a future study.

**Start Date:** January 2016

**Duration of Project:** 32 months

**Project Phase:** In Progress

**Publications:** –

**Other Dissemination Activities:** –
Project No: AOT2.1

Project Title: Technology Assessment Reviews (TARs) contract (2011–2016).

Grant Applicants / Principal Investigators (place of work): Campbell, M., Burr, J., Mowatt, G. (HSRU, University of Aberdeen)

HERU Investigators: Scotland, G., Boyers, D., Javanbakht, M., (HERU) Kilonzo, M., Tassie, E.

HERU Research Theme: Assessment of Technologies – Technology Adoption Phase

Source of Funding and Total Awarded: Department of Health, NIHR – £2,125,564

Amount of HERU Funding: £242,790

Objectives: To deliver technology assessment reviews (TARs) for the National Institute for Health and Care Excellence (NICE) and other NHS customers.

Outline: The AoT theme plays a central role in the University of Aberdeen’s contract to conduct Technology Assessment Reviews (TARs) for NICE and other NHS customers. TARs are used by NICE and other NHS bodies to develop guidance and recommendations on the use of technologies in the NHS. The work involves critiquing economic evidence and models submitted by industry (to NICE) in support of their case to have new and existing medicines reimbursed on the NHS in England and Wales (single technology appraisals (STAs)), and larger technology appraisals involving rapid systematic reviews and economic modelling to synthesise cost-effectiveness comparisons between relevant alternatives. For TARs commissioned to support the Technology Appraisal processes of NICE, the resultant guidance is mandatory in England and Wales, but certain types of assessment are also used by Scottish decision-making bodies such as the SMC and the SHTG to help inform guidance for the NHS in Scotland.

The following projects have been completed in the 2010–2016 review period: AOT2.6, AOT2.18, AOT3.2, AOT2.9, AOT2.3 and AOT2.10.

Start Date: April 2011

Duration of Project: 5 years

Publications: See individual project templates for each TAR.

Other Dissemination Activities: See individual project templates for each TAR.
Project No: AOT2.2  Completed

Project Title: TAR Project: Imatinib at escalated doses of 600mg/day or 800mg/day for the treatment of people with unresectable and/or metastatic gastrointestinal stromal tumours whose disease has progressed on treatment with imatinib at a dose of 400mg/day: systematic review and economic evaluation.

Grant Applicants / Principal Investigators (place of work): Hislop, J., Mowatt, G. (HSRU, University of Aberdeen); Vale, L. (HERU/HSRU); Quayyum, Z. (HERU).

HERU Investigators: Quayyum, Z.

HERU Research Theme: Assessment of Technologies – Technology Adoption Phase

Source of Funding: National Institute for Health Research (NIHR) (Part of the 2011–2016 TAR contract – see template AOT2.1)

Objectives: The main objective was to assess the clinical and cost-effectiveness of alternative treatment strategies for people with unresectable gastrointestinal tumours (GISTs), whose disease has progressed on treatment with imatinib at a dose of 400mg per day.

Outline: The study provided evidence on clinical and cost-effectiveness of using imatinib at an escalated dose of 600mg per day or 800mg per day to treat patients with GISTs, compared with treating them with sunitinib and best supportive care. An economic model was developed to compare the cost-effectiveness and cost-utility of use of imatinib at a dose of 600mg per day or 800mg per day, or use of sunitinib, or best supportive care only, for treating people with unresectable gastrointestinal tumours (GISTs). The model was based on insufficient effectiveness data. The economic evaluation determined the incremental cost per quality adjusted life year (QALY) gained with escalated doses of imatinib. It was found that best supportive care was the least costly and least effective. It would be the care pathway most likely to be cost-effective when the cost per quality-adjusted life-year threshold was < £25,000. Imatinib at 600mg/day was most likely to be cost-effective at a threshold between £25,000 and £45,000. Imatinib at 600mg/day followed by further escalation followed by sunitinib was most likely to be cost-effective at a threshold > £45,000.

Outcome and Translation: The review and economic evaluation provided evidence to NICE to make recommendations about the best way of treating GIST for people whose disease has progressed on treatment with imatinib at a dose of 400mg per day. The results of the study informed the NICE technology appraisal guidance [TA209] ‘Imatinib for the treatment of unresectable and/or metastatic gastrointestinal stromal tumours’ (http://www.nice.org.uk/guidance/ta209).
## Start Date:
October 2009

## Duration of Project:
5 months

## Publications:


## Other Dissemination Activities:
–
<table>
<thead>
<tr>
<th>Project No:</th>
<th>AOT2.3</th>
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<tbody>
<tr>
<td>Project Title:</td>
<td>STA: Eltrombopag for the treatment of chronic idiopathic (immune) thrombocytopenic purpura (ITP): a single technology appraisal.</td>
</tr>
<tr>
<td>Grant Applicants / Principal Investigators (place of work):</td>
<td>Vale, L. (HERU/HSRU); Boyers, D. (HERU); Crowther, M. (Department of Haematology, Aberdeen Royal Infirmary); Jenkinson, D., Fraser, C., Mowatt, G., Jia, X. (HSRU, University of Aberdeen).</td>
</tr>
<tr>
<td>HERU Investigators:</td>
<td>Boyers, D., Vale, L.</td>
</tr>
<tr>
<td>HERU Research Theme:</td>
<td>Assessment of Technologies – Technology Adoption Phase</td>
</tr>
<tr>
<td>Source of Funding:</td>
<td>National Institute for Health Research (NIHR) (Part of the 2011–2016 TAR contract – see template AOT2.1)</td>
</tr>
<tr>
<td>Objectives:</td>
<td>This study appraised the clinical and cost-effectiveness of eltrombopag within its licensed indication for the treatment of refractory chronic idiopathic (immune) thrombocytopenic purpura (ITP).</td>
</tr>
<tr>
<td>Outline:</td>
<td>This project was carried out as part of the National Institute for Health and Care Excellence (NICE) Single Technology Appraisal (STA) process. The manufacturer of eltrombopag (GlaxoSmithKline plc) submitted an evidence review and an economic model assessing the cost-effectiveness of eltrombopag against a range of treatment comparators for two distinct treatment scenarios (Watch and Rescue care and long-term treatment of ITP) in two patient groups (splenectomised patients and non-splenectomised patients). The Aberdeen HTA group were commissioned to act as the Evidence Review Group (ERG) for the project, and to provide an independent report reviewing the manufacturer’s evidence submission.</td>
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<tr>
<td>Outcome and Translation:</td>
<td>Based on the manufacturer’s submitted evidence and the subsequent ERG review and analysis of this evidence, eltrombopag was not initially recommended within its marketing authorisation for the treatment of chronic ITP: in splenectomised adults whose condition is refractory to other treatments (for example, corticosteroids, immunoglobulins) or as second-line treatment in non-splenectomised adults where surgery is contraindicated. Following a subsequent review of the guidance and submission of a Patient Access Scheme, NICE updated their guidance to recommend eltrombopag as a treatment option for these patients, only if:</td>
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<tr>
<td></td>
<td>(a) Their condition is refractory to standard active treatments and rescue therapies or</td>
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<td></td>
<td>(b) They have severe disease and a high risk of bleeding that needs frequent courses of rescue therapies.</td>
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</table>
Start Date: October 2009

Duration of Project: 10 months

Publications:


Other Dissemination Activities:


**Project No:** AOT2.4  
**Completed**

**Project Title:** STA: Denosumab for the prevention of osteoporotic fractures in post-menopausal women (Single Technology Assessment for NICE).

**Grant Applicants / Principal Investigators (place of work):** Waugh, N., (Warwick University); Scotland, G. (HERU/HSRU); McNamee, P. (HERU); Royle, P., Henderson, R. (Highland Health Board); Hollick, R. (NHS Grampian).

**HERU Investigators:** Scotland, G., McNamee, P.

**HERU Research Theme:** Assessment of Technologies – Technology Adoption Phase

**Source of Funding and Total Awarded:** Department of Health, Chief Scientist Office (CSO) CORE and the University of Aberdeen – £146,640

**Amount of HERU Funding:** £8,000

**Objectives:** The aim of this project was to review the evidence for the clinical and cost-effectiveness of denosumab, for the prevention of fragility fractures in post-menopausal women.

**Outline:** This project was carried out as part of the National Institute for Health and Clinical Excellence (NICE) Single Technology Appraisal Process. The manufacturer of denosumab (Amgen UK Ltd) submitted an evidence review and an economic model assessing the cost-effectiveness of denosumab against a range of treatment comparators. The Aberdeen HTA group were commissioned to act as the Evidence Review Group (ERG) for the project, and to provide an independent report reviewing the manufacturer’s evidence submission.

**Outcome and Translation:** Following the ERG report, denosumab was recommended by NICE as a treatment option for the primary prevention of osteoporotic fragility fractures only in post-menopausal women at increased risk of fractures, and only amongst those unable to tolerate or comply with oral bisphosphonates, or where their use is contraindicated.

**Start Date:** February 2010

**Duration of Project:** 3 months
**Publications:**


**Other Dissemination Activities:**

STA: Pazopanib for the first-line treatment of patients with advanced and/or metastatic renal cell carcinoma: a single technology appraisal.

Grant Applicants / Principal Investigators (place of work):
Waugh, N. (Warwick University); Kilonzo, M. (HERU); Vale, L. (HERU/HSRU); Hislop, J., Elders, A., Fraser, C., Mowatt, G. (HSRU, University of Aberdeen); Bissett, D. (Department of Clinical Oncology, Aberdeen Royal Infirmary); McClinton, S. (Department of Urology Aberdeen Royal Infirmary).

HERU Investigators:
Kilonzo, M.

HERU Research Theme:
Assessment of Technologies – Technology Adoption Phase

Source of Funding:
National Institute for Health Research (NIHR) (Part of the 2011–2016 TAR contract – see template AOT2.1)

Objectives:
This study appraised the clinical and cost-effectiveness of pazopanib within its licensed indication for the first-line treatment of advanced and/or metastatic renal cell carcinoma.

Outline:
Kidney cancer caused 3,848 deaths in the UK in 2008. It is the seventh most common cancer in men; 5,165 new cases were diagnosed in 2007. Until 2009 the only licensed treatments available to NHS patients with metastatic kidney cancer were IFN and interleukin-2. The benefits of these are believed to be modest. Pazopanib hydrochloride (GlaxoSmithKline) is an oral multi-targeted kinase receptor inhibitor with anti-tumour activity. Pazopanib inhibits vascular endothelial growth factor receptor (VEGFR) -1, -2 and -3, platelet-derived growth factor receptor (PDGFR), and c-kit, which may result in inhibition of angiogenesis in tumours in which these receptors are upregulated.

Outcome and Translation:
Following this appraisal, NICE recommended pazopanib as a possible first-line treatment for some people with advanced renal cell carcinoma: www.nice.org.uk/guidance/TA215.

Start Date:
April 2010

Duration of Project:
10 months
Publications:


Other Dissemination Activities:

–
Assessment of Technologies

**Project No:** AOT2.6  **Completed**

**Project Title:** TAR Project: Elucigene FH20 and LIPOchip for the diagnosis of familial hypercholesterolemia.

**Grant Applicants / Principal Investigators (place of work):** Sharma, P., Mowatt, G., Boachie, C., Stewart, F. (HSRU, University of Aberdeen); Miedzybrodzka, Z. (Molecular Biology, University of Aberdeen); Simpson, W. (Clinical Biochemistry, University of Aberdeen); Boyers, D., Kilonzo, M., McNamee, P. (HERU).

**HERU Investigators:** Boyers, D., Kilonzo, M., McNamee, P.

**HERU Research Theme:** Assessment of Technologies – Technology Adoption Phase

**Source of Funding:** National Institute for Health Research (NIHR) (Part of the 2011–2016 TAR contract – see template AOT2.1)

**Objectives:**

The objective of this project was to appraise the clinical and cost-effectiveness of Elucigene FH20 and LIPOchip as standalone tests or in combination with other tests for the diagnosis of familial hypercholesterolemia (FH) in patients with a clinical diagnosis of definite or possible FH.

**Outline:**

Familial hypercholesterolaemia (FH) is an autosomal dominant-genetic condition causing a risk of premature coronary heart disease. In the UK, prevalence is estimated at 1 in 500, affecting around 100,000 people in England, around 6,000 in Wales and approximately 10,000 in Scotland. At least 85% of people with FH in the UK remain undiagnosed.

Current guidelines recommend DNA testing using comprehensive genetic analysis (CGA) by mutation screening of the low-density lipoprotein receptor (LDLR) gene, using sequencing and dosage analysis by multiplex ligation-dependent probe amplification (MLPA), and targeted testing for specific mutations in apolipoprotein B (ApoB) and protein convertase subtilisin/kexin (PCSK9). It has been suggested that use of assay systems targeted to detect the most common FH mutations in a population might either replace CGA, or be usefully used as a pre-screen to reduce the number of samples requiring the apparently more expensive CGA. Elucigene FH20 and LIPOchip are commercially available genetic tests, designed to detect mutations that are most frequent in a Caucasian population. This study showed that both tests are cost-effective relative simple LDL screening. However, comprehensive genetic analysis was found to generate greater QALY gains at a cost substantially less than £20,000 per QALY gained. CGA was thus found to be the preferred testing option, with a high probability of cost-effectiveness.
Outcome and Translation: Based on the results of this diagnostic accuracy review and health economic model, NICE have issued guidance not recommending the use of Elucigene FH20 and LIPOchip for the diagnosis of FH and the initiation of cascade testing of relatives. This recommendation was made on the basis that a more comprehensive test (CGA) can cost-effectively detect more at-risk cases than either of the candidate tests under consideration.

Start Date: October 2010

Duration of Project: 10 months

Publications:


Other Dissemination Activities:


**Project No:** AOT2.7  
**Completed**

**Project Title:** TAR Project: Systematic review of the diagnostic accuracy and cost-effectiveness of magnetic resonance spectroscopy and enhanced magnetic resonance imaging techniques in aiding the localisation of prostate abnormalities for biopsy.

**Grant Applicants / Principal Investigators (place of work):** Mowatt, G., Scotland, G., Boachie, C., Tassie, E., Cruickshank, M., Ford, J.A., Fraser, C., Kurban, L., Lam, T.B., Padhani, A.R., Royle, J. (Aberdeen Health Technology Assessment Group); Scheenen, T.W. (Radboud University Nijmegen Medical Center).

**HERU Investigators:** Scotland, G., Tassie, E.

**HERU Research Theme:** Assessment of Technologies – Technology Adoption Phase

**Source of Funding:** National Institute for Health Research (NIHR) (Part of the 2011–2016 TAR contract – see template AOT2.1)

**Objectives:**
To assess the diagnostic accuracy and cost-effectiveness of magnetic resonance spectroscopy (MRS) and enhanced MRI techniques (dynamic contrast-enhanced magnetic resonance imaging [DCE-MRI], diffusion-weighted MRI [DW-MRI]) in aiding the localisation of prostate abnormalities for biopsy in men with suspected prostate cancer and elevated PSA but previously negative biopsy.

**Outline:**
This project included a systematic review of studies to assess the diagnostic accuracy of MRS, DCE-MRI and DW-MRI for localising prostate abnormalities for biopsy in comparison with T2-MRI and/or TRUS (trans-rectal ultrasound)-guided biopsy. A Markov model was developed to assess the cost-effectiveness of using the alternative MRI/MRS sequences for directing TRUS-guided biopsies, compared with a systematic extended-cores TRUS-guided approach.

**Outcome and Translation:**
This model-based evaluation of alternative diagnostic strategies yielded very small differences in QALYs. The evaluation of diagnostic strategies for prostate cancer is complicated by concerns about over-diagnosis and uncertainty surrounding the benefits of radical treatment for patients with low-/moderate-risk disease. If eMRI techniques can be confirmed to have high sensitivity for high-risk cancer, while negating the need for biopsies in patients with low-risk disease, they could offer a cost-effective approach to diagnosis. The results of the modelling undertaken for this study were considered in the update of the NICE guideline on diagnosis and management of prostate cancer: [https://www.nice.org.uk/guidance/CG175](https://www.nice.org.uk/guidance/CG175)

**Start Date:** November 2011

**Duration of Project:** 9 months
**Publications:**


**Other Dissemination Activities:**


TAR Project: Point-of-care coagulometers (the CoaguChek XS system and the INRatio2 PT/INR monitor) for self-monitoring coagulation status in people on long-term vitamin K antagonist therapy who have atrial fibrillation or heart valve disease.

Grant Applicants / Principal Investigators (place of work):

HERU Investigators: Scotland, G., Tassie, E.

HERU Research Theme: Assessment of Technologies – Technology Adoption Phase

Source of Funding: National Institute for Health Research (NIHR) (Part of the 2011–2016 TAR contract – see template AOT2.1)

Objectives: This assessment investigates the clinical effectiveness and cost-effectiveness of point-of-care coagulometers for the self-monitoring of coagulation status in people receiving long-term vitamin K antagonist therapy. CoaguChek system (both the S and XS models), INRatio2 PT/INR monitor and ProTime Microcoagulation system coagulometers were considered in this assessment as an alternative to standard UK anticoagulation therapy services.

Outline: There are increasing numbers of people with atrial fibrillation, heart valve disease or other cardiac conditions who are at high risk of thrombosis, requiring long-term oral anticoagulation therapy (OAT). The goal of OAT, generally with warfarin (a type of vitamin K antagonist), is to establish a balance between bleeding and clotting. Under-anticoagulation increases the risk of thromboembolism while over-anticoagulation increases the risk of haemorrhage; hence treatment with warfarin requires frequent monitoring. The blood coaguability of people taking warfarin is monitored by the use of the international normalised ratio (INR) which is a standardised unit for measuring the time it takes for blood to clot. As standard practice, warfarin monitoring is managed by healthcare professionals in anticoagulant clinics based in hospitals using laboratory testing or managed in primary care (with or without the use of laboratory services). The other option for warfarin monitoring is the use of a personal testing machine at home (known as a point-of-care test) which allows people to perform self-testing (with results managed by healthcare professional) or self-management (when people perform the test and alter the dose of anticoagulation therapy themselves according to a personalised protocol). Self-testing and self-management are together referred to as self-monitoring.
Outcome and Translation: This diagnostic assessment review informed NICE diagnostics guidance (DG14: http://www.nice.org.uk/guidance/dg14). Based on the evidence presented in the report, the NICE appraisal committee recommended two coagulometers (CoaguChek XS and InRatio2 PT/INR) for use by people taking long-term anti-blood clotting therapy who have atrial fibrillation or heart valve disease, if they prefer and are able to effectively use this type of monitoring. The report was also reviewed by the Scottish Health Technologies Group, and used to inform updated advice to the NHS in Scotland: http://www.healthcareimprovementscotland.org/our_work/technologies_and_medicines/shtg_-_evidence_notes/evidence_note_57.aspx.

Start Date: April 2013

Duration of Project: 12 months

Publications:


Other Dissemination Activities:

Project No: AOT2.9  
Project Title: TAR Project: Collagenase clostridium histolyticum for treating Dupuytren’s contracture.  
Grant Applicants / Principal Investigators (place of work): Brazzelli, M., Cruickshank, M., Elders, A., Fraser, C., Ramsay, C., Robertson, C. (HSRU, University of Aberdeen); Hernández, R., McNamee, P., Tassie, E. (HERU); Lawrie, D. (Woodend Hospital, Aberdeen), (Aberdeen Assessment of Technologies Group).  
HERU Investigators: Tassie, E., McNamee, P., Hernández, R.  
HERU Research Theme: Assessment of Technologies – Technology Adoption Phase  
Source of Funding: National Institute for Health Research (NIHR) (Part of the 2011–2016 TAR contract – see template AOT2.1)  
Objectives: To appraise the clinical and cost-effectiveness of collagenase clostridium histolyticum injections, as an alternative to surgery for the treatment of adults presenting with Dupuytren’s contracture with a palpable cord.  
Outline: Dupuytren’s disease is a benign, slowly progressive fibroproliferative condition, which affects the palmar fascia in the hand. The disease is common, costly and associated with considerable functional impairment. As the disease progresses, cords gradually contract, reeling in the metacarpo-phalangeal joints and the proximal interphalangeal joints leading to progressive digital flexion deformities. Joint contractures and deformities are painless but may significantly interfere with the activities of daily living and impact upon the ability to work and on quality of life. Overall, approximately 2 million people in the UK are believed to have Dupuytren’s disease. There is no cure for Dupuytren’s disease and the goal of treatment is to restore hand function. Surgery remains the treatment of choice for severe contracture and some cases of moderate symptoms. Collagenase procedure is a novel, non-surgical treatment which has a UK marketing authorisation for the treatment of Dupuytren’s. This project constructed an economic model to estimate the costs and consequences of collagenase histolyticum injections versus alternative surgical strategies. We found that collagenase was more costly and generated fewer QALYs compared with the most commonly used treatment, limited fasciectomy. The economic model was derived from a naive indirect comparison and was hindered by a lack of suitable data. In addition, there was considerable uncertainty about the appropriateness of many assumptions and parameters used in the model.
Outcome and Translation: This study brought together all the available evidence on collagenase clostridium histolyticum as an alternative to surgery in adults with Dupuytren’s contracture with a palpable cord, and modelled the relative costs and benefits of different treatment strategies. We recommended that a randomised controlled trial is required to confirm or refute our findings. Such a trial has subsequently been commissioned by the NIHR HTA programme: http://www.nets.nihr.ac.uk/projects/hta/1510204.

Start Date: August 2013

Duration of Project: 18 months


Other Dissemination Activities: –
Project No: AOT2.10  
Completed

Project Title: TAR Project: Clinical and cost-effectiveness of open-mesh repairs in adults presenting with a clinically diagnosed unilateral, primary inguinal hernia who are operated on in an elective setting.

Grant Applicants / Principal Investigators (place of work): Brazelli, M., Sharma, P., Cruickshank, M., Fraser, C., Kemp, L., Ramsay, C. (HSRU, University of Aberdeen); Scott, N. (Population Health, University of Aberdeen); Boyers, D., Hernández, R. (HERU); Ahmed, I. (NHS Grampian); Vale, L. (Newcastle University).

HERU Investigators: Boyers, D., Hernández, R.

HERU Research Theme: Assessment of Technologies – Technology Adoption Phase

Source of Funding: National Institute for Health Research (NIHR) (Part of the 2011–2016 TAR contract – see template AOT2.1)

Objectives: To systematically review the clinical and cost-effectiveness and to develop a de novo economic model to assess the cost-effectiveness of surgical open preperitoneal mesh repairs compared with standard Lichtenstein repair for the treatment of adults presenting with a clinically diagnosed, unilateral, primary, inguinal hernia who are operated in an elective setting.

Outline: Inguinal hernia repair is the most common surgical procedure in the UK, consuming substantial healthcare resources. A variety of surgical techniques and approaches are available, the most common in current practice being tension-free mesh repairs, which can be placed through open surgery (Lichtenstein method or open preperitoneal repair) or laparoscopic (keyhole) surgery. Lichtenstein is the gold standard among open repairs. The project synthesised evidence on the clinical and cost-effectiveness of open preperitoneal mesh repairs in comparison to Lichtenstein repair. Recurrence rates for these procedures are low. Key clinical outcomes were recurrence, chronic pain, complications and quality of life after inguinal hernia repair.

For the assessment of cost-effectiveness evidence, comprehensive literature searches were carried out to identify appropriate trial based or decision model economic evaluations of the relevant comparators. A fully probabilistic de novo Markov cohort economic decision analysis model was developed. Modelled health states included initial surgery, chronic pain, post-operative complications, numbness, recurrence and death. The perspective of the analysis was that of the UK NHS and results of the economic modelling were presented in terms of incremental cost per QALY gained. Comprehensive sensitivity analyses were used to describe the uncertainty in our results.
Assessment of Technologies

Outcome and Translation: Open preperitoneal mesh repair was £256 less costly, and improved health outcomes by 0.041 QALYs compared with Lichtenstein mesh repair. The open preperitoneal procedure was the most efficient and dominant treatment strategy with a high (> 98%) probability of being cost-effective for the NHS at a willingness-to-pay of £20,000 for a QALY. Results were robust to a range of sensitivity analyses.

Open preperitoneal mesh repair appears to be a safe and efficacious alternative to Lichtenstein mesh repair, with the potential to save substantial NHS resources. Further research should definitively determine the long-term clinical effectiveness as well as the most efficient type of open preperitoneal repair.

The project provided evidence to NHS decision makers regarding the efficient allocation of scarce funding resources to the surgical management of primary unilateral inguinal hernia repairs. A comprehensive monograph was prepared and presented to the NIHR funders and further academic papers are being drafted.

Start Date: August 2014
Duration of Project: 6 months

Project No: AOT2.11
Completed

Project Title: STA: Alirocumab for treating primary hypercholesterolaemia and mixed dyslipidaemia (Single Technology Assessment for NICE).

Grant Applicants / Principal Investigators (place of work): Scotland, G. (HERU/HSRU); Javanbakht, M. (HERU); Neilson, A. (HERU); Scott, N. (Medical Statistics Team, University of Aberdeen), Cruickshank, M., Sharma, P., Fraser, C. (Health Services Research Unit, University of Aberdeen), Simpson, W. (NHS Grampian), Brazzelli, M. (Health Services Research Unit, University of Aberdeen).

HERU Investigators: Scotland, G., Neilson, A., Javanbakht M. (HERU)

HERU Research Theme: Assessment of Technologies – Technology Adoption Phase

Source of Funding: National Institute for Health Research (NIHR) (Part of the 2011–2016 TAR contract – see template AOT2.1)

Objectives: The aim of this project was to review the evidence for the clinical and cost-effectiveness of alirocumab for treating primary hypercholesterolaemia and mixed dyslipidaemia.

Outline: Primary hypercholesterolaemia is a form of dyslipidaemia characterised by abnormalities of lipoprotein transport, associated with high concentrations of cholesterol in the blood. Mixed dyslipidaemia is defined as elevations in LDL cholesterol and triglyceride (TG) levels that are often accompanied by low levels of HDL cholesterol. People with hypercholesterolaemia and mixed dyslipidaemia are at increased risk of cardiovascular disease (CVD) due to the fact that long-term high concentrations of cholesterol are known to accelerate atherosclerosis, the build-up of fatty deposits in the arteries.

This project was carried out as part of the National Institute for Health and Care Excellence (NICE) Single Technology Appraisal Process. The company responsible for alirocumab (Sanofi Ltd) submitted an evidence review and an economic model assessing the cost-effectiveness of alirocumab, alone or in combination with statin +/- ezetimibe, against no treatment or statin alone or in combination with ezetimibe, for the treatment of primary hypercholesterolaemia and mixed dyslipidaemia. The Aberdeen HTA group were commissioned to act as the Evidence Review Group (ERG) for the project, and to provide an independent report reviewing the company's evidence submission.

Outcome and Translation: Following consideration of the company submission and the ERG reports, the NICE appraisal committee recommended alirocumab as a treatment option for certain subgroups of people with heterozygous-familial and non-familial hypercholesterolaemia and dyslipidemia: https://www.nice.org.uk/guidance/ta393/chapter/1-Recommendations.
Start Date: October 2015

Duration of Project: 3 months


Project No: AOT2.12  Completed

Project Title: STA: Radium-223 dichloride for treating hormone-relapsed prostate cancer with bone metastases (men who have not received docetaxel and for whom docetaxel is contraindicated or not suitable) (NICE re-consideration of current Cancer Drug Fund (CDF) technologies under the new proposed CDF criteria).

Grant Applicants / Principal Investigators (place of work):
Scotland, G. (HERU/HSRU); Hernández, R. (HERU); Robertson, C., Fraser, C. (Health Services Research Unit, University of Aberdeen); Scott, N. (Medical Statistics Team, University of Aberdeen)

HERU Investigators: Scotland, G., Hernández, R.

HERU Research Theme: Assessment of Technologies – Technology Adoption Phase

Source of Funding: National Institute for Health Research (NIHR) (Part of the 2011–2016 TAR contract – see template AOT2.1)

Objectives:
The aim of this project was to review updated evidence for the clinical and cost effectiveness of radium-223 dichloride for treating hormone-relapsed prostate cancer with bone metastases in men who have not received docetaxel and for whom docetaxel is contraindicated or not suitable.

Outline:
Advanced prostate cancer is often associated with bone metastases which cause significant morbidity and mortality. Radium-223 dichloride (Xofigo, Bayer) is a radiopharmaceutical agent designed to deliver alpha radiation to bone metastases without affecting normal bone marrow.

This project was carried out to support NICE’s decision making process surrounding the re-consideration of current Cancer Drug Fund (CDF) technologies under the new proposed CDF criteria. Radium-223 was previously rejected by NICE for routine commissioning in men who had not previously received treatment with docetaxel. It was subsequently made available to these patients through the CDF in England. Following a decision to reform the old CDF, NICE began to reappraise all drugs already in the CDF in April 2016.

The company responsible for radium-223 (Bayer) submitted updated evidence for review and a revised economic model addressing the committee concerns from the previous appraisal. The Aberdeen HTA group were commissioned to act as the Evidence Review Group (ERG) for the appraisal, and to provide an independent report reviewing the company’s evidence submission. Following review of the revised modelling, the ERG established that the company’s revisions to the model were generally appropriate, and that these updates improved the cost-effectiveness estimates for radium-223.
Outcome and Translation: Following consideration of the company submission and the ERG reports, the NICE appraisal committee recommended radium-223 as an option for treating hormone-relapsed prostate cancer with symptomatic bone metastases (in men without prior docetaxel treatment), only if docetaxel is contraindicated or is not suitable for them: https://www.nice.org.uk/guidance/ta412.

Start Date: June 2016

Duration of Project: 1 month

Publications: Scotland, G., Hernández, R., Robertson, C., Scott, N. and Fraser, C. (2016) Radium-223 dichloride for treating hormone-relapsed prostate cancer with bone metastases (men who have not received docetaxel and for whom docetaxel is contraindicated or not suitable): ERG critique of the company submission for reconsideration of current CDF technologies under the new proposed CDF criteria. Report from Aberdeen Health Technology Assessment Group to NICE Appraisal Committee.

Other Dissemination Activities: Scotland, G. (2016) 'Report of the Evidence Review Group on reconsideration of radium-223 for treating hormone-relapsed prostate cancer with bone metastases (men who have not received docetaxel and for whom docetaxel is contraindicated or not suitable)'. National Institute for Health and Care Excellence (NICE) Appraisal Committee Meeting, Manchester, 26 July 2016.
Project No: AOT2.13  In Progress

Project Title: Technology Assessment Reviews (TARs) contract (2016–2021)

Grant Applicants / Principal Investigators (place of work): Ramsay, C., Campbell, M., Brazzelli, M., Cummins, E. (HSRU, University of Aberdeen); Scotland, G. (HERU/HSRU).


HERU Research Theme: Assessment of Technologies – Technology Adoption Phase

Source of Funding and Total Awarded: National Institute for Health Research (NIHR) – £2,624,984

Amount of HERU Funding: £246,915

Objectives: To deliver technology assessment reviews (TARs) for the National Institute for Health and Care Excellence (NICE) and other NHS customers.

Outline: The AoT theme plays a central role in the University of Aberdeen’s contract to conduct Technology Assessment Reviews (TARs) for NICE and other NHS customers. TARs are used by NICE and other NHS bodies to develop guidance and recommendations on the use of technologies in the NHS. For TARs commissioned to support the Technology Appraisal processes of NICE, the resultant guidance is mandatory in England and Wales, and certain types of assessment are also used by Scottish decision-making bodies such as the SMC and the SHTG to help inform guidance for the NHS in Scotland.

In 2014, the theme in collaboration with colleagues from HSRU was successful in having the TARs contract renewed to 2021. Aberdeen is the only centre in Scotland to hold such a contract. The work involves critiquing economic evidence and models submitted by industry (to NICE) in support of their case to have new and existing medicines reimbursed on the NHS (single technology appraisals (STAs)), and larger technology appraisals involving rapid systematic reviews and economic modelling to synthesise cost-effectiveness comparisons between relevant alternatives. Over the past six years, the theme has contributed to six STAs (AOT2.4, AOT2.3, AOT2.5, AOT3.13, AOT2.11, AOT2.12) and ten larger projects assessing the clinical and cost-effectiveness of diagnostic (AOT2.6, AOT2.8, AOT2.14), pharmaceutical (AOT2.9, AOT2.2), and other health technologies (AOT3.11, AOT2.10, AOT2.7, AOT3.3, AOT3.21).

Start Date: The current contract commenced in April 2016.

Duration of Project: 5 years

Project Phase: 

Publications: See individual project templates.

Other Dissemination Activities: See individual project templates.
**Project No:** AOT2.14  
**In Progress**

**Project Title:** TAR Project: Multiple frequency bio-impedance devices (BCM – Body Composition Monitor, BioScan 920-II, BioScan touch i8, InBody S10, and MultiScan 5000) for fluid management in people with chronic kidney disease having dialysis.

**Grant Applicants / Principal Investigators** (place of work): Ramsay, C., Brazelli, M., Campbell, M. (HSRU, University of Aberdeen); Scotland, G. (HERU/HSRU).

**HERU Investigators:** Scotland, G., Jacobsen, E.

**HERU Research Theme:** Assessment of Technologies – Technology Adoption Phase

**Source of Funding:** National Institute for Health Research (NIHR) – Part of the TAR contract 2016–2021

**Objectives:** To assess the clinical and cost-effectiveness of using multiple frequency bio-impedance devices to guide fluid management decisions in patients with chronic kidney disease on dialysis.

**Outline:** Chronic kidney disease can lead to kidney failure and the need for waste products and excess fluid to be removed from the blood by a process called dialysis. In people having dialysis, it is important to monitor the amount of fluid being removed, as removing too much, or not enough, fluid, can cause other health problems during dialysis or between dialysis sessions. Assessing the fluid levels has traditionally been done by medical staff using their experience and clinical judgement but this can be unreliable. In recent years, a type of technical device has been introduced to estimate a person’s fluid (hydration) status, and help determine the amount of fluid to remove during a dialysis session. These devices work by sending painless electrical currents through the body via electrodes attached to certain parts of it (e.g. hand and foot). Based on the impedance offered by the body to currents of different electrical frequency, an algorithm is used to compute a person’s body composition (i.e. lean tissue, fat tissue, intracellular and extracellular water). In turn, this data can be used to estimate the amount of fluid that should be removed during dialysis in order to achieve normal levels of hydration. It is not clear at the present time whether using these devices improves fluid management and patient outcomes, and whether they represent good value-for-money for the NHS.

**Start Date:** June 2016

**Duration of Project:** 6 months

**Project Phase:**

**Publications:** –

**Other Dissemination Activities:** –

N'Dow, J., Grant, A. (Division of Applied Health Sciences, University of Aberdeen); Norrie, J., Glazener, K. (HSRU, University of Aberdeen); Pickard, R., Orr, K. (University of Newcastle upon Tyne); Buckley, B. (Galway); Lam, T. (Department of Urology, Aberdeen Royal Infirmary); Vale, L. (HERU/HSRU); Kilonzo, M. (HERU).

This study established the clinical benefit and cost-effectiveness of using antibiotic- or antiseptic-impregnated urethral catheters over standard urethral catheters in hospitalised adults requiring short-term catheterisation.

The study design was a multicentre, randomised controlled trial testing three short-term urinary catheter policies in a range of high-volume clinical settings. The study included adult patients (≥16 years of age) requiring urethral catheterisation (expected to be required for a maximum of two weeks), in pre-selected units with a high volume of short-term catheterisation. There were two experimental groups managed with (a) silver alloy-impregnated hydrogel urethral catheters, (b) nitrofurazone-impregnated silicone urethral catheters. There was one control group managed with a PTFE-coated latex urethral catheter – the ‘standard’ control. The primary clinical outcome was incidence of symptomatic urinary tract infection up to six weeks post-catheter insertion (number of participants with at least one occurrence) and the economic one was incremental cost per infection averted and QALYs gained, using the Euro-Qol 5 Dimensions (EQ–5D) measured over a six-week follow-up period.

This study has helped to inform NHS decision makers and providers whether it is worthwhile for the NHS to use antibiotic- or antiseptic-impregnated urethral catheters in hospitalised adults requiring short-term catheterisation.
Publications:


Other Dissemination Activities:

–
Assessment of Technologies

Project No: AOT2.16  Completed

Project Title: Improving the value of screening for diabetic macular oedema using surrogate photographic markers.

Grant Applicants / Principal Investigators (place of work): Olson, J., Sharp, P., Goatman, K. (Biomedical Physics, University of Aberdeen); Scotland, G. (HERU/HSRU); McNamee, P. (HERU); Prescott, G. (Population Health, University of Aberdeen).

HERU Investigators: Scotland, G., McNamee, P.

HERU Research Theme: Assessment of Technologies – Technology Adoption and In-Use Technology Phases

Source of Funding and Total Awarded: National Institute for Health Research (NIHR), Health Technology Assessment (HTA) Programme – £464,949, University of Aberdeen and the Chief Scientist Office (CSO) CORE

Amount of HERU Funding: £16,448

Objectives: Diabetic macular oedema (DMO) is a significant cause of visual loss in people with diabetes. Existing photographic screening strategies for identifying diabetic macular oedema have low specificity. The aim of this prospective cohort study was to evaluate the sensitivity and specificity of using different patterns of photographic surrogate markers to screen for DMO, and to assess the cost-effectiveness of using these alternative strategies in national screening programmes for diabetic retinopathy.

Outline: A decision model was developed to simulate the progression of patients with undiagnosed DMO. Sensitivity and specificity estimates derived from a perspective cohort were superimposed on top of this natural history model to estimate the costs and consequences (i.e. the number of appropriate/inappropriate ophthalmology referrals, patient years free from moderate vision loss, and quality adjusted life years) of adopting alternative screening strategies. The study also assessed the potential cost-effectiveness of using automated detection algorithms to predict the probability of DMO, and the cost-effectiveness of adding optical coherence tomography to the screening pathway for patients with suspected DMO.

Outcome and Translation: Many individuals currently referred to ophthalmology services from diabetic retinopathy screening programmes with suspected macular oedema are subsequently found not to require treatment. This results in high costs to the NHS and unnecessary anxiety for patients. The results of this study have helped to inform the incorporation of optical coherence tomography, to monitor patients with surrogate marker for macular oedema, within the screening programme.

Start Date: August 2007
**Duration of Project:** 42 months

**Publications:**


**Other Dissemination Activities:**

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<th><strong>Project No:</strong></th>
<th>AOT2.17</th>
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</thead>
<tbody>
<tr>
<td><strong>Project Title:</strong></td>
<td>Cost-effectiveness of exercise training in older patients with heart failure.</td>
</tr>
<tr>
<td><strong>Grant Applicants / Principal Investigators</strong> (place of work):</td>
<td>McMurdo, M., Witham, M., Struthers, A.D. (Ninewells Hospital &amp; University of Dundee); Johnston, D. (University of Aberdeen); Lang, C. (Ninewells Hospital &amp; University of Dundee); Pol, M. van der (HERU).</td>
</tr>
<tr>
<td><strong>HERU Investigators:</strong></td>
<td>Pol, M. van der, Boyers, D.</td>
</tr>
<tr>
<td><strong>HERU Research Theme:</strong></td>
<td>Assessment of Technologies – Technology Adoption Phase</td>
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<tr>
<td><strong>Source of Funding and Total Awarded:</strong></td>
<td>Health Services Research Committee, Chief Scientist Office (CSO) – £213,465 and University of Aberdeen</td>
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<tr>
<td><strong>Amount of HERU Funding:</strong></td>
<td>£12,518</td>
</tr>
<tr>
<td><strong>Objectives:</strong></td>
<td>To assess the cost-effectiveness of exercise training in older patients with heart failure.</td>
</tr>
<tr>
<td><strong>Outline:</strong></td>
<td>Whilst exercise training is known to be beneficial in younger people with heart failure, this evidence is not applicable to typical patients who are older. Furthermore, there is little evidence available on the cost-effectiveness of exercise training in older heart-failure patients. A 112-patient, two-arm, randomised trial was conducted to evaluate the effectiveness and cost-effectiveness of exercise training in older patients with heart failure. The exercise training programme consisted of eight weeks of twice-weekly, therapist-led, supervised small-group intermittent functional aerobic exercise and strength training, with the duration of sessions gradually increased to 60 minutes. This was followed by a 16-week, home-based exercise phase which included self-monitoring and telephone instruction and encouragement from the therapist. The results showed that the exercise training was neither effective nor cost-effective. Heart failure predominantly affects people aged over 70 years of age.</td>
</tr>
<tr>
<td><strong>Outcome and Translation:</strong></td>
<td>The exercise intervention did not improve exercise capacity or quality of life in older patients with heart failure. There was no evidence of cost savings to the NHS. Therefore, this study does not support the adoption of exercise training for older heart-failure patients. The findings are of interest to cardiologists, cardiac rehabilitation workers and practitioners of medicine for older people.</td>
</tr>
<tr>
<td><strong>Start Date:</strong></td>
<td>September 2007</td>
</tr>
<tr>
<td><strong>Duration of Project:</strong></td>
<td>3 years</td>
</tr>
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</table>
**Publications:**


**Other Dissemination Activities:**

FOCCUS: Pragmatic multi-centre randomised trial of (1) routing postoperative ICU care and/or (2) pre-operative fluid loading in high-risk surgical patients undergoing major elective surgery and urgent surgery.

Cuthbertson, B. (Sunnybrook Health Services Centre, Toronto); Campbell, M., Norrie, J., Grant, A. (HSRU, University of Aberdeen); Stott, S. (ICU, Aberdeen Royal Infirmary); Vale, L. (University of Newcastle); Brittenden, J. (Vascular Surgery, Aberdeen Royal Infirmary); Kinsella, J. (Anaesthesia, University of Glasgow).

This study was designed to assess the effectiveness and cost-effectiveness of the level of early post-operative dependency in high-risk surgical patients.

In Scotland about 4,500 patients die each year around the time of surgery. Because of a lack of critical care facilities, patients usually receive post-operative care in either the general surgical ward environment or a ward-based surgical high-dependency unit (HDU). This study was an economic evaluation as part of a multicentre randomised trial to evaluate both the roles of (a) high-dependency care versus intensive care in the post-operative period after high-risk major surgery and (b) pre-operative fluid loading, using a 2*2 factorial design.

Due to a lack of availability of intensive care unit beds, recruitment to the first comparison was postponed and the study focused instead on the straightforward comparison of fluid loading using 25ml/kg of Ringer’s lactate solution with no routine fluid loading in the management of high-risk surgery-elective surgical patients in Scotland.
The study found that a pragmatic fluid-loading intervention consisting of Ringer’s lactate solution delivered in the hours prior to major elective surgery could be achieved with an intervention cost of £51 per case. Adjusting for baseline variables, the fluid loading group was on average £2,047 less costly (95% CI: -£6,947 to £2,854) and more effective [mean 0.043 QALYs (95% CI: -0.017 to 0.103)] than routine care. Fluid loading had an 89% probability of being cost-effective at a willingness-to-pay per QALY threshold of £30,000. Sensitivity analyses did not alter the overall conclusions.

Outcome and Translation: The results suggest that the intervention has a high probability of cost-effectiveness compared with a standard-of-care approach with no routine fluid loading. Further, larger studies are required to confirm these results. If the results of this study are confirmed in a definitive RCT, this intervention may be easily introduced into routine care with a potential for cost savings in the allocation of scarce NHS resources.

Start Date: September 2007

Duration of Project: 30 months

Publications:


Project No: AOT2.19

Completed

Project Title: MUSICIAN: Managing Unexplained Symptoms (chronic widespread pain) in primary Care: Involving traditional and Accessible New approaches.

Grant Applicants / Principal Investigators (place of work): Macfarlane, G., Prescott, G. (Population Health, University of Aberdeen); Hannaford, P., El-Metwally, A. (Academic Primary Care, University of Aberdeen); Norrie, J. (HSRU, University of Aberdeen); McNamee, P. (HERU).

HERU Investigators: McNamee, P., Scotland, G.

HERU Research Theme: Assessment of Technologies – Technology Adoption Phase

Source of Funding and Total Awarded: Arthritis Research Campaign (ARC) – £376,406 and University of Aberdeen

Amount of HERU Funding: £1,530

Objectives: To assess whether, in addition to usual care, (a) a telephone-based cognitive behavioural therapy (CBT) programme, (b) prescribed exercise, (c) a combination of both treatments improves pain and disability in the short (six months) and medium (nine months) term amongst patients with unexplained chronic widespread musculoskeletal pain.

Outline: Chronic widespread pain (CWP) has a population prevalence of approximately 10% and is amongst the most common reasons for referral to a rheumatologist. Such patients use health services extensively, with one study estimating average 6-month direct costs of approximately £1,000. There is currently a lack of evidence regarding how best to manage patients who frequently present with CWP. A 2x2 factorial-design randomised controlled study was used to assess the effectiveness and cost-effectiveness of the alternative regimes.

Outcome and Translation: The study provided evidence to practitioners and policy makers on the best approach for the management of CWP. At six and nine months after intervention, active interventions were associated with nonsignificant increases in QALYs. Applying a cost-effectiveness ceiling ratio of £30,000 per QALY gained, telephone-based CBT had the highest probability of being the preferred option at nine months, with about a 70% chance of being cost-effective compared with treatment as usual. Importantly, patient-reported improvements in health were recently found to be maintained at two years after treatment, suggesting sustained effectiveness, and providing evidence that the treatment is very cost-effective.

Start Date: October 2007

Duration of Project: 3 years
Publications:


Other Dissemination Activities:


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<th>Project No:</th>
<th>AOT2.20</th>
<th>Completed</th>
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<tr>
<td>Project Title:</td>
<td>Improving maternal, neonatal and child survival: a partnership approach to achieve Millennium Development Goals in Bangladesh.</td>
<td></td>
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<tr>
<td>Grant Applicants / Principal Investigators (place of work):</td>
<td>Hussein, J., Cumming, A. (IMMPACT, University of Aberdeen); Quayyum, Z. (HERU); Byass, P. (Umea University, Sweden); Nicholls, P. (Southampton University); Enser, T. (Oxford Policy Unit/IMMPACT); Leppard, M. (Queen Margaret University).</td>
<td></td>
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<tr>
<td>HERU Investigators:</td>
<td>Quayyum, Z. (HERU)</td>
<td></td>
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<tr>
<td>HERU Research Theme:</td>
<td>Assessment of Technologies – Technology Adoption Phase</td>
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<tr>
<td>Source of Funding and Total Awarded:</td>
<td>Department for International Development (DFID) and Australian Government Overseas Aid Program (AusAID) – 746,600 US$</td>
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<td>Amount of HERU Funding:</td>
<td>£63,830</td>
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<tr>
<td>Objectives:</td>
<td>This study measured the impact of interventions designed to improve maternal, neonatal and child health in Bangladesh, and to develop research capacity in Bangladesh.</td>
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<tr>
<td>Outline:</td>
<td>BRAC, a large Bangladeshi non-governmental organisation, has initiated maternal, neonatal and child survival interventions to support the effort of the government of Bangladesh in achieving two major Millennium Development Goals relating to maternal and child health. The objectives of this five-year project included improving maternal and child health services, particularly amongst poorer groups, and reducing financial barriers. The project included evaluation of interventions by assessing changes in maternal health outcomes and costs.</td>
<td></td>
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<tr>
<td>Outcome and Translation:</td>
<td>The project demonstrated the development and application of improved health research methods in a low- and middle-income setting. Further, the capacity of researchers in Bangladesh to undertake similar work in the future was strengthened.</td>
<td></td>
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<tr>
<td>Start Date:</td>
<td>July 2008</td>
<td></td>
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<tr>
<td>Duration of Project:</td>
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**Publications:**


**Other Dissemination Activities:**


### Project No: AOT2.21 Completed

**Project Title:** Screening for disorders of glucose regulation in cystic fibrosis.

**Grant Applicants / Principal Investigators (place of work):** Waugh, N., Royle, P. (Population Health, University of Aberdeen); Helms, P. (Applied Clinical Sciences, University of Aberdeen); Hernández, R. (HERU); Stein, K., Pitt, M.A. (Peninsula Medical School); Ewings, P. (Royal Devon and Exeter NHS Trust); Craigie, I.P. (Royal Hospital for Sick Children); Sheldon, C. (Royal Devon and Exeter NHS Trust).

**HERU Investigators:** Hernández, R.

**HERU Research Theme:** Assessment of Technologies – Technology Adoption Phase

**Source of Funding:** Department of Health – NHS Executive Health Technology Assessment (HTA) – £111,572 and Research Council UK (RCUK)

**Amount of HERU Funding:** £11,230

**Objectives:** This project reviewed the evidence on whether screening for disorders of glucose regulation in cystic fibrosis is worthwhile, and examined which test, or combination of tests, may be best.

**Outline:** People with cystic fibrosis suffer damage to the pancreas that, over time, reduces their ability to produce insulin. In some patients, this progresses to diabetes. The onset of diabetes can be insidious, and it can cause damage before symptoms of diabetes occur and lead to diagnosis. There are a number of different screening tests, some less popular than others. The planned research consisted of a systematic review of the evidence, an economic evaluation using de novo economic modelling, and surveys of current practice and patients’ views. However, no new economic evaluation was conducted owing to a lack of available data.

**Outcome and Translation:** The study provided an up-to-date summary of the evidence to inform the policy position of the UK National Screening Committee and other relevant decision makers. The study concluded that the definition of cystic fibrosis-related diabetes should probably be based on pulmonopathy risk, rather than using the classical definition of diabetes. This implies that we should be screening for a wider range of hyperglycaemia than in other forms of diabetes.

**Start Date:** July 2008

**Duration of Project:** 30 months

**Publications:** –

**Other Dissemination Activities:** –
**Project No:** AOT2.22  
**Completed**

**Project Title:** EAGLE: Effectiveness, in Angle closure Glaucoma, of Lens Extraction.

**Grant Applicants / Principal Investigators** (place of work): Azuara-Blanco, A., Ramsay, C., Norrie, J. (HSRU, University of Aberdeen); Burr, J. (University of St. Andrews); Aung, T. (Singapore National Eye Centre); Foster, P. (UCL); Friedman, D. (The Johns Hopkins Hospital); Lai, J. (United Christian Hospital); Da-Wen, L. (Tri-Services General Hospital); Lui, C. (Taipei Veterans General Hospital); Nolan, W. (Sandwell and West Birmingham Hospital); See, J. (National University Hospital); Wong, D. (University of Hong Kong); Scotland, G. (HERU).

**HERU Investigators:** Scotland, G., Javanbakht, M. (HERU)

**HERU Research Theme:** Assessment of Technologies – Technology Adoption Phase

**Source of Funding and Total Awarded:** Medical Research Council (MRC) (Trials Grant) and Chief Scientist Office (CSO) CORE – £1,514,769 and Chief Scientist Office (CSO) CORE

**Amount of HERU Funding:** £33,847

**Objectives:** To determine whether early lens extraction for angle closure glaucoma improves patient-reported and clinical outcomes and to assess cost-effectiveness compared with standard care.

**Outline:** The active group had early lens extraction, i.e. cataract surgery. The control group had standard care where laser treatment was used to open drainage but did not improve sight. The outcomes were changes in quality of life; visual field; intra-ocular pressure; angle closure; need for additional medications; need for further surgery (trabeculectomy). The costs of the treatment and subsequent management for both interventions were estimated and incremental cost per QALY gained calculated, based on the responses to the EQ–5D.

Approximately 23 specialist centres in the UK, 7 centres in East Asia (from Singapore, Malaysia, Hong Kong and Taiwan), and 1 in Australia participated in this trial.

**Outcome and Translation:** This international, multicentre trial determined the best way of treating angle closure glaucoma, one of the main causes of blindness. The results of the study are being disseminated in a series of peer reviewed papers, keynote presentations and a lay summary.

**Start Date:** November 2008

**Duration of Project:** 7 years 2 months
Publications:


Other Dissemination Activities: –
### Project No: AOT2.23  
**Completed**

### Project Title: PROSPECT: Clinical and cost-effectiveness of surgical options for the management of anterior or posterior vaginal wall prolapse, pragmatic evaluation by multicentre randomised controlled trial – PROlapse Surgery, Pragmatic Evaluation and randomised Controlled Trial.

### Grant Applicants / Principal Investigators (place of work):
- Glazener, C., Grant, A., Norrie, J., MacLennan, G., McDonald, A., McPherson, G. (HSRU, University of Aberdeen);
- Vale, L. (HERU/HSRU);
- Smith, A.R.B. (St. Mary’s Hospital Manchester);
- Freeman, R.M. (Plymouth Hospital NHS Trust);
- Bain, C., Cooper, K. (NHS Grampian);
- Hagan, S. (Glasgow Caledonian University);

### HERU Investigators:
- Kilonzo, M., Boyers, D.

### HERU Research Theme:
- Assessment of Technologies – Technology Adoption Phase

### Source of Funding and Total Awarded:
- National Institute for Health Research (NIHR), Health Technology Assessment (HTA) Programme – £2,866,992 and Chief Scientist Office (CSO) CORE

### Amount of HERU Funding:
- £64,438

### Objectives:
To estimate the effectiveness and cost-effectiveness of different surgical options for the repair of vaginal prolapse.

### Outline:
The lifetime risk of undergoing surgery for prolapse is nearly 10%. There are several different traditional surgical techniques, none of which have been properly evaluated. The study embedded two large RCTs investigating different surgical techniques for two distinct patient populations of women with vaginal prolapse (primary and secondary) within a comprehensive cohort of all patients. The economic evaluation investigated the costs and cost-effectiveness of the interventions from the perspective of the NHS and for the women and their families. Information on the cost of the intervention and the use of primary and secondary NHS services by the women (including referral for specialist management) were collected, as were personal costs to the women (such as costs of travelling to appointments and work/social restrictions). Trial participants were asked to complete the EQ–5D at baseline and at 6, 12 and 24 months after randomisation, and responses were used to compute QALYs. In a sensitivity analysis, QALYs were also estimated from the SF–12 completed at the same time points.

The difference in effectiveness was expressed in terms of the numbers of patients cured and improved. Incremental cost–utility ratios were computed comparing the interventions. An economic model that considers a longer time horizon was developed to provide additional information for policy makers. In the model, the findings of the trial were extrapolated to the patient’s lifetime.
The study concluded that there is no clear superiority of the synthetic mesh, biological graft or mesh kit over standard repair in the first two years after surgery. Unless there is a significant decrease in the reoperation rates for failure in the medium or long term in the mesh or graft arms, compared to standard repair, it is unlikely that any type of mesh or graft is going to be cost-effective, given the excess cost over standard repair and the excess cost of treatment for the adverse effect of mesh exposure or extrusion. Long-term follow-up is now on-going.

Start Date: May 2009

Duration of Project: 6 years

Publications:


Glazener, C., Breeman, S., Elders, A., Hemming, C., Cooper, K., Freeman, R., Smith, A., Hagen, S., Montgomery, I., Kilonzo, M., Boyers, D., McDonald, A., McPherson, G., MacLennan, G. and Norrie, J. (2017) ‘Clinical effectiveness and cost-effectiveness of surgical options for the management of anterior and/or posterior vaginal wall prolapse: two randomised controlled trials within a comprehensive cohort study – results from the PROSPECT Study’, Health Technology Assessment, 20(95).*

*Denotes published after end of Review period on 31 October 2016.

Other Dissemination Activities: –
Project No: AOT2.24 Completed


Grant Applicants / Principal Investigators (place of work):
Azuara-Blanco, A. (NHS Grampian); Ramsay, C., Cook, J., McCormack, K. (HSRU, University of Aberdeen); Burr, J. (University of St. Andrews); Hernández, R. (HERU); Garway-Heath, D. (Moorfields Eye Hospital NHS Foundation Trust); Bourne, R. (Hinchingbrooke Hospital/Moorfields Eye Hospital/Addenbrooke’s Hospital); Batterbury, M. (Royal Liverpool University Hospital).

HERU Investigators: Hernández, R.

HERU Research Theme: Assessment of Technologies – Technology Adoption Phase

Source of Funding and Total Awarded: National Institute for Health Research (NIHR), Health Technology Assessment (HTA) Programme – £368,857 and Research Council UK (RCUK) and University of Aberdeen

Amount of HERU funding: £21,162

Objectives: The aim of this project is to assess the relative performance and the cost-effectiveness of new diagnostic imaging technologies, as triage tests in secondary care, for identifying people with glaucoma.

Outline: Glaucoma describes a group of eye diseases in which there is progressive damage of the optic nerve and loss of visual field leading to impaired vision and sometimes blindness. The estimated prevalence of glaucoma in the UK is 2% of the adult population with approximately 4,000 new cases of severe visual impairment due to glaucoma every year. Currently, a definitive glaucoma diagnosis is based on the expertise of an ophthalmologist interpreting a visual field test. New imaging techniques have emerged and this within-patient, multicentre, comparative study compared these new techniques between themselves and with current practice. We assessed the cost-effectiveness of adopting individual tests or combination of tests as triage tests compared with the current practice of diagnostic examination by an ophthalmologist in a secondary care setting.
Considerable NHS resources are required to assess all patients referred to secondary eye-care services with suspected glaucoma. Furthermore, there is considerable strain on secondary eye-care services through the increase in false positive referrals from optometrists.

Automated imaging can be effective in aiding glaucoma diagnosis among individuals referred from the community to HES. A model of care using a triage composite test appears to be cost-effective. NICE supported its decision to review the glaucoma clinical guidelines in 2016 based on the evidence provided by this and other studies (see project AOT3.4).

Future work is needed as there are uncertainties about glaucoma progression under routine care, and the cost of providing healthcare. Acceptability of implementing a triage test needs to be explored.

**Start Date:**
April 2010

**Duration of Project:**
44 months

**Publications:**


Other Dissemination Activities:


**Project No:** AOT2.25  
**Completed**

**Project Title:** SUSPEND: Spontaneous Urinary Stone Passage ENabled by Drugs, use of drug therapy in the management of symptomatic stones in hospitalised adults: a multicentre, placebo-controlled, randomised trial of calcium channel blockers (nifedipine) and alpha blockers (tamsulosin).

**Grant Applicants / Principal Investigators (place of work):** McClinton, S., N’Dow, J., MacLennan, G., Schumm, K., Thomas, R. (HSRU, University of Aberdeen); Burr, J. (University of St. Andrews); Kilonzo, M. (HERU).

**HERU Investigators:** Kilonzo, M.

**HERU Research Theme:** Assessment of Technologies – Technology Adoption Phase

**Source of Funding and Total Awarded:** National Institute for Health Research (NIHR), Health Technology Assessment (HTA) Programme – £1,452,458 and University of Aberdeen

**Amount of HERU Funding:** £51,525

**Objectives:**

To compare in 13 centres across the UK the clinical and cost-effectiveness of (a) calcium channel blockers (nifedipine), (b) alpha blockers (tamsulosin) and (c) placebo in facilitating the passage of urinary stones by four weeks after randomisation/initiation of treatment and the incremental cost per quality adjusted life-years (QALY) gained.

**Outline:**

One in eight adults are affected by urinary stones with 50% having a recurrence within five years resulting in significant calls on health service resources. Two recent meta-analyses have reported a potential role for alpha blockers and calcium channel blockers in facilitating ureteric stone passage. However, the quality of included trials was poor and there was insufficient evidence that they were cost-effective. The three-group, placebo-controlled, randomised trial compared the use of an alpha blocker (tamsulosin), a calcium channel blocker (nifedipine) and placebo. All three tablets looked identical. Primary outcome was passage of stone. The hypothesis being tested was that use of either nifedipine or tamsulosin would result in an absolute increase in the stone-free rate of 15% relative to placebo and that there was an absolute difference of 10% in stone-free rate between calcium channel blockers (nifedipine) and alpha blockers (tamsulosin).

**Outcome and Translation:**

The trial found that tamsulosin and nifedipine did not increase the likelihood of stone passage over four weeks for people with ureteric colic, and, therefore, use of these drugs is very unlikely to be cost-effective for the NHS.

**Start Date:** June 2010

**Duration of Project:** 4 years, 5 months
Publications:


Other Dissemination Activities:

–
Project No: AOT2.26  
Project Title: eTHoS: eiTher Haemorrhoidectomy or Stapled haemorrhoidopexy for haemmorrhoidal disease: a pragmatic multicentre randomised controlled trial comparing stapled haemorrhoidopexy to conventional excisional haemorrhoidectomy.

Grant Applicants / Principal Investigators (place of work):
Watson, A. (NHS Highland); Loudon, M. (Aberdeen Royal Infirmary); Vale, L. (University of Newcastle); Jayne, D. (Leeds Teaching Hospital HNS Trust); Maw, A. (Glan Clywd Hospital); Curran, F. (Stepping Hill Hospital, Stockport); Brown, S. (Northern General Hospital, Sheffield); Cook, J., Norrie, J. (HSRU, University of Aberdeen); Burr, J. (University of St. Andrews); Buckley, B. (National University of Ireland).

HERU Investigators: Kilonzo, M.

HERU Research Theme: Assessment of Technologies – Technology Adoption Phase and Broader Measures of Value

Source of Funding and Total Awarded: National Institute for Health Research (NIHR), Health Technology Assessment (HTA) Programme – £1,214,388

Amount of HERU Funding: £108,685

Objectives:
To establish for people with circumferential haemorrhoids (grade II, III and IV), is stapled haemorrhoidopexy (SH) more effective and cost-effective than traditional excisional haemorrhoidectomy (TH)? This will be estimated by comparing patient-reported overall health-related quality of life (measured using the EQ-5D) over a period of 24 months.

Haemorrhoids are common in all age groups from mid-teens onwards. In England in 2006/2007, approximately 25,000 haemorrhoidal procedures were performed as hospital day-case or inpatient admissions, placing a significant burden on health service resources. Stapled haemorrhoidopexy (SH) offers a new alternative to traditional haemorrhoidectomy (TH). There have been multiple randomised controlled trials (RCTs) comparing SH with TH and these have been analysed in two recent systematic reviews and an HTA monograph. SH appears to be associated with less pain in the immediate post-operative period, but a higher rate of recurrence in the longer term and need for further surgery. However, these findings are based on data from small trials, all with methodological flaws and providing limited data on utilities in the early post-operative period. The eTHoS RCT is comparing SH with CH. The primary outcomes are: (1) Health-related quality-of-life profile derived from the EQ-5D; (2) Incremental cost per quality-adjusted life year (QALY) at two years. Participants have now been followed up to two years. The results of the trial are currently being disseminated through peer reviewed publications and other activities. The trial results will...
guide NHS decision making on the optimal approach to the surgical management of haemorrhoids.

**Outcome and Translation:**
The trial results indicated that TH is both more clinically effective and less costly when compared with SH. It is more painful in the short term, but return to normal activity rates are equal. In addition to superior quality of life measures, haemorrhoid symptoms scores, continence and tenesmus rates and the need for further surgery were all lower in TH. TH is, therefore, a superior surgical treatment for the management of grades II to IV haemorrhoids when compared with SH. Given the current financial status of the NHS, commissioners of healthcare may consider being more prescriptive about procedures being offered for haemorrhoids.

**Start Date:**
July 2010

**Duration of Project:**
6 years, 3 months

**Publications:**


**Other Dissemination Activities:**
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<table>
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<tr>
<th>Project No:</th>
<th>AOT2.27</th>
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<tr>
<td>Project Title:</td>
<td>STITCH: Surgical Trial In Traumatic intracerebral Haemorrhage.</td>
</tr>
<tr>
<td>Grant Applicants / Principal Investigators</td>
<td>Mendelow, A., Gregson, B., Mitchell, P., McColl, E. (University of Newcastle); Unterberg, A. (University of Heidelberg); Chambers, I. (South Tees NHS Trust); McNamee, P. (HERU).</td>
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<td>HERU Investigators:</td>
<td>Boyers, D., McNamee, P.</td>
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<td>HERU Research Theme:</td>
<td>Assessment of Technologies – Technology Adoption Phase</td>
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<tr>
<td>Source of Funding and Total Awarded:</td>
<td>National Institute for Health Research (NIHR), Health Technology Assessment (HTA) Programme via University of Newcastle – £2,328,920, Chief Scientist Office (CSO) CORE and University of Aberdeen</td>
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<td>Amount of HERU Funding:</td>
<td>£97,784</td>
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<tr>
<td>Objectives:</td>
<td>To obtain class 1 evidence by undertaking a multicentre pragmatic randomised parallel group trial to establish whether a policy of early surgery in patients with traumatic supratentorial intracerebral haemorrhage or contusion improves outcome compared to a policy of initial conservative treatment, and to assess the cost-effectiveness of the alternative treatment options. To confirm appropriate thresholds for intracranial pressure and cerebral perfusion pressure for clinical management of head-injured patients with supratentorial intracerebral haemorrhage or contusions in the subgroup of patients with such monitoring.</td>
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<tr>
<td>Outline:</td>
<td>At present it is known that patients with bleeding on the surface of the brain following a head injury benefit from urgent surgery but it is not known whether patients with bleeding inside the brain would also benefit from surgery or not. These patients have a poor outcome with between 30% and 60% dying, becoming vegetative or with severe disability at six months. Using a multicentre, randomised controlled design with economic analysis, this study provides some evidence for whether or not surgery is of benefit at reasonable cost to the NHS, for patients with bleeding or a bruise inside the brain following a head injury. An economic evaluation, adopting an international health services perspective, was conducted alongside the randomised controlled trial to assess the relative costs and consequences of early surgery versus conservative management. Resource use and quality of life (QoL) data were collected from all centres across all countries. Results were presented as incremental costs (international dollars) per QALY gained, and compared to World Health Organization (WHO) guidelines on cost-effectiveness thresholds. Subgroup analyses were presented for low-, low-middle-, upper-middle- and high-income countries.</td>
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</table>
A policy of early surgery was on average more costly and more effective than conservative management, though differences between arms were not statistically significant. The base case incremental cost-effectiveness ratio was $50,541 per QALY gained. Results for the economic analysis were surrounded by considerable uncertainty.

Outcome and Translation: This study added to the international evidence base and informed the surgical community and other decision makers of the value of early surgery for traumatic intracerebral haemorrhage.

Start Date: September 2010

Duration of Project: 42 months

Publications:


Other Dissemination Activities:

**Assessment of Technologies**

**Project No:** AOT2.28  
**Completed**

**Project Title:** Maintained physical activity and physiotherapy in the management of distal arm pain.

**Grant Applicants / Principal Investigators (place of work):**  
Jones, G., Macfarlane, G. (Other Applied Health Sciences, University of Aberdeen); McNamee, P. (HERU); Burton, K. (University of Huddersfield); Coggon, D., Palmer, K. (University of Southampton); Lamb, S. (University of Warwick); McCabe, C. (University of Bath); McConnachie, A. (University of Glasgow); Shenker, N. (Cambridge University Hospitals); Walker-Bone, A. (Brighton and Sussex University Hospitals).

**HERU Investigators:** McNamee, P., Neilson, A.

**HERU Research Theme:** Assessment of Technologies – Technology Adoption Phase

**Source of Funding and Total Awarded:** Arthritis Research UK (ARUK) – £533,197 and University of Aberdeen

**Amount of HERU Funding:** £41,977

**Objectives:**

To investigate whether, among patients awaiting physiotherapy for distal arm pain (pain in the elbow, forearm, wrist or hand), advice to remain active and maintain usual activities results in a long-term reduction in arm pain and disability, compared with advice to rest.

Among the same patient population, to investigate whether immediate (‘fast-track’) physiotherapy results in a long-term reduction in arm pain and disability, compared with physiotherapy delivered at the usual time – typically, after a waiting-list period of six weeks.

**Outline:**

The best approach to managing arm pain is unclear. Patients are often advised to rest and avoid purported harmful activities, and are commonly referred to physiotherapy. However, none of these strategies are evidence-based and there are reasons to suppose that rest may be inferior to remaining active. Well-conducted randomised trials are needed to resolve these uncertainties and to improve outcomes. This project addressed this need through the conduct of a multicentre randomised trial together with a cost–utility analysis. Project findings are currently being written up for publication.

**Outcome and Translation:**

The results of the study will inform clinical practice over how best to manage distal arm pain.

**Start Date:** September 2011

**Duration of Project:** 54 months
**Publications:**


**Other Dissemination Activities:**

–
**Project No:** AOT2.29  
**Completed**

**Project Title:** SIMS – PILOT: Single Incision Mini-Slings versus standard midurethral slings in surgical management of female stress urinary incontinence.

**Grant Applicants / Principal Investigators (place of work):** Boyers, D., Kilonzo, M. (HERU).

**HERU Investigators:** Boyers, D., Kilonzo M.

**HERU Research Theme:** Assessment of Technologies – Technology Adoption Phase

**Source of Funding and Total Awarded:** NHS Grampian (Endowment Fund) – £1,000 and the Chief Scientist Office (CSO) CORE

**Amount of HERU Funding:** £1,000

**Objectives:**
This study assessed the cost, quality of life and the health economic implications of ‘Single Incision Mini-Slings’ (SIMS) compared to ‘Standard Mid-Urethral Slings’ (SMUS): tension-free vaginal tapes TVT™ Obturator system in the management of female stress urinary incontinence (SUI).

**Outline:** Stress urinary incontinence (SUI) is the most common type of urinary incontinence (UI) in pre-menopausal women, accounting for almost 50% of cases. Surgical procedures for the management of female SUI have been continuously evolving over the last four decades with the ultimate aim of providing an effective and truly ambulatory surgical procedure. However, evidence on the clinical and cost-effectiveness of new methods of surgery is lacking.

The aim of this study was to conduct an initial health economic evaluation alongside a pilot randomised controlled trial comparing single incision mini-slings (SIMS), performed under local anaesthetic with standard midurethral slings (SMUS) performed under general anaesthetic for the surgical treatment of SUI. The study assessed the costs to the NHS, quality of life implications (generic and condition specific QoL) and cost-effectiveness outcomes. Trial follow-up was one-year duration.
The results of our study generated the only available information in relation to the cost-effectiveness of these interventions and made an important contribution to the literature evaluating surgical methods for urinary incontinence. There were no significant differences between randomised groups in terms of QoL or patient-reported success rate. However the SIMS intervention has the potential to generate cost savings to the NHS and was on average £142 less costly compared to SMUS, generating incremental cost savings of £48,419 per QALY lost in the base case analysis, with a 94% probability of cost-effectiveness. Results were driven by the savings accrued from performing the SIMS procedure under local anaesthetic. Including a wider perspective and the potential for earlier return to work further increased the potential for SIMS to be a cost-effective procedure for SUI.

Outcome and Translation: The results of this work contributed to a successful funding application for a currently on-going large, UK-wide RCT: ‘Single-incision Adjustable Mini-Slings versus standard tension-free mid-urethral slings in the management of female stress urinary incontinence; a pragmatic multicentre non-inferiority randomised controlled trial: the SIMS trial’.

Start Date: May 2012

Duration of Project: 6 months


**Project No:** AOT2.30  
**Completed**

**Project Title:** Long-term follow-up of the SIMS – PILOT study: Single Incision Mini-Slings versus standard mid-urethral slings in surgical management of female stress urinary incontinence.

**Grant Applicants / Principal Investigators** (place of work): Boyers, D., Jacobsen, E., Kilonzo, M. (HERU); Abdel-Fattah, M., Mostafa, A. (Other Applied Health Sciences, University of Aberdeen).

**HERU Investigators:** Boyers, D., Kilonzo, M., Jacobsen, E.

**HERU Research Theme:** Assessment of Technologies – Technology Adoption Phase

**Source of Funding and Total Awarded:** NHS Grampian – £1,500 and Chief Scientist Office (CSO) CORE

**Amount of HERU Funding:** £1,500

**Objectives:** To determine the long-term (four-year) cost-effectiveness of adjustable single incision mini-slings compared to standard midurethral slings, using data from a pilot study.

**Outline:** Stress urinary incontinence (SUI) is the most common type of urinary incontinence (UI) in pre-menopausal women, accounting for almost 50% of cases. Surgical procedures for the management of female SUI have been continuously evolving over the last four decades with the ultimate aim of providing an effective and truly ambulatory surgical procedure. However, evidence on the clinical and cost-effectiveness of new methods of surgery is lacking. Data are particularly scarce in relation to longer-term outcomes, such as resource implications, quality of life and failure rates of the respective treatments.

This project is an update of an earlier pilot study comparing single incision mini-slings (SIMS), performed under local anaesthetic with standard mid-urethral slings (SMUS) performed under general anaesthetic for the surgical treatment of SUI has already been conducted. An initial assessment of the one-year pilot data showed that there were no significant differences between randomised groups in terms of QoL or patient reported success rate. Analysis of the four-year follow-up data has been completed and papers are currently being written up for the project.

**Outcome/Translation:** The purpose of the study was to determine if initial cost-effectiveness results are maintained over longer term, four-year, follow-up. Work from this project has already contributed to securing funding for a larger study to definitively determine the relative effectiveness, safety and cost-effectiveness of the respective interventions. This project therefore runs alongside a larger study of the SIMS intervention, which is currently on-going.
Start Date: January 2016
Duration of Project: 1 month
Publications: –
Other Dissemination Activities: –
Project No: AOT2.31  In Progress

Project Title: CLASS: Comparison of LAser, Surgery and foam Sclerotherapy: randomised controlled trial comparing foam sclerotherapy, alone or in combination with endovenous laser therapy, with conventional surgery as a treatment for varicose veins.

Grant Applicants / Principal Investigators (place of work): Britenden, J., Cassar, K., Bachoo, P., Norrie, J. (School of Medicine and Dentistry, University of Aberdeen); Gough, M.J., Mavor, I.A.D., Scott, J. (University of Leeds); McCollum, P. (University of Hull); Chetter, I.C. (Hull NHS Trust); Burr, J., Campbell, M., Ramsay, C. (HSRU, University of Aberdeen); Vale, L., Scotland, G. (HERU/HSRU); Tassie, E. (HERU).

HERU Investigators: Scotland, G., Tassie, E.

HERU Research Theme: Assessment of Technologies – Technology Adoption Phase

Source of Funding and Total Awarded: National Institute for Health Research (NIHR), Health Technology Assessment (HTA) Programme – £919,303; Extended five-year follow-up: £152,156 and the Chief Scientist Office (CSO) CORE

Amount of HERU Funding: Original trial: £29,000; Extended follow-up: £11,254

Objectives: To compare the clinical and cost-effectiveness of conventional surgery with two minimally invasive treatment modalities.

Outline: A randomised controlled trial comparing foam sclerotherapy, alone or in combination with endovenous laser therapy, with conventional surgery as a treatment for varicose veins. The study involves participants from hospitals throughout the UK and in addition to clinical measures, NHS and patient costs were assessed, and QALYs were derived from responses to the EQ–5D and SF–36 at baseline, six weeks and six months. Given that the initial report was based on follow-up data to six months, results were extrapolated to a longer time horizon using an economic decision analytic model. The trial has now entered a period of extended follow-up to five years post randomisation. This is expected to complete in 2017.

Start Date: January 2008

Duration of Project: 10 years, 6 months

Project Phase: 

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**Publications:**


**Other Dissemination Activities:**

Project No: AOT2.32

Project Title: BSRBR-AS: British Society for Rheumatology Biologics Register in Ankylosing Spondylitis.

Grant Applicants / Principal Investigators (place of work):
Macfarlane, G., Jones, G. (Other Applied Health Sciences, University of Aberdeen); McNamee, P. (HERU); Hyrich, K., Watson, K., Lunt, M., Symmons, D. (Arthritis Research UK Epidemiology Unit, University of Manchester); Sturrock, R. (Centre for Rheumatic Diseases, University of Glasgow); Kay, L. (Freeman Hospital, Newcastle).

HERU Investigators: McNamee, P., Neilson, A.

HERU Research Theme: Assessment of Technologies – Technology Adoption Phase

Source of Funding and Total Awarded:
British Society for Rheumatology – £822,587 and University of Aberdeen

Amount of HERU Funding: £55,876

Objectives:
To determine whether, amongst patients with ankylosing spondylitis, the use of biologic therapy increases the risk of adverse serious infection – that is, infection leading to hospitalisation or death. To assess the association between the use of biologic therapy and malignancy, serious co-morbidity and all-cause mortality. To estimate the costs and quality-of-life values for health states in ankylosing spondylitis (AS).

Outline:
The British Society for Rheumatology Biologics Register – Ankylosing Spondylitis (BSRBR-AS) has been established to monitor the safety of biologic treatments for patients with AS and to determine how such treatments affect symptoms, function, co-morbidities and quality of life. The study is a prospective cohort enrolling two groups of patients meeting international criteria for AS and who are naïve to biologic therapy: those commencing biologic therapy (etanercept or adalimumab) and those who are not commencing biologic therapy.

The health economics analysis to be undertaken will involve the construction of cost and quality-of-life values for health states in AS, and therefore facilitate the development of economic models to assess the cost-effectiveness of new medicines for AS. Such models inform judgements made by bodies such as NICE and SMC on whether to recommend new medicines for use in the NHS.

Start Date: April 2012

Duration of Project: 68 months

Project Phase: [ ]
**Publications:**

**Other Dissemination Activities:** –
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<th><strong>Project No:</strong></th>
<th>AOT2.33</th>
<th><strong>In Progress</strong></th>
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<tr>
<td><strong>Project Title:</strong></td>
<td>Does oral sodium bicarbonate therapy improve function and quality of life in older patients with chronic kidney disease and low-grade acidosis? A randomised controlled trial.</td>
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<tr>
<td><strong>Grant Applicants / Principal Investigators</strong> (place of work):</td>
<td>Witham, M. (University of Dundee); Avenell, A. (HSRU, University of Aberdeen); Soiza, R. (School of Medicine &amp; Dentistry, University of Aberdeen); McNamee, P. (HERU).</td>
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<tr>
<td><strong>HERU Investigators:</strong></td>
<td>McNamee, P.</td>
<td></td>
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<tr>
<td><strong>HERU Research Theme:</strong></td>
<td>Assessment of Technologies – Technology Adoption Phase</td>
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<td><strong>Source of Funding and Total Awarded:</strong></td>
<td>National Institute for Health Research (NIHR), Health Technology Assessment (HTA) Programme – £136,108 and University of Aberdeen</td>
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<tr>
<td><strong>Amount of HERU Funding:</strong></td>
<td>£57,713</td>
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<td><strong>Objectives:</strong></td>
<td>To assess whether oral bicarbonate therapy improves physical function and health related quality of life in older people with chronic kidney disease (CKD) and mild acidosis. To assess the impact of oral bicarbonate therapy on biochemical markers of the condition in older people with CKD and mild acidosis. To assess whether use of oral bicarbonate therapy is associated with an excess of adverse events in older people with CKD and mild acidosis. To assess the cost-effectiveness of using oral bicarbonate therapy on biochemical markers of the condition in older people with CKD and mild acidosis.</td>
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<tr>
<td><strong>Outline:</strong></td>
<td>A randomised controlled trial is being undertaken to test whether bicarbonate treatment makes older people with advanced kidney disease healthier. 380 patients will receive either bicarbonate or dummy (placebo) tablets three times a day for two years. We test muscle strength and bulk, walking and balance ability, quality of life, kidney, bone and blood vessel function at intervals over the two-year period. We record blood pressure and side effects, record falls, admissions to hospital and contact with GPs, and also test the cost of treatment against the cost of not treating.</td>
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<td><strong>Start Date:</strong></td>
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<td><strong>Duration of Project:</strong></td>
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Other Dissemination Activities: –
### Assessment of Technologies

**Project No:** AOT2.34  
**In Progress**

**Project Title:** VUE: Vault or Uterine prolapse surgery Evaluation: two parallel randomised controlled trials of surgical options for upper compartment (uterine or vault) pelvic organ prolapse.

**Grant Applicants / Principal Investigators (place of work):**
- Glazener, C., Breeman, S., McPherson, G., McDonald, A., Norrie, J., Elders, A. (HSRU, University of Aberdeen)
- Montgomery, I.B.G. (Aberdeen)
- Hagen, S. (Glasgow Caledonian University)
- Smith, A.R.B. (St. Mary’s Hospital Manchester)
- Freeman, R.M. (Plymouth Hospital NHS Trust)
- Bain, C., Cooper, K. (NHS Grampian)
- Kilonzo, M. (HERU)

**HERU Investigators:** Kilonzo, M.

**HERU Research Theme:** Assessment of Technologies – Technology Adoption Phase

**Source of Funding and Total Awarded:**
National Institute for Health Research (NIHR), Health Technology Assessment (HTA) Programme – £1,426,242 and University of Aberdeen

**Amount of HERU Funding:** £47,680

**Objectives:**
The primary objective is to determine the optimal surgical management for women with upper compartment (uterine or vault) pelvic organ prolapse, in terms of clinical effectiveness, cost-effectiveness and adverse events. The two parallel trials will compare: (a) in women having uterine prolapse surgery, the effects of removal of the uterus versus uterine preservation; (b) in women having vault prolapse surgery, the effects of a vaginal vault suspension versus an abdominal vault suspension.

**Outline:**
Gynaecologists have recognised for some time that both anatomical failure and recurrence of prolapse symptoms after surgery are common: one in three women who have a prolapse operation will go on to have another, though not necessarily in the same compartment. More recently, it has also been recognised that surgery can be followed by a greater impairment of quality of life than from the original prolapse itself (for example the development of new-onset urinary incontinence after surgery, or prolapse at a different site). Whilst anterior and posterior prolapse surgery is most common (90% of operations), around 43% of women also have a uterine (34%) or vault (9%) procedure at the same time. Indeed, this demonstrates that women who have a hysterectomy have around a 27% chance of needing a subsequent vault prolapse repair. These data are derived from the first 700 women recruited in PROSPECT, a large HTA-funded UK RCT of anterior or posterior prolapse surgery with or without the use of mesh (HTA No. 07/60/18). In VUE, the opportunity has arisen to then switch from randomising between lower compartment surgery to trials involving different surgical options for upper compartment prolapse (uterine and vault).
Start Date: November 2012

Duration of Project: 7 years

Project Phase: [ ]


Other Dissemination Activities: –
### Project No:
AOT2.35

### Project Title:
OPAL – Optimal PFMT for Adherence Long-term: Multicentre randomised trial of the effectiveness and cost-effectiveness of basic versus intensive, biofeedback-assisted pelvic floor muscle training for female stress or mixed urinary incontinence.

### Grant Applicants / Principal Investigators (place of work):
Hagen, S., McClurg, D., Booth, J. (Glasgow Caledonian University); Glazener, C., Francis, J., Norrie, J., Elders, A., McDonald, A., McPherson, G., Kolehmainen, N. (HSRU, University of Aberdeen); Wael, A. (NHS Ayrshire and Arran); Abdel-Fattah, M. (Other Applied Health Sciences, University of Aberdeen); Bugge, C. (University of Stirling); Buckley, B. (Independent); Dean, S. (University of Exeter); Kilonzo, M. (HERU); Smith, H. (University of Otago, NZ); Guerrero, K.L. (Clinical expert); Wilson, L.E. (User).

### HERU Investigators:
Kilonzo, M.

### HERU Research Theme:
Assessment of Technologies – Technology Adoption Phase

### Source of Funding and Total Awarded:
National Institute for Health Research (NIHR), Health Technology Assessment (HTA) Programme – £1,895,338 and University of Aberdeen

### Amount of HERU Funding:
£56,657

### Objectives:
The objective of the study is to establish if a pelvic floor muscle training (PFMT) regimen intensified via the addition of a theory-based biofeedback protocol, compared to basic PFMT, is more effective and cost-effective in reducing severity of incontinence at 24 months, and providing greater improvement in quality of life, reduced need for surgery and other UI treatment, improved pelvic floor muscle function and increased self-efficacy for, and adherence to, PFMT.

### Outline:
Based on previous research, current UK guidelines recommend that women with stress incontinence are offered at least three months of pelvic floor muscle exercises. These exercises are taught by a specialist physiotherapist or nurse. There is evidence that these exercises can work to strengthen the muscles and decrease leakage, but it is not clear how ‘intensively’ women have to exercise to get a good result that lasts, thus improving their quality of life and reducing the likelihood of surgery. This research aims to find out whether the use of biofeedback can help to improve the results of the exercise training in both the short- and longer-term. We also want to find out how much urine leakage women in both groups have, how much this impacts on their lives, what other bladder problems they have, what other treatments they have had, how much exercise they did, how confident they were, and how much their muscles have strengthened. We also measure the costs of the treatments and any costs to the women and their families, and balance these costs against any benefits of the intensive treatment.
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<th><strong>Start Date:</strong></th>
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<tr>
<td><strong>Duration of Project:</strong></td>
<td>4 years, 8 months</td>
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<td><strong>Project Phase:</strong></td>
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<td><strong>Publications:</strong></td>
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<td><strong>Other Dissemination Activities:</strong></td>
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Project No: AOT2.36  
In Progress  

Project Title: MASTER: Male synthetic sling versus Artificial urinary Sphincter Trial for men with urodynamic stress incontinence after prostate surgery: Evaluation by Randomised trial.

Grant Applicants / Principal Investigators (place of work): Abrams, P. (North Bristol NHS Trust); Drake, M. (University of Bristol); Glazener, C., Norrie, J., Ramsay, C., Boachie, C., McCormack, K., McPherson, G., McDonald, A. (HSRU, University of Aberdeen); Pickard, R. (University of Newcastle upon Tyne); Kilonzo, M. (HERU); Cotterill, N. (University of Bristol).

HERU Investigators: Kilonzo, M.

HERU Research Theme: Assessment of Technologies – Technology Adoption Phase

Source of Funding and Total Awarded: National Institute for Health Research (NIHR), Health Technology Assessment (HTA) Programme – £1,625,275 and University of Aberdeen

Amount of HERU Funding: £62,499

Objectives: The objectives of the study are to determine: what is the clinical effectiveness of implanting the male sling compared with an artificial urinary sphincter (AUS) in terms of self-reported incontinence at 12 months? What is the cost-effectiveness of a policy of primary implantation of the male sling compared with AUS, measured by incremental cost per quality-adjusted life-year (QALY) at 24 months?

Outline: Around one in five men who undergo prostate surgery for cancer or benign disease need to use incontinence pads because of leakage of urine when they walk around, cough or do any physical exertion. This impacts upon quality of life, can lower self-esteem and productivity, and can damage personal relationships. At present the only effective surgical treatment is insertion of a plastic artificial urinary sphincter (AUS) device which involves a major operation to place an inflatable cuff around the urine pipe close to the bladder, and inflating it to prevent leakage. A new male sling has been developed which, when inserted under the urine pipe, supports the outlet of the bladder but doesn’t need a pump. It is less expensive for the NHS (around £6,000) and easier to insert, but some men may still need a subsequent operation to insert an AUS if they feel their incontinence has not improved enough. It is also uncertain whether there are other advantages or disadvantages compared to the AUS, and whether men will be as satisfied with the results.

Start Date: July 2013

Duration of Project: 6 years

Project Phase: 

Publications: –

Other Dissemination Activities: –
Project No: AOT2.37  
Project Title: HEALTH: Hysterectomy or Endometrial AbLation Trial for Heavy menstrual bleeding. A multicentre randomised controlled trial comparing laparoscopic supra-cervical hysterectomy with second generation endometrial ablation for the treatment of heavy menstrual bleeding.

Grant Applicants / Principal Investigators (place of work): Cooper, K. (NHS Grampian); Bhattacharya, S. (Other Applied Health Sciences, University of Aberdeen); Scotland, G. (HERU/HSRU); Clark, J. (Birmingham Women’s Hospital); Hawe, J. (Countess of Chester NHS Foundation Trust); Phillips, K. (Hull and East Yorkshire Hospitals NHS Trust); Hawthorne, R. (NHS Greater Glasgow and Clyde); Norrie, J., Cook, J. (HSRU, University of Aberdeen).

HERU Investigators: Scotland, G.

HERU Research Theme: Assessment of Technologies – Technology Adoption Phase

Source of Funding and Total Awarded: National Institute for Health Research (NIHR), Health Technology Assessment (HTA) Programme – £1,331,697 and Chief Scientist Office (CSO) CORE

Amount of HERU Funding: £48,441

Objectives: To compare the clinical and cost-effectiveness of laparoscopic supra-cervical hysterectomy (LASH) with second generation endometrial ablation (EA) for the treatment of heavy menstrual bleeding (HMB) in terms of patient reported satisfaction and incremental cost per QALY gained at 15 months post-randomisation.

Outline: One woman in five in the UK experiences HMB, which can have a major impact on her quality of life. It is the fourth most common reason for women to attend gynaecology outpatient clinics and accounts for 20% of all gynaecology outpatient referrals. The NICE guideline on HMB recommends EA as well as hysterectomy as options for women with HMB. However, up to a quarter of women who undergo EA require subsequent gynaecological surgery and despite the demonstrated clinical and cost-effectiveness of hysterectomy, concerns remain about its invasiveness and the risks of short- and long-term morbidity associated with the procedure.

Unlike conventional hysterectomy, the more recent approach of laparoscopic supra-cervical hysterectomy (LASH) is minimally invasive, quick, relatively easy to learn and associated with low morbidity, short hospital stay (under 24 hours) and rapid recovery time. HEALTH is a multicentre randomised controlled trial (RCT) comparing LASH with second-generation EA (the current first line surgical treatment for HMB).
Start Date: October 2013
Duration of Project: 42 months
Project Phase: 
Publications: –
Other Dissemination Activities: –
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<th>Project No:</th>
<th>AOT2.38</th>
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<td>Project Title:</td>
<td>Got-it-trial: A pragmatic, adaptive, sequential, placebo controlled randomised trial to determine the effectiveness of glycerine tritrate for retained placenta.</td>
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<tr>
<td>Grant Applicants / Principal Investigators (place of work):</td>
<td>Denison, F., Lawton, J. (University of Edinburgh); Scotland, G. (HERU/HSRU); Norrie, J., McPherson, G. (HSRU, University of Aberdeen); Brook-Smith, S. (NHS Lothian).</td>
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<td>HERU Investigators:</td>
<td>Scotland, G.</td>
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<td>HERU Research Theme:</td>
<td>Assessment of Technologies – Technology Adoption Phase</td>
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<tr>
<td>Source of Funding and Total Awarded:</td>
<td>National Institute for Health Research (NIHR), Health Technology Assessment (HTA) Programme – £1,679,448 and Chief Scientist Office (CSO) CORE</td>
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<td>Amount of HERU Funding:</td>
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<td>Objectives:</td>
<td>The overall aim of this randomised placebo controlled double-blind pragmatic UK-wide trial is to determine the clinical and cost-effectiveness of GTN compared with placebo in avoiding manual removal of the placenta (MROP) in women with retained placenta (RP).</td>
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<td>Outline:</td>
<td>RP affects 2% of vaginal deliveries, which equates to nearly 11,000 women in the UK per annum, and is a major cause of post-partum haemorrhage with major obstetric haemorrhage itself affecting nearly 1 in 180 women and being the commonest cause of significant maternal morbidity. It is hypothesised that sublingual glyceryl trinitrate (GTN) spray will reduce the need for manual removal of the placenta (MROP) following failure of the current approach to management (oxytocin and controlled cord traction). GTN will be compared with placebo on outcomes measured over four interrelated domains – clinical, safety, patient-sided and economic. The economic analysis will take the form of a cost–consequence analysis, relating differences in costs to the health service at six weeks post-delivery with differences on the clinical, safety, and patient-sided outcomes.</td>
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<td>Duration of Project:</td>
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The SIMS Trial: Adjustable anchored Single-Incision Mini-Slings versus standard tension-free mid-urethral slings in the surgical management of female stress urinary incontinence; a pragmatic multicentre non-inferiority randomised controlled trial.

Grant Applicants / Principal Investigators (place of work):
Abdel-Fattah, M., N'Dow, J. (Other Applied Health Sciences, University of Aberdeen); Assassa, R. (Mid-Yorkshire Hospitals NHS Trust); Kilonzo, M. (HERU); MacLennan, G., McCormack, K., Norrie, J. (HSRU, University of Aberdeen); Wardle, J. (Continence Foundation).

HERU Investigators: Kilonzo, M., Boyers, D.

HERU Research Theme: Assessment of Technologies – Technology Adoption Phase and Broader Measures of Value

Source of Funding and Total Awarded: National Institute for Health Research (NIHR), Health Technology Assessment (HTA) Programme – £1,470,020, University of Aberdeen and Chief Scientist Office (CSO) CORE

Amount of HERU Funding: £48,736

Objectives: The aim is to determine the clinical effectiveness and cost-effectiveness of adjustable, anchored, Single-Incision Mini-Slings (SIMS) compared to tension-free standard mid-urethral slings (SMUS) in the surgical management of female stress urinary incontinence (SUI).

Outline: Stress urinary incontinence (SUI) is the most common type of urinary incontinence (UI) in pre-menopausal women, accounting for almost 50% of cases. Surgical procedures for the management of female SUI have been continuously evolving over the last four decades with the ultimate aim of providing an effective and truly ambulatory surgical procedure. In the most common surgical procedure, tension-free, standard mid-urethral slings (SMUS), a synthetic mesh (tape) is placed under the urethra to add support by creating a sub-urethral hammock. An alternative procedure known as adjustable anchored single-incision mini-sling (SIMS) is designed to have advantages over tension-free SMUS in that it avoids the blind insertion trajectory into the pelvic cavity or the thigh muscles while maintaining the concept of the hammock support to the urethra. The aim of the current study is to conduct a health economic evaluation alongside a randomised controlled trial comparing these two interventions.

Start Date: December 2013

Duration of Project: 66 months

Project Phase: [ ]

Publications: –

Other Dissemination Activities: –
Project No: AOT2.40  
Project Title: REBALANCE: REview of Behaviour And Lifestyle interventions for severe obesity: AN evidenCE synthesis.

Grant Applicants / Principal Investigators (place of work): Avenell, A., Skea, Z., De Bruin, M., MacLennan, G. (HSRU, University of Aberdeen); Boyers, D. (HERU); Aveyard, P. (University of Oxford); Webber, L. (UK Health Forum).

HERU Investigators: Boyers, D.

HERU Research Theme: Assessment of Technologies – Technology Adoption Phase

Source of Funding and Total Awarded: National Institute for Health Research (NIHR), Health Technology Assessment (HTA) Programme – £530,873 and Chief Scientist Office (CSO) CORE

Amount of HERU funding: £30,411

Objectives: The overarching objective is to integrate the quantitative, qualitative and economic evidence base for the management of higher levels of obesity by weight-loss and maintenance services, researching concurrently to systematically review:

• The effectiveness of interventions for weight loss and maintenance of people with BMI 35kg/m2 or more.
• The qualitative and mixed-methods evidence relating to:
  o The acceptability, feasibility and appropriateness for adults with BMI 35kg/m2 or more
  o The feasibility of delivering services
  o The cost-effectiveness for weight loss and maintenance for people with BMI 35kg/m2 or more.
Outline: A micro-simulation model will be used to determine the most cost-effective treatment strategy.

Patients with a BMI over 35kg/m² have increased, obesity-related co-morbidities. Economic costs of treating obesity-related complications are substantial. Systematic review evidence on the feasibility/acceptability and (cost-)effectiveness of weight management for BMI ≥35kg/m² is lacking.

Current weight-loss services provided by the NHS, local authorities and commercial organisations rarely take the severity of people’s weight into account. So people who may need more support, or different kinds of support, to lose weight might not be offered more help, or that help for longer. There are some services already provided by the NHS to help people who are very heavy to lose weight, but the provision of these services is patchy around the UK. The services provided are very variable, and it is not clear exactly how much of what kinds of help should be provided.

We will conduct five concurrent systematic reviews examining quantitative, qualitative and economic evidence to see if weight loss programmes should be designed differently for people who are much heavier (and more likely to have medical problems related to their weight). We will particularly examine which weight loss programmes help people lose weight in the long term and keep that weight off. We will look to see if these weight loss programmes decrease people’s risks from serious diseases, such as diabetes or heart disease. We will use the well-known UK Health Forum’s (UKHF) micro-simulation model to assess the lifetime cost and quality-of-life implications of the most promising weight loss interventions. We will draw conclusions on the value for money of providing the most effective interventions for weight loss on the NHS.

Start Date: July 2016
Duration of Project: 20 months
Project Phase: 
Publications: –
Other Dissemination Activities: –
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<thead>
<tr>
<th>Project No:</th>
<th>AOT2.41</th>
<th>In Progress</th>
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<tbody>
<tr>
<td>Project Title:</td>
<td>LENS: Lowering Events in Non-proliferative retinopathy in Scotland.</td>
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<tr>
<td>Grant Applicants / Principal Investigators (place of work):</td>
<td>Preiss, D. (University of Oxford); Logue, J. (University of Glasgow); Armitage, J. (University of Oxford); Olson, J. (NHS Grampian); Scotland, G. (HERU/HSRU); Sattar, N. (University of Glasgow); Leese, G., Colhoun, H. (University of Dundee).</td>
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<tr>
<td>HERU Investigators:</td>
<td>Scotland, G.</td>
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<tr>
<td>HERU Research Theme:</td>
<td>Assessment of Technologies – Technology Adoption Phase</td>
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<tr>
<td>Source of Funding and Total Awarded:</td>
<td>National Institute for Health Research (NIHR) – £1,789,595 and Chief Scientist Office (CSO) CORE</td>
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<tr>
<td>Amount of HERU Funding:</td>
<td>£80,728</td>
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<tr>
<td>Objectives:</td>
<td>The primary objective is to compare the effect of allocation to fenofibrate versus placebo on the composite outcome of progression of observable diabetic retinopathy (DR) to clinically significant diabetic retinopathy, or any of retinal laser therapy, vitrectomy or intra-vitreal injection of medication owing to DR. Assessment of cost-effectiveness is a secondary outcome.</td>
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<tr>
<td>Outline:</td>
<td>Diabetic retinopathy (DR) and diabetic maculopathy are common microvascular complications of diabetes mellitus. At an advanced (clinically significant) stage, these complications can lead to visual loss and blindness. While the risk of cardiovascular events in DM has been substantially reduced by various preventive strategies, there are few effective options to slow the progression of microvascular complications. However, sub-studies from two large cardiovascular trials have suggested that a drug called fenofibrate may be effective in slowing the progression of DR (measured as a composite tertiary outcome). Whilst suggestive of some benefit, these sub-studies do not provide definitive evidence. The LENS study aims to provide better evidence by randomising 1,060 individuals, at moderate to high risk of progressing to clinically significant DR, to either fenofibrate or placebo for at least a median of four years. Participants will be followed up for progression to clinically significant DR, retinal laser therapy, vitrectomy or intra-vitreal injection of medication owing to DR, health-related quality of life, and health service resource use. The economic evaluation will take the form of cost–utility analysis conducted alongside the trial, and modelling will be used to extrapolate longer-term cost-effectiveness if necessary.</td>
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<tr>
<td>Start Date:</td>
<td>October 2016</td>
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<tr>
<td>Duration of Project:</td>
<td>6 years</td>
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<td>Project Phase:</td>
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<td>Publications:</td>
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<tr>
<td>Other Dissemination Activities:</td>
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**Project No:** AOT2.42  
**In Progress**

**Project Title:** RAACENO: Reducing Asthma Attacks in Children using Exhaled Nitric Oxide as a biomarker to inform treatment strategy – a randomised controlled trial.

**Grant Applicants / Principal Investigators (place of work):** Norrie, J., Morgan, H. (HSRU, University of Aberdeen); Fielding, S., Price, D. (Other Applied Health Sciences, University of Aberdeen); Neilson, A. (HERU); Thomas, M. (University of Southampton); Gaillard, E. (University of Leicester).

**HERU Investigators:** Neilson, A.

**HERU Research Theme:** Assessment of Technologies – Technology Adoption Phase

**Source of Funding and Total Awarded:** National Institute for Health Research (NIHR) / Medical Research Council (MRC), efficacy & mechanism evaluation programme – £1,534,562 and University of Aberdeen

**Amount of HERU Funding:** £48,659

**Objectives:**
(1) To undertake a randomised controlled trial to assess the efficacy of asthma treatment guided by fractional exhaled nitric oxide (FeNO) plus symptoms compared to treatment guided by symptoms alone, on exacerbation rates in children with asthma.

(2) To explore the complex mechanistic relationship between sputum eosinophilia, FeNO, asthma control and exacerbation.

(3) To undertake a cost-effectiveness analysis assessing the incremental cost per exacerbation averted with FeNO plus symptom guided treatment versus symptom guided treatment alone.

**Outline:** Primary research question: Is a schedule of FeNO plus symptom treatment more efficacious in reducing asthma when compared to a symptom-only schedule? Secondary research questions: (1) Is a FeNO plus symptom treatment schedule more efficacious in improving asthma control and spirometry when compared to a symptom-only schedule? (2) Are there correlations between changes in repeated measurements of FeNO and sputum eosinophil count? (3) Is sputum eosinophilia associated with increased risk of asthma exacerbations but not asthma control over the following three months? (4) Is asthma treatment guided by symptoms plus FeNO more efficacious in reducing risk of asthma exacerbations where FeNO and sputum eosinophilia are concordant? (5) What are the relative costs, effects and cost-effectiveness of a FeNO plus symptom treatment schedule compared to a symptom-only schedule over 12 months? (6) Is FeNO plus symptom treatment acceptable to children and their parents? What are their and the research nurses’ perceptions?
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<tr>
<td><strong>Start Date:</strong></td>
<td>October 2016</td>
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<tr>
<td><strong>Duration of Project:</strong></td>
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In-Use Technology Phase
Project No: AOT3.1 Completed

Project Title: OTIS: Prospective collaborative study of patients with intestinal segments transposed into urinary tract following surgery for bladder cancer or benign end-stage bladder disease.

Grant Applicants / Principal Investigators (place of work): N’Dow, J., Grant, A. (HSRU, University of Aberdeen); Hernández, R. (HERU).

HERU Investigators: Hernández, R.

HERU Research Theme: Assessment of Technologies – In-use Technology Phase

Source of Funding and Total Awarded: BUPA – £179,857 and Research Council UK (RCUK)

Amount of HERU Funding: £13,972

Objectives: To compare ideal conduit diversion, continent diversion, bladder reconstruction and bladder replacement as methods for replacing or improving the function of the lower urinary tract.

Outline: Each year in the UK around 3,000 people have major surgery because their bladders are seriously diseased or must be removed. This prospective study compared the various surgical options using transposed intestinal segments and established sufficiently large observational cohorts to allow statistically reliable comparisons between the surgical procedures. Outcomes measured were quality of life and requirements for other healthcare resources, up to at least one year after the index procedure. Approximately 600 patients were recruited from 10 hospitals in Great Britain.

Outcome and Translation: This study informed the relative effectiveness and efficiency of alternative treatments for patients undergoing bladder surgery.

Start Date: December 2004

Duration of Project: 9 years

Publications: OTIS Study Team (Hernández, R. is a member of the study team) (forthcoming) Prospective collaborative study of patients with intestinal segments transposed into urinary tract following surgery for bladder cancer or benign end-stage bladder disease (OTIS). Final report submitted to BUPA.

Other Dissemination Activities: –
**Project No:** AOT3.2  
**Completed**

**Grant Applicants / Principal Investigators (place of work):** Rustam, A-S. (University of Edinburgh); McNamee, P. (HERU).

**HERU Investigators:** McNamee, P., Quayyum, Z.

**HERU Research Theme:** Assessment of Technologies – In-use Technology Phase

**Source of Funding and Total Awarded:** Medical Research Council Clinical Fellowship via University of Edinburgh – £575,105 and University of Aberdeen

**Amount of HERU Funding:** £5,280

**Objectives:**

To pilot questionnaires to assess the healthcare costs, patient costs and loss of productivity attributable to intracranial vascular malformations.

**Outline:** Intracranial vascular malformations (IVMs) are responsible for over one-third of spontaneous (non-traumatic) intracerebral haemorrhage (ICH) in young adults, making them the leading cause in this age group. Therefore, IVMs are likely to be directly costly to the NHS (prolonged and repeated inpatient stays in acute and rehabilitation sectors) and indirectly costly to society (loss of productivity). This study assessed the scale of both sets of costs, using responses from a national population-based cohort. Questionnaire response and completion rates were good, with little evidence of response bias. The burden associated with lost productivity was greater than healthcare costs, reflecting the disabling and sometimes fatal nature of IVMs among adults of working age.

**Outcome and Translation:** This was the first cost-of-illness study for IVMs on an unselected, population-based cohort. The scale of the cost burden is large and suggests that development of effective interventions that reduce the prevalence of IVMs should be a priority for the clinical community dealing with ICH. The priority now is to develop such interventions and evaluate their clinical and cost-effectiveness.

**Start Date:** January 2006

**Duration of Project:** 5 years


The clinical effectiveness and cost-effectiveness of different surveillance mammography regimes after the treatment of primary breast cancer.

Objectives:

To identify feasible management strategies for surveillance and follow-up of women after treatment for breast cancer in a UK context and to determine the effectiveness and cost-effectiveness of differing surveillance and follow-up strategies after treatment for breast cancer.

Outline:

Large numbers of women each year undergo treatment for breast cancer and many of these need long-term surveillance to identify new cases of cancer or recurrences. Currently, while much surveillance is conducted mammographically there is variation in how frequently these mammograms are performed and in how many years women are followed up. This evaluation examined the clinical effectiveness and cost-effectiveness of different surveillance mammography regimes after the treatment of primary breast cancer in the UK in primary and secondary care settings, using a combination of systematic reviews of diagnostic performance and relative effectiveness, patient-level analysis of large registry data sets collected in different regions of the UK and cost-effectiveness modelling.

The project concluded that surveillance is likely to improve survival with a strategy of mammography alone every 12 to 24 months appearing to have the highest net benefits. The evidence base on which to recommend any change in current practice is relatively weak, however. Careful consideration should be given to stratification of patients to ensure maximum benefit with those at high risk being offered more comprehensive (e.g. mammography and clinical) follow-up and more frequent surveillance (every 12 months). The greatest net benefit for women with the lowest likelihood of ipsilateral breast tumour recurrence or metachronous contralateral breast cancer is mammography only every three years.
Outcome and Translation: This project provided evidence regarding the most effective and cost-effective ways of following up women after primary breast cancer. The results of the project were disseminated in a series of peer-reviewed papers and keynote presentations as well as a lay summary. The report was made available to the working party on Breast Cancer surveillance for the National Screening Committee. The report has been referenced in the Royal College of Radiologists and the American Society of Clinical Oncology guidelines for breast cancer follow-up: http://www.rcr.ac.uk/publication/guidance-screening-and-symptomatic-breast-imaging-third-edition; http://www.asco.org/practice-guidelines/quality-guidelines/guidelines/breast-cancer#/9821).

Start Date: September 2008

Duration of Project: 18 months

Publications:


**Project No:** AOT3.4  
**Completed**

**Project Title:** Optimal surveillance regimes for individuals with ocular hypertension (OHT): modelling and economic evaluation.

**Grant Applicants / Principal Investigators** (place of work):
Azuara-Blanco, A., Cook, J. (HSRU, University of Aberdeen); Burr, J. (University of St. Andrews); Deeks, J. (University of Birmingham); Garway-Heath, D.F., Wormald. R. (Moorfields Eye Hospital NHS Foundation Trust); Crabb, D. (City University); Perera, R., Kotecha, A., Glasziou, P. (University of Oxford); Vale, L., Hernández, R., Ryan, M. (HERU).

**HERU Investigators:** Ryan, M., Hernández, R., Vale, L.

**HERU Research Theme:** Assessment of Technologies – In-use Technology phase and Broader Measures of Value

**Source of Funding and Total Awarded:** Department of Health, Health Technology Assessment (HTA) – £357,236, University of Aberdeen, Chief Scientist Office (CSO) CORE and Research Council UK (RCUK)

**Amount of HERU Funding:** £42,761

**Objectives:**
This study identified the most effective and cost-effective way of monitoring individuals with raised intra-ocular pressure.

**Outline:**
Ocular hypertension (OHT) (raised intra-ocular pressure (IOP) >21mmHg) is one of the major risk factors for developing glaucoma, and one of the main causes of blindness in the UK. It is also the only risk factor that can be treated. Treatment, usually in the form of eye drops, reduces the risk of progressive disease. However, the dilemma is that OHT is much more common than glaucoma, and not everybody with OHT will develop glaucoma. Monitoring people with OHT to determine the need for IOP-lowering treatment needs to be proportionate to the risk of developing glaucoma and associated sight loss. This study determined effective and efficient monitoring strategies for OHT through identification and validation of glaucoma-risk prediction models and economic decision analytic modelling. In addition to the standard cost–utility analysis (CUA), population preferences were elicited for attributes of alternative monitoring strategies and applied in the decision model in the form of a cost–benefit analysis (CBA).

**Outcome and Translation:**
This study provided evidence on the most clinical and cost-effective way to monitor individuals with OHT in the UK. It also highlighted the potential importance of public preferences for broader measures of value, with the preferred strategy based on the CBA findings being different to the recommended approach based on findings of the CUA. Based on the evidence provided by this study, NICE have decided to review the glaucoma clinical guidelines in 2016, with a view to reporting in 2017.
Start Date: February 2009

Duration of Project: 20 months

Publications:


Other Dissemination Activities:

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<tr>
<th><strong>Project No:</strong></th>
<th>AOT3.5</th>
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<tr>
<td><strong>Project Title:</strong></td>
<td>Scottish cervical cancer prevention programme: assessing and modelling the impact of HPV 16/18 immunisation on the performance of current cervical screening and the effectiveness of alternative cervical screening strategies to optimise cancer prevention in the HPV immunisation era.</td>
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<tr>
<td><strong>Grant Applicants / Principal Investigators (place of work):</strong></td>
<td>Cruickshank, M. (Department of Obstetrics and Gynaecology, University of Aberdeen); Campbell, C., Weller, D. (University of Edinburgh); Choi, Y. (Centre for Infections, Health Protection Agency); Cubie, H. (Lothian University NHS Hospital Trust, Royal Infirmary of Edinburgh); Cuschieri, K. (Edinburgh Royal Infirmary); Donaghy, M., Robertson, C. (Health Protection Scotland); Imrie, J. (Monklands District General Hospital); Sullivan, F. (University of Dundee); McNamee, P. (HERU).</td>
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<tr>
<td><strong>HERU Investigators:</strong></td>
<td>Neilson, A.</td>
<td></td>
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<tr>
<td><strong>HERU Research Theme:</strong></td>
<td>Assessment of Technologies – In-use Technology Phase</td>
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<td><strong>Source of Funding and Total Awarded:</strong></td>
<td>Chief Scientist Office (CSO) Health Services and Population Health Research Committee – £450,000</td>
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<td><strong>Amount of HERU funding:</strong></td>
<td>£8,550</td>
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<tr>
<td><strong>Objectives:</strong></td>
<td>To determine the cost-effectiveness of the Scottish HPV vaccination programme.</td>
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<td><strong>Outline:</strong></td>
<td>In Scotland, human papilloma virus (HPV) vaccination of females aged 12 to 13 years started, via a school immunisation programme, on 1 September 2008. A ‘catch-up campaign’, targeting females up to the age of 18, ran alongside this. Scotland now moves from the Scottish Cervical Screening Programme to a Scottish Cervical Cancer Prevention Programme, with the aim of further reducing cervical cancer mortality by primary prevention based on HPV immunisation and secondary prevention based on screening. Health Protection Scotland (HPS) is coordinating the introduction of the new immunisation programme, and also established an HPV immunisation project to monitor its impact. Many new questions need to be investigated to inform NHS policy on the future delivery of the combined screening and immunisation programme. Scotland is in a unique position to lead on new research as 16–17-year-olds were immunised in 2008 and become eligible for cervical screening from September 2010. Our research combined routinely collected data on screening and disease detection with data on HPV genotyping and screening test performance to model future screening performance.</td>
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</table>
Outcome and Translation: This study will inform NHS Scotland policy on future service delivery of the national cervical screening and immunisation programme. Scotland's research networks and HPS can collaborate effectively using Scotland's excellent data linkage facilities to further develop and deliver a composite population health intervention for cancer prevention, and improve health outcomes in Scotland.

Start Date: April 2010

Duration of Project: 60 months


**Project No:** AOT3.6
**Completed**

**Project Title:** Clinical and short-term NHS costs of maternal obesity for maternity services in Scotland.

**Grant Applicants / Principal Investigators (place of work):** Denison, F., Norman, J. (University of Edinburgh); Scotland, G. (HERU/HSRU); Morris, C. (Information Services Division); Mahmood, T. (Forth Park Hospital); Bhattacharya, S., Lee, A. (Other Applied Health Sciences, University of Aberdeen).

**HERU Investigators:** Scotland, G., Norwood, P.

**HERU Research Theme:** Assessment of Technologies – In-use Technology Phase

**Source of Funding and Total Awarded:** Chief Scientist Office (CSO) via the University of Edinburgh – £37,679 and the Chief Scientist Office (CSO) CORE

**Amount of HERU Funding:** £13,353

**Objectives:** The aim of this study was to investigate the clinical and economic costs of maternal obesity during pregnancy by interrogating the SMR02 database held by the Information and Services Division of NHS Scotland. The objectives were to (i) ascertain the effect of maternal obesity on maternal and perinatal outcome, (ii) determine temporal trends in and predictors of maternal obesity and (iii) undertake an analysis of maternal and neonatal NHS costs in obese and non-obese women.

**Outline:** Scotland has one of the highest rates of obesity in Europe, and the rising prevalence is particularly marked in women of reproductive age, reaching 20.6% in Scotland by 2003. This is of concern as maternal obesity is associated with increased morbidity and mortality for both mother and offspring. Obese women are more likely to experience gestational diabetes, hypertensive disorders, induction of labour, operative delivery and post-partum haemorrhage, whilst the offspring of obese mothers are at higher risk of late foetal death, congenital anomaly and admission to the neonatal unit. In order to plan for the future delivery of maternal health services in Scotland, this study estimated the impact that increasing obesity rates will have on NHS resource use and costs.

**Outcome and Translation:** Results of this study will help clinicians involved in pre-pregnancy and antenatal care to assess risk and counsel women about the effect of obesity on their health and that of their babies. In addition, output from this research may help inform the planning and delivery of maternity services.

**Start Date:** September 2010

**Duration of Project:** 1 year
**Publications:**


**Other Dissemination Activities:**


Project Title: Assessment of the cost-effectiveness of magnetic resonance including diffusion-weighted brain imaging in patients with transient ischaemic attack and minor stroke.

Grant Applicants / Principal Investigators (place of work): Wardlaw, J.M., Dennis, M., Sandercock, P., de Wilde, J. (University of Edinburgh); Brazzelli, M. (HSRU, University of Aberdeen); McNamee, P. (HERU); Muir, K., Hadley, D. (University of Glasgow).

HERU Investigators: McNamee, P., Scotland, G.

HERU Research Theme: Assessment of Technologies – In-use Technology Phase

Source of Funding and Total Awarded: National Institute for Health Research (NIHR), Health Technology Assessment (HTA) Programme – £264,260 and University of Aberdeen

Amount of HERU Funding: £57,860

Objectives: To determine, amongst people with suspected transient ischaemic attack (TIA) and mini-stroke, the effectiveness and cost-effectiveness of magnetic resonance diffusion-weighted imaging (MR DWI) versus computed tomography (CT).

Outline: For accurate diagnosis of transient ischaemic attack (TIA) and mini-stroke, computed tomography (CT) and magnetic resonance imaging (MRI) are two types of scanning that are available. CT is less expensive but more widely available. However, it is not very good at detecting ischaemic strokes, the commonest type of mini-stroke. MR diffusion-weighted imaging (MR DWI) is newer, more expensive and good at showing the ischaemia, but is often not available for people with mini-stroke. There is a lack of research evidence on whether greater use of MR DWI would lead to better patient care and fewer strokes. This project addressed this research gap by conducting a systematic review and economic model of the cost-effectiveness of MR DWI relative to CT. We found that, compared with a policy of ‘CT scan all patients’, MR was not cost-effective, except for patients presenting at > 1 week after symptoms to diagnose haemorrhage. Strategies that triaged patients with low ABCD2 scores for slow investigation or treated DWI-negative patients as non-TIA/minor stroke prevented fewer strokes and increased costs. Further, ‘one-stop’ CT/MR angiographic-plus-brain imaging was not cost-effective.

Outcome and Translation: The project will inform the development of future evidence-based guidelines for the diagnosis of TIA and mini-stroke in the UK, through dissemination of published outputs within the appropriate clinical networks.

Start Date: January 2011

Duration of Project: 18 months
**Publications:**


**Other Dissemination Activities:**


**Objectives:**

To establish the clinical effectiveness and cost-effectiveness of using different monitoring intervals to detect disease worsening or stability in patients diagnosed with glaucoma. The project focused on the mainstay measurement for glaucoma monitoring, visual fields (VF), used existing NHS data on current practice and provided new research knowledge through modelling.

**Outline:**

Glaucoma is a disease of the optic nerve which can lead to irreversible loss of the visual field. Around 2% of people over 40 years old have glaucoma. Once diagnosed, patients need lifelong treatment and monitoring within the NHS. This represents a significant burden on NHS resources.

The clinical cornerstone of functional testing in glaucoma is the VF test on an instrument called a standard automated perimeter (SAP). Progression may be considered to have occurred when there is reliable evidence that VF damage has worsened significantly. Variability in measurement means that patients need several tests over a period of time before any change can be documented with confidence. If a change on VF is not detected there might be long-term costs associated with the disease progression following inadequate treatment; on the other hand, if patients are called in too often there is increased pressure on NHS resources.

The study involved a survey of current practice, and statistical and economic decision analytic modelling to identify follow-up schemes that could be subjected to a randomised controlled trial.
Outcome and Translation: Statistical modelling of VF data suggests there is a strong rationale for testing more frequently in the early period following diagnosis, with the primary benefit of providing better information about fast progressing patients. The economic model suggested increasing VF testing may be cost-effective, especially when accounting for gains to society. Nevertheless, many clinicians consider increased VF testing of patients impossible with current resources. In addition, patient focus groups raised concerns about the practicalities of delivery of VF tests.

This project considered the clinical and cost-effectiveness of marginal changes to the current provision of glaucoma surveillance services. The results may impact on health outcomes and broader patient experience factors.

Start Date: October 2011

Duration of Project: 22 months

Publications:


Other Dissemination Activities: –
Grant Applicants / Principal Investigators (place of work): Mowatt, G., Ramsay, C., Azuara-Blanco, A., Clark, D. (HSRU, University of Aberdeen); Lois, N. (NHS Grampian); Burr, J.M. (University of St. Andrews); Hernández, R. (HERU).

HERU Investigators: Hernández, R.

HERU Research Theme: Assessment of Technologies – In-use Technology Phase

Source of Funding and Total Awarded: National Institute for Health Research (NIHR), Health Technology Assessment (HTA) Programme – £222,425 and Research Council UK (RCUK)

Amount of HERU Funding: £20,261

Objectives: To assess whether OCT (alone or in combination with other tests) helps ophthalmologists and/or other health professionals to diagnose and monitor individuals with nAMD. The relative efficiency of OCT was assessed using a decision analytic model.

Outline: Neovascular age-related macular degeneration (nAMD) is the most common cause of visual impairment in the UK with between 13,000 and 37,000 new cases every year. Since 2008, patients have been able to receive effective treatment with new (anti-VEGF) drugs. Treatment is given as monthly injections, initially, into the eye and then tailored to the individual. The disease status is reviewed every month and treatment administered if the disease is deemed active. This frequent monitoring has enormously increased the workload of speciality eye clinics, which already account for over 10% of all outpatient activity in the NHS.

Diagnosis of nAMD is done by ophthalmologists who interpret imaging tests. Fluorescein angiography (FA) – a time consuming and invasive test – is considered the reference standard. OCT, a relatively new test that is currently used in addition to FA to diagnose nAMD, is non-invasive, safe and easier to interpret, and could potentially replace FA. In addition, OCT is used for monitoring throughout the UK but its accuracy has not been determined.

This project included systematic reviews of the literature and a model based economic evaluation.
Outcome and Translation:

There has already been a shift in the diagnostic and monitoring pathways for nAMD caused by the adoption of OCT. At the diagnostic stage, OCT is currently used in addition to FA, whereas for monitoring it has virtually replaced FA.

The evidence suggests that using OCT as the only test for monitoring patients with nAMD and detecting activity would, potentially, result in a substantial proportion of patients receiving treatment unnecessarily.

The results help better planning and provision of the different treatment options for people with nAMD and identified areas where further research is needed.

Start Date: February 2012

Duration of Project: 22 months

Publications:


Other Dissemination Activities: –
**Project No:** AOT3.10  
**Completed**

**Project Title:** Cost-effectiveness of fertility diagnosis and treatment in women of different BMI groups.

**Grant Applicants / Principal Investigators (place of work):**  
Pandey, S., Mollison, J., Bhattacharya, S. (Other Applied Health Sciences, University of Aberdeen); Scotland, G. (HERU/HSRU); Wordsworth, S. (University of Oxford).

**HERU Investigators:** Scotland, G.

**HERU Research Theme:** Assessment of Technologies – In-use Technology Phase

**Source of Funding and Total Awarded:**  
NHS Grampian (Endowment Funds) – £7,486 and Chief Scientist Office (CSO) CORE

**Amount of HERU Funding:** £2,691

**Objectives:**  
This study estimated the cumulative costs and outcomes of fertility treatment over a five-year period from time of first presentation at the fertility clinic.

**Outline:**  
Globally, an increasing number of women are now either overweight or obese. Obesity increases the risk of infertility and the availability of fertility treatment is subject to access criteria based on female body mass index (BMI). However, no study has evaluated the direct health service costs for infertility management from diagnosis through to treatment leading to live birth or discontinuation across different BMI categories. This project uses routinely collected data on all women referred from primary care for fertility treatment in a defined geographical area to explore the total cumulative cost and cost per live birth of investigating and treating infertility in women in different BMI groups. Clinical outcomes including spontaneous and treatment associated pregnancies and live-birth were also compared across the groups. The effect of BMI on clinical effectiveness and cost was ascertained.

**Outcome and Translation:**  
This study was useful for planning and identifying potential strategies for improving the efficiency of fertility services and contributed to the existing evidence base on cost-effectiveness of fertility services in women of different BMI categories.

**Start Date:** April 2012

**Duration of Project:** 12 months

**Publications:**  

**Other Dissemination Activities:** –
**Project No:** AOT3.11  
**Completed**

**Project Title:** TAR Project: Clinical and cost-effectiveness of cholecystectomy versus observation/conservative management for preventing recurrent symptoms and complications in adults presenting with uncomplicated symptomatic gallstones or cholecystitis.

**Grant Applicants / Principal Investigators (place of work):** Brazelli, M., Ramsay, C., Cruickshank, C., Stewart, F., Fraser, C., Elders, A., Avenell, A. (HSRU, University of Aberdeen); Kilonzo, M., McNamee, P. (HERU); Ahmed, I., Leeds, J. (NHS Grampian).

**HERU Investigators:** Kilonzo, M., McNamee, P.

**HERU Research Theme:** Assessment of Technologies – In-use Technology Phase

**Source of Funding and Total Awarded:** National Institute for Health Research (NIHR) (Part of the 2011–2016 TAR contract – see template AOT2.1)

**Objectives:** The aim of this study was to assess the clinical and cost-effectiveness of cholecystectomy versus observation/conservative therapy for preventing recurrent symptoms and complications in adults presenting with the first episode of symptomatic gallstones (biliary colic or cholecystitis) in secondary care.

**Outline:** Gallstones disease (cholelithiasis) is one of the most common and costly gastrointestinal disorders in Western countries. Approximately 15% of the adult Western population suffer from gallstones. Laparoscopic cholecystectomy has become the therapy of choice for patients with symptomatic gallstones with or without cholecystitis and the rate of surgical procedures has increased over time. In the UK, (early) cholecystectomy is commonly offered to symptomatic patients suffering from biliary colic or cholecystitis, with a significant cost to the NHS. However, a proportion of these patients do not show up for elective surgery or opt for conservative treatment. Whilst many studies have concentrated on the best timing for performing surgery and on operative outcomes and complications the question whether cholecystectomy is always required in patients with mild, uncomplicated, symptomatic gallstones has not been rigorously evaluated in a UK setting. In a recent population-based cohort study, 58% of the patients who initially presented with mild, uncomplicated symptoms and 52% of those who had severe, uncomplicated symptoms at presentation did not experience further episodes of biliary pain at medium-term follow-up. These findings indicated that symptomatic uncomplicated patients may be treated expectantly. This study includes a systematic review of the evidence for the safety and clinical and cost-effectiveness of conservative treatment versus immediate surgery, as well as de novo decision modelling to determine which management option is likely to offer the most cost-effective use of NHS resources.
Outcome and Translation: This study developed clinical care pathways for the treatment of symptomatic gallstones in a UK NHS context; summarised evidence for the clinical effectiveness and safety of observation/conservative management compared to surgery; determined the relative cost-effectiveness of the alternative option; and identified and prioritised future research. As a result of the uncertainty surrounding the clinical and cost-effectiveness of the alternative approaches to treatment, the NIHR HTA programme subsequently commissioned a prospective trial to definitively address this question. The AoT theme is currently collaborating on this on-going study (see AOT3.21).

Start Date: August 2012

Duration of Project: 6 months

Publications:


Other Dissemination Activities: –
The aim of this study was to assess the clinical and cost-effectiveness of adopting risk-stratified approaches to extended screening intervals in the national diabetic retinopathy screening programme in Scotland, using selected clinical and demographic variables routinely available to screening programmes. With the prevalence of diabetes increasing by ~4% annually in Scotland, costs of screening for diabetic retinopathy are set to rise indefinitely unless efficiency gains can be realised. While the early identification of people at risk of sight loss from diabetic retinopathy is beneficial, many patients currently screened annually in Scotland face a low risk of progression prior to their subsequent screening visit. This multidisciplinary collaborative project used longitudinal screening data held by the Scottish Care Information-Diabetes Collaboration to model the risk of developing referable retinopathy by individual level clinical and demographic characteristics. By utilising derived probabilities of progression within a state transition microsimulation model, we were able to assess the cost and health impact of adopting extended two-yearly screening intervals for groups of patients identified as being at a low risk of progression.

The analysis illustrated that a shift to biennial screening for those with no retinopathy observed on two consecutive screening episodes could lead to significant resource savings for negligible losses in quality adjusted life years. Therefore, the study suggests that this selective approach to biennial screening should be implemented in Scotland, adding weight to the policy decision recently taken by the National Screening Committee. The results of this study have been shared with Scottish Diabetic Retinopathy Screening Collaborative and will be used to help inform the business case for implementation of the policy in Scotland.
<table>
<thead>
<tr>
<th>Start Date:</th>
<th>October 2013</th>
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<td>Duration of Project:</td>
<td>12 months</td>
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</table>
STA: Ezetimibe for treating primary (heterozygous-familial and non-familial) hypercholesterolaemia (Single Technology Assessment for NICE).

**Grant Applicants / Principal Investigators (place of work):**
Scotland, G. (HERU/HSRU); Javanbakht, M. (HERU); Scott, N. (Medical Statistics Team, University of Aberdeen); Cruickshank, M., Sharma, P., Fraser, C. (Health Services Research Unit, University of Aberdeen); Simpson, W. (NHS Grampian); Brazzelli, M. (Health Services Research Unit, University of Aberdeen).

**HERU Investigators:**
Scotland, G., Javanbakht M. (HERU)

**HERU Research Theme:**
Assessment of Technologies – In-use Technology Phase

**Source of Funding:**
National Institute for Health Research (NIHR) (Part of the 2011–2016 TAR contract – see template AOT2.1)

**Objectives:**
The aim of this project was to review the evidence for the clinical and cost-effectiveness of ezetimibe, for the treatment of heterozygous-familial and non-familial hypercholesterolaemia.

**Outline:**
Primary hypercholesterolaemia is a form of dyslipidemia characterised by abnormalities of lipoprotein transport associated with high concentrations of cholesterol in the blood. People with hypercholesterolaemia are at increased risk of cardiovascular disease (CVD) owing to the fact that long-term high concentrations of cholesterol are known to accelerate atherosclerosis, the build-up of fatty deposits in the arteries.

This project was carried out as part of the National Institute for Health and Care Excellence (NICE) Single Technology Appraisal Process. The company responsible for ezetimibe (Merck Sharp & Dohme Ltd) submitted an evidence review and an economic model assessing the cost-effectiveness of the drug, alone or in combination with statin treatment, against no treatment or statin alone for the treatment of primary hypercholesterolaemia. The Aberdeen HTA group were commissioned to act as the Evidence Review Group (ERG) for the project, and to provide an independent report reviewing the company's evidence submission.

**Outcome and Translation:**
Following consideration of the company submission and the ERG report, the NICE appraisal committee recommended ezetimibe as a treatment option for some people with heterozygous-familial and non-familial hypercholesterolaemia: [http://www.nice.org.uk/guidance/ta385/chapter/1-Recommendations](http://www.nice.org.uk/guidance/ta385/chapter/1-Recommendations).


Start Date: June 2015

Duration of Project: 3 months


Project No: AOT3.14

Project Title: IQUAD: Improving the QUALity of Dentistry: a randomised controlled trial comparing oral hygiene advice and periodontal instrumentation for the prevention and management of periodontal disease in dentate adults attending dental primary care.

Grant Applicants / Principal Investigators (place of work):
Clarkson, J., Bonetti, D., Pitts, N. (University of Dundee); Ramsay, C. (HSRU, University of Aberdeen), Burr, J. (University of St. Andrews); Worthington, H., Jones, C., Tickle, M. (University of Manchester Dental Hospital); Heasman, P., Steele, J. (University of Newcastle); Young, L., Madden, I., McCombes, W. (NHS Education for Scotland); Hodge, P. (University of Glasgow Dental School); Ross, M. (University of Edinburgh); Ricketts, D., Hall, A. (Dundee Dental Care Hospital & School); Averley, P. (Queensway Dental Practice); Pol, M. van der (HERU).

HERU Investigators: Pol, M. van der, Boyers, D.

HERU Research Theme: Assessment of Technologies – In-use Technology phase and Broader Measures of Value

Source of Funding and Total Awarded: National Institute for Health Research (NIHR), Health Technology Assessment (HTA) Programme – £704,357, Chief Scientist Office (CSO) CORE and University of Aberdeen

Amount of HERU Funding: £90,303

Objectives: To compare the effectiveness and cost-effectiveness of personalised oral hygiene advice (OHA) or periodontal instrumentation (PI) at different time intervals (no PI; 6-monthly or 12-monthly) or their combination, for improving periodontal health in dentate adults attending general dental practice.

Outline: Periodontal disease is the most common oral disease affecting adults. This disease is preventable, yet it remains the major cause of poor oral health worldwide and is the primary cause of tooth loss in older adults. There is a lack of strong evidence to inform clinicians and policy makers of the relative effectiveness (if any) and cost-effectiveness of different types of oral hygiene advice (OHA). The economic evaluation conducted as part of this cluster randomised controlled trial will elicit the costs of dental care to both the NHS and patients and will equate these data with benefits to patients. Benefits to patients will be estimated using a discrete choice experiment administered to a sample of the general population that will provide a scoring algorithm with which to weight the outcomes for the patient participants in the trial.

Start Date: October 2010

Duration of Project: 6 years, 3 months
Project Phase:

Publications:

Other Dissemination Activities: –
Project No: AOT3.15  
In Progress

Project Title: INTERVAL: Investigation of NICE Technologies for Enabling Risk-Variable-Adjusted-Length dental recalls trial (pilot and follow-on study).

Grant Applicants / Principal Investigators (place of work): Pitts, N., Clarkson, J., Bonetti, D., Freeman, R., Ricketts, D. (University of Dundee); Ramsay, C. (HSRU, University of Aberdeen); Worthington, H. (University of Manchester); Pol, M. van der (HERU); Anderson, T., McCombes, W., Young, L. (NHS Education for Scotland); Burke, F., White, D. (University of Birmingham); Douglas, G. (University of Leeds); Gorter, R. (University of Amsterdam); Herbert, R. (University of Cardiff); Hodge, P. (University of Glasgow); Humphris, G. (University of St. Andrews); Mettes, T. (Radboud University, Nijmegen Medical Centre, The Netherlands); Needleman, I. (UCL Eastman Dental Institute); Ross, M. (University of Edinburgh).

HERU Investigators: Pol, M. van der, Boyers, D.

HERU Research Theme: Assessment of Technologies – In-use Technology Phase and Broader Measures of Value

Source of Funding and Total Awarded: National Institute for Health Research (NIHR), Health Technology Assessment (HTA) Programme – £2,865,946, Chief Scientist Office (CSO) CORE and University of Aberdeen

Amount of HERU Funding: £95,884

Objectives: To evaluate the effectiveness and cost-effectiveness of three dental recall strategies.

Outline: A parallel-group, randomised, controlled comparison of three forms of dental recall strategy (6-month recall, risk-based recall and 24-month recall) will evaluate the effectiveness and cost-effectiveness of these recall strategies by assessing their impact on maintaining oral health. A cost-benefit analysis will be undertaken to assess the efficiency of the alternative recall strategies. Willingness to pay will be elicited using a discrete choice experiment.

Start Date: May 2011

Duration of Project: 7 years, 4 months

Project Phase: 

Publications: –

Other Dissemination Activities: –
Project No: AOT3.16  In Progress

Project Title: TISU: Therapeutic Interventions for Stones of the Ureter: a multicentre randomised controlled trial of extracorporeal shockwave lithotripsy, as first treatment option, compared with direct progression to ureteroscopic retrieval, for ureteric stones.

Grant Applicants / Principal Investigators (place of work):
McClinton, S., Kurban, L. (NHS Grampian); N’Dow, J., MacLennan, S., Lam, T. (Academic Urology Unit, University of Aberdeen); MacLennan, G., Norrie, J., Thomas, R., Starr, K. (HSRU, University of Aberdeen); Kilonzo, M. (HERU); Keely, F. (Southmead Hospital); Anson, K. (St George’s NHS Trust); Clark, C. (Service User); Pickard, R. (Newcastle University); Burgess, N. (Norfolk and Norwich University Hospital).

HERU Investigators: Kilonzo, M.

HERU Research Theme: Assessment of Technologies – In-use Technology Phase

Source of Funding and Total Awarded: National Institute for Health Research (NIHR), Health Technology Assessment (HTA) Programme – £1,412,800

Amount of HERU Funding: £49,715

Objectives: The objectives of this trial are to determine whether extracorporeal shockwave lithotripsy (ESWL) when compared with ureteroscopic retrieval should be the first treatment option for symptomatic ureteric stones that require an active intervention.

Outline: Urinary stone disease is very common with an estimated prevalence among the general population of 2–3% (1.8 million people in the UK) with males forming stones three times as often as females. All symptomatic urinary tract stones, and ureteric stones in particular, are associated with severe pain and can have a significant impact on patients’ quality of life due to the detrimental effect on their ability to work and the need for hospitalisation. Most ureteric stones can be expected to pass spontaneously with supportive care (painkillers and fluids) possibly aided by drugs such as alpha blockers or calcium channel blockers (conservative management). However, between a fifth and a third of cases require an active intervention (stone removal) because of failure to pass the stone, continuing pain, infection or obstruction to urine drainage.
The two standard active intervention options are extracorporeal shockwave lithotripsy (ESWL) and ureteroscopic stone retrieval. Whilst both ESWL and ureteroscopy appear to be effective in terms of stone clearance they differ in terms of invasiveness, anaesthetic requirement, treatment setting, potentially the number of procedures required to clear the stone, complications, patient reported outcomes (such as severity and duration of pain after intervention, time off work and bothersome urinary symptoms), and cost. There is uncertainty around which is the most clinically effective in terms of stone clearance and the true cost to the NHS and to society (in terms of impact on patient reported health and economic burden).

**Start Date:** December 2012

**Duration of Project:** 72 months

**Project Phase:**

**Publications:** –

**Other Dissemination Activities:** –
**Project No:** AOT3.17  
**In Progress**

**Project Title:** EDNA: Early Detection of Neovascular Age-related macular degeneration.

**Grant Applicants / Principal Investigators (place of work):** Chakravarthy, U., Hogg, R. (Queen’s University Belfast); Ramsay, C., Banister, K., Cook, J., Azuara-Blanco, A. (HSRU, University of Aberdeen); Scotland, G. (HERU/HSRU); Sivaprasad, S. (Moorfields Eye Hospital NHS Foundation Trust); Heimann, H. (Royal Liverpool & Broadgreen University Hospitals NHS Trust).

**HERU Investigators:** Scotland, G.

**HERU Research Theme:** Assessment of Technologies – In-use Technology Phase

**Source of Funding and Total Awarded:** National Institute for Health Research (NIHR), Health Technology Assessment (HTA) Programme – £863,779 and Chief Scientist Office (CSO) CORE

**Amount of HERU Funding:** £74,630

**Objectives:** To identify the optimum non-invasive test strategy that will robustly detect nAMD in the other eye during follow-up in secondary care of persons with nAMD in one eye.

**Outline:** 'Wet' or neovascular age-related macular degeneration (nAMD) is a leading cause of sight loss in older people. The EDNA study will evaluate five non-invasive diagnostic tests which are easily performed and routinely carried out in the NHS secondary care setting and which fall into two groups: functional and morphological.

The functional tests are visual acuity, Amsler test and self-reported quality of sight. The morphological tests are fundus examination and optical coherence tomography (OCT). The diagnostic accuracy of these tests will be assessed against a reference standard test (fluorescein angiography). The results from this prospective cohort study will be used to inform the development of a decision analytic model, which will model disease progression and the costs and consequences of using the alternative diagnostic test to monitor patients in secondary care. [http://www.nets.nihr.ac.uk/projects/hta/1214207](http://www.nets.nihr.ac.uk/projects/hta/1214207).

**Start Date:** January 2015

**Duration of Project:** 66 months

**Project Phase:**

**Publications:** –

**Other Dissemination Activities:** –
E-FREEZE: A randomised controlled trial evaluating the clinical and cost-effectiveness of a policy of freezing all embryos followed by thawed frozen embryo transfer, compared with a policy of fresh embryo transfer in women undergoing in-vitro fertilization.

Grant Applicants / Principal Investigators (place of work):
Mahashwari, A. (NHS Grampian); Macklon, N. (University of Southampton); Khalaf, Y. (Guy’s and St Thomas's Hospital); Lavery, S. (Hammersmith Hospital); Child, T., Juszczak, E., Hardy, P., Kurinczuk, J. (University of Oxford); Rajkohwa, M. (Birmingham’s Women’s Hospital); Coomarasamy, A. (University of Birmingham); Cutting, R. (University of Sheffield); Brison, D. (Central Manchester University Hospital NHS Trust); Troup, S. (Liverpool Women’s Hospital); Lewis-Jones, C. (Infertility Network, UK); Raine-Fenning, N. (University of Nottingham); Bhattacharya, S. (Other Applied Health Sciences, University of Aberdeen); Scotland, G. (HERU/HSRU).

HERU Investigators:
Scotland, G.

HERU Research Theme:
Assessment of Technologies – In-use Technology Phase

Source of Funding and Total Awarded:
National Institute for Health Research (NIHR), Health Technology Assessment (HTA) Programme – £1,353,359 and Chief Scientist Office (CSO) CORE

Amount of HERU Funding:
£68,279

Objectives:
The primary objective of the trial is to determine if (in women undergoing in-vitro fertilization (IVF) treatment) a policy of freezing embryos, followed by thawed frozen embryo transfer, results in a higher healthy baby rate when compared with the current policy of transferring fresh embryos. Secondary objectives will assess if the freeze all policy results in: (1) fewer complications associated with IVF treatment and pregnancy; (2) greater cost-effectiveness from a health service and broader societal perspective.

Outline:
Despite improvements in technology, IVF success rates remain low with an overall live birth rate of 25% per treatment. Additionally, there are concerns about health outcomes for mothers and babies conceived through IVF, particularly after fresh embryo transfer, including maternal ovarian hyperstimulation syndrome (OHSS) and perinatal morbidity. It is believed that high levels of ovarian hormones during ovarian stimulation could create a relatively hostile environment for embryo implantation whilst increasing the risk of OHSS. It has been suggested that electively freezing embryos with the intention of thawing and replacing them within the uterus at a later stage (thawed frozen embryo transfer), instead of fresh embryo transfer, may lead to improved pregnancy rates and fewer complications. This two-arm parallel group randomised controlled trial, across multiple IVF centres in the UK, aims to address this question: http://www.nets.nihr.ac.uk/projects/hta/1311582.
Start Date: August 2015
Duration of Project: 4 years
Project Phase: 
Publications: –
Other Dissemination Activities: –
Project No: AOT3.19

Project Title: The PUrE RCT: The clinical and cost-effectiveness of surgical interventions for stones in the lower pole calyces of the kidney.

Grant Applicants / Principal Investigators (place of work):
- McClinton, S. (NHS Grampian & University of Aberdeen)
- Lam, T. (University of Aberdeen)
- Wiseman, O. (Addenbrooke's NHS Trust)
- Smith, D. (University College London Hospital)
- Turney, B. (John Radcliffe Hospital NHS Trust)
- Pickard, R. (The Freeman Hospital & University of Newcastle)
- Thomas, R., MacLennan, G., Norrie, J., MacLennan, S., Starr, K., Clark, C.T. (HSRU, University of Aberdeen)
- Hernández, R. (HERU)
- Anson, K. (St George's Healthcare NHS Trust)

HERU Investigators: Hernández, R.

HERU Research Theme: Assessment of Technologies – In-use Technology Phase

Source of Funding and Total Awarded:
- National Institute for Health Research (NIHR), Health Technology Assessment (HTA) Programme – £1,839,269 and University of Aberdeen

Amount of HERU Funding: £54,948

Objectives:
To assess the clinical and cost-effectiveness of surgical interventions for stones in the lower pole calyces of the kidney: the PUrE RCT – Percutaneous Nephrolithotomy (PNL), Flexible Ureterorenoscopy (FURS) and Extracorporeal Shockwave Lithotripsy (ESWL) for lower pole calyceal kidney stones.
Outline:

Kidney stone disease is very common and, although stones in the kidney do not always cause problems, most need treatment. They can cause serious problems, such as pain, infection and kidney failure, with burden to patients, the NHS and society. There are three treatment options in the NHS for stones in the lower part of the kidney: (1) flexible ureterorenoscopy with laser lithotripsy (FURS); (2) percutaneous nephrolithotomy (PNL); and (3) extracorporeal shockwave lithotripsy (ESWL). Each treatment has advantages and disadvantages (benefits and harms) and there is uncertainty about which of these treatments is best to free people from kidney stones and which is best value for patients and the NHS.

This study will randomly allocate 522 patients with smaller stones (diameter ≤ 10 mm) to be treated with either FURS or ESWL and 522 patients with larger stones (10 mm < diameter ≤ 25 mm) to be treated with either FURS or PNL, with each participant followed up for one year.

The primary outcome is generic health status (EQ-5D-5L) area under the curve (AUC) to 12 weeks post-intervention. This study includes a full economic evaluation. A within trial analysis as well as a simple model to extend the analysis beyond the clinical study follow-up period will be considered. For further details please see: http://www.nets.nihr.ac.uk/projects/hta/1315202.

Start Date: December 2015
Duration of Project: 60 months
Project Phase: –
Publications: –
Other Dissemination Activities: –
Project No: AOT3.20  
Project Title: C-Gall: A randomised controlled trial comparing the clinical effectiveness and cost-effectiveness of laparoscopic cholecystectomy compared with observation/conservative management for preventing recurrent symptoms and complications in adults with uncomplicated symptomatic gallstones.

Grant Applicants / Principal Investigators (place of work): Ahmed, I. (NHS Grampian); Ramsay, C., Norrie, J., Gillies, K., Avenell, A., Brazzelli, M. (HSRU, University of Aberdeen); Hernández, R. (HERU); Murchie, P. (Other Applied Health Sciences, University of Aberdeen).

HERU Investigators: Hernández, R.

HERU Research Theme: Assessment of Technologies – In-use Technology Phase

Source of Funding and Total Awarded: Department of Health – National Institute for Health Research (NIHR), Health Technology Assessment (HTA) Programme – £1,397,962 and University of Aberdeen

Amount of HERU Funding: £55,967

Objectives: The primary aim of the study is to assess the clinical and cost-effectiveness of observation/conservative management compared with cholecystectomy for preventing recurrent symptoms and complications in adults with uncomplicated symptomatic gallstones.

Outline: Gallstones are common but only one in three people develop symptoms (severe abdominal pain, nausea and vomiting). These are sometimes accompanied by inflammation of the gallbladder (cholecystitis). Painkillers, anti-inflammatory medicines and antibiotics are usually prescribed initially and surgery to remove the gallbladder (cholecystectomy) is advised for medically fit patients. Approximately 70,000 cholecystectomies are performed every year in the UK, with significant costs for the NHS. However, it is known that some patients do not have any more symptoms after the initial episode of pain and that surgery might not be necessary.

This study will identify, across 20 UK hospitals, 430 patients that will be randomly allocated to either receive surgery or conservative management. Participants will be followed for 18 months and the primary outcome measure will be quality of life throughout that period (measured by the area under the curve using the SF-36 instrument).

This study will include a full economic evaluation. We will also consider a model to extend the analysis beyond the clinical follow-up period. The primary economic outcome measure will be incremental cost per QALY.

Start Date: April 2016
Duration of Project: 54 months

Project Phase: [ ] [ ] [ ]

Publications: –

Other Dissemination Activities: –
**Project No:** AOT3.21

**Project Title:** TAR project: Surveillance following endovascular aortic aneurysm repair.

**Grant Applicants / Principal Investigators (place of work):** Ramsay, C., Brazelli, M., Campbell, M. (HSRU, University of Aberdeen); Scotland, G. (HERU/HSRU).

**HERU Investigators:** Scotland G., Hernández, R.

**HERU Research Theme:** Assessment of Technologies – In-use Technology Phase

**Source of Funding and Total Awarded:** National Institute for Health Research (NIHR) – Part of the TAR contract 2016–2021

**Objectives:**

To assess the evidence for the clinical effectiveness and cost-effectiveness of surveillance strategies using colour duplex (CDU) and contrast-enhanced ultrasound (CEU) compared with computed tomography angiography (CTA) in the surveillance after endovascular aneurysm repair (EVAR).

**Outline:**

An abdominal aortic aneurysm is a swelling or bulge that causes the wall of the main blood vessel (aorta) to weaken and become pouch-shaped or sac-shaped. Large aneurysms can burst, causing massive internal bleeding, which can lead to death. EVAR of the aneurysm has become the preferred treatment option for abdominal aortic aneurysm. EVAR is minimally invasive but it is associated with potential complications of which the most common is the occurrence of an endoleak (blood flow in the aneurysm sac). Consequently, patients who receive EVAR treatment must be followed up for the rest of their life.

CTA is an imaging modality widely used for the surveillance after EVAR. CTA is considered to be very accurate but it is not very good at detecting the direction of blood flow from an endoleak. It also carries the risk of repeated exposure to radiation and to a toxic contrast agent. CDU and CEU have been suggested as possible safer imaging alternatives to CTA but have not been widely adopted. The optimal surveillance strategy with regard to the choice of imaging modalities and the frequency of testing has not been established yet.

We will conduct a systematic review of the literature to assess the current evidence for the clinical effectiveness and cost-effectiveness of surveillance strategies using CDU and CEU compared with CTA in the surveillance after EVAR. A model based economic evaluation will also be conducted as part of this assessment. Where possible we will consider data from national and international clinical registries and databases.

**Start Date:** June 2016

**Duration of Project:** 6 months

**Project Phase:**

**Publications:** –

**Other Dissemination Activities:** –
Broader Measures of Value
**Project No:** AOT4.1  
**Project Title:** PhD: Broadening the valuation space in health technology assessment: the case of monitoring individuals with ocular hypertension.

**Grant Applicants / Principal Investigators (place of work):** Hernández, R., (PhD Student), Ryan, M. (HERU); Burr, J. (University of St. Andrews); Vale, L. (University of Newcastle).

**HERU Investigators:** Hernández, R., Ryan, M.

**HERU Research Theme:** Assessment of Technologies – Broader Measures of Value and In-Use Technology Phase

**Source of Funding and Total Awarded:** Research Council UK (RCUK) Fellowship – £125,000, University of Aberdeen and the Chief Scientist Office (CSO) CORE

**Amount of HERU Funding:** £125,000

**Objectives:** To investigate alternative approaches to incorporating discrete choice experiment (DCE) willingness-to-pay (WTP) outcomes into decision analytic models within the framework of a cost–benefit analysis (CBA).

**Outline:** The economic evaluation (EE) component of health technology assessments (HTA) often defines value in terms of health related quality of life, with many HTA agencies requiring the use of EQ-5D based quality adjusted life years (QALYs). These approaches do not capture value derived from patient experience factors and the process of care. This thesis widened the valuation space beyond this limited perspective, taking account of such factors, using monetary values generated from a DCE, incorporating these into a discrete event simulation (DES) and conducting a cost–benefit analysis (CBA).

The case study monitored individuals with ocular hypertension (Project Number B2.21). Five strategies were compared using a DES: (1) ‘treat all’ at ocular hypertension diagnosis with minimal follow-up; (2), (3) biennial monitoring (either in primary or secondary care) with treatment according to predicted glaucoma risk; and monitoring and treatment according to the UK National glaucoma guidance (either (4) conservative or (5) intensive).
Outcome and Translation: DCE based WTP estimates for health outcomes (e.g. risk of developing or progressing glaucoma and treatment side-effects), patient experience factors (e.g. communication and understanding with the healthcare professional) and process of care (e.g. monitoring setting) were obtained. Conditional logit, mixed logit preference space and mixed logit WTP-space (rarely used within health economics) econometric specifications were used. These WTP valuations were aggregated in the DES, as fixed mean values or allowing variation between simulated individuals.

While the standard cost–utility analysis (CUA) using EQ-5D implied that ‘treat all’ was most likely cost-effective, CBA with broadened valuation space identified, consistently across different econometric specifications, ‘biennial hospital’ as the best choice.

This thesis proposed an approach to broaden the valuation space that can be promptly used for EE-HTA. Researchers should be attentive of the valuation space considered in their EE and choose wisely the EE approach to be used (e.g. CUA and/or CBA).

Start Date: October 2008
Duration of Project: 6 years 6 months
Publications:


### Project No: AOT4.2 Completed

#### Project Title:
PhD: Elicitation and application of preference values in economics evaluation: case studies in reproductive health.

#### Grant Applicants / Principal Investigators (place of work):
Scotland, G. (PhD student), Ryan, M., McNamee, P., Pol., M. van der (HERU); Newlands, D. (Economics, University of Aberdeen Business School); Hussein, J. (Division of Applied Health Sciences, University of Aberdeen).

#### HERU Investigators:
Scotland, G., Ryan, M., McNamee, P., Pol., M. van der

#### HERU Research Theme:
Assessment of Technologies – Broader Measures of Value and Technology Adoption Phase

#### Source of Funding:
Chief Scientist Office (CSO) CORE and University of Aberdeen

#### Objectives:
To develop and apply alternative methods of benefit valuation in the context of economic evaluation in reproductive health.

#### Outline:
Application of the standard methods of cost–utility analysis can be challenging in maternal and reproductive healthcare because: (1) alternative interventions can be geared towards enhancing the experience of women, rather than improving health status; and (2) alternative interventions can directly affect the health and well-being of both the woman and infant(s).

This thesis discusses and attempts to address these challenges through three empirical case studies. The first demonstrates a method for measuring and incorporating women’s preferences for patient experience factors into an economic evaluation comparing alternative approaches to labour management. The second assesses women’s preferences for mother-infant health outcomes in the context of an economic evaluation comparing alternative approaches to IVF treatment. The final case study adopts an approach to estimate the relative monetary value that community members place on the prevention of maternal and neonatal deaths, in the context of decisions between competing healthcare programmes that impact differentially on these outcomes.

#### Outcome and Translation:
The case studies show that the challenges identified above can be overcome by adapting one or other of the stated preference valuation techniques available to health economists. DCEs in particular offer a flexible approach to dealing with the complexities and trade-offs that can arise when considering choices between alternative reproductive healthcare interventions in the context of scarce resources.

#### Start Date:
January 2005

#### Duration of Project:
5 years
**Publications:**


Other Dissemination Activities:


Objectives:
To investigate the external validity of discrete choice experiments (DCEs). To compare different correction methods (ex ante and ex post) for hypothetical bias to improve the predictive validity of DCEs. To use the most valid estimates of willingness to pay (WTP) to inform cost–benefit analyses of two dental care interventions.

Outline:
Stated preference methods in health are sometimes criticised due to concerns over the external validity of the results. Most of these concerns relate to hypothetical bias, where respondents to a survey may not follow through on their stated choices if offered an identical choice in reality. The implication of hypothetical bias may be incorrect predictions of service uptake or biased estimates of WTP, leading to incorrect policy recommendations from cost–benefit analysis. The thesis focuses on the challenge of hypothetical bias, and investigates a number of different mitigation techniques.

*Ex ante* mitigation methods focus on addressing hypothetical bias *a priori*, before respondents complete the task. Three different methods: oath scripts, consequentiality scripts and cheap talk scripts are compared with a standard approach.

*Ex post* mitigation methods aim to calibrate choice responses, often based on certainty scales, to statistically reconcile stated and revealed preferences. The thesis compares the use of different calibrations using quantitative certainty scales, qualitative certainty scales and a dissonance minimisation approach.

Predictions of service uptake (scale and polish and dental check-ups) from the DCE are compared with revealed preference data, collected using retrospective questionnaires, to determine the methods generating the best predictive validity. Willingness to pay is estimated across groups. The impact of different correction methods on decision making using cost–benefit analysis is explored.
The thesis will draw conclusions on the presence of hypothetical bias in dental care DCEs. Recommendations will be made regarding the most robust methods to ensure external validity of future DCEs.

**Start Date:**
June 2012

**Duration of Project:**
5 years

**Project Phase:**

**Publications:**

**Other Dissemination Activities:**


**Project No:** AOT4.4  
**Project Title:** PhD: Exploring the role for patients’ values in health technology assessment: a mixed methods approach.

**Grant Applicants / Principal Investigators (place of work):** Tockhorn-Heidenreich, A. (PhD Student); Ryan, M. (HERU); Scotland, G. (HERU/HSRU); Entwistle, V. (HSRU, University of Aberdeen).

**HERU Investigators:** Tockhorn-Heidenreich, A., Ryan, M., Scotland, G.

**HERU Research Theme:** Assessment of Technologies – Broader Measures of Value and Methods of Benefit Valuation (person-centred care)

**Source of Funding and Total Awarded:** ESRC Scottish Graduate School of Social Sciences (SGSSS) – Doctoral Training Centre (Health Pathway) PhD Studentship – £54,489 and Chief Scientist Office (CSO) CORE

**Amount of HERU Funding:** £54,489

**Objectives:** To get a better understanding of the current role of patients’ preferences in the health technology assessment (HTA) process in Scotland and to derive a broader measure of patients’ valuation of new health technologies than currently considered in the quality-adjusted life years (QALY) approach. The PhD also explores the potential use of discrete choice experiments (DCEs) to elicit this broader measure of value based on generic attributes of new health technologies.

**Outline:** This PhD will contribute to the discussion of the elicitation and valuation of patients’ values in health technology assessment (HTA). The PhD consists of three parts.

1. Assess the role of patient group submissions on reimbursement decisions of the Scottish Medicines Consortium (SMC) using econometric analysis.
2. Use qualitative research methods to analyse existing patient group submissions to the National Institute for Health and Care Excellence (NICE) to derive generic themes and attributes capturing patients’ concern about new health technologies.
3. Following (2), collect primary data, using a DCE, to derive a broader generic measure of value to quantify the patient preferences for the new health technology.

**Start Date:** October 2012

**Duration of Project:** 6 years (Part-Time)

**Project Phase:**

**Publications:** –
**Project No:** AOT4.5  
**Project Title:** PhD: Using existing data to incorporate broader measures of benefit in economic evaluation.

**Grant Applicants / Principal Investigators (place of work):** Tassie, E. (PhD Student), Watson, V. (HERU), Scotland, G. (HERU), Bryan, S. (HERU/UBC).

**HERU Investigators:** Tassie, E., Watson, V., Scotland, G., Bryan, S.

**HERU Research Theme:** Assessment of Technologies – Broader Measures of Value and Methods of Benefit Valuation (person-centred care)

**Source of Funding and Total Awarded:** Institute of Applied Health Science (IAHS), University of Aberdeen Flagship PhD Studentship – £77,668

**Amount of HERU Funding:** £77,668

**Objectives:** To examine benefit transfer in a health economics setting, specifically if existing monetary valuations elicited in one research area can be transferred to another and incorporated into an economic evaluation framework.

**Outline:** The quality-adjusted life year (QALY) is the predominantly used measure of health benefit in economic evaluation. The QALY has many advantages, including readily available generic preference based instruments (e.g. EQ-5D) and its applicability across disease areas. However, these advantages are somewhat traded off by its narrow, health-oriented viewpoint and inability to capture benefits of health and healthcare outwith these generic instruments. For example, the QALY framework fails to adequately capture patient preferences for non-health attributes or the process of care.

A popular approach used in health economics to value all relevant benefits is the use of stated preference methods, where benefits can be measured in terms of willingness-to-pay (WTP). Despite their growing application in health economics, WTP measures of benefit are rarely used in economic evaluations. One reason is that measuring WTP is resource intensive (in terms of time and finances) because a new valuation study is required for each economic evaluation.
There are now many published monetary valuation studies that provide enough data to test if pre-existing WTP measures of benefit can be combined using benefit transfer (BT) as an alternative to conducting a new study. BT synthesises results from previously published studies and with adjustment, using all available and relevant information, predicts an estimate in a new study setting that is different in type, location or time from the original studies. This PhD will conduct two case studies to test the transferability of values. The first case study will focus across clinical areas (e.g. are values of the process of care the same across chronic and acute care settings?) while the second will focus within a clinical area (e.g. can values collected in perinatal care be transferred to post-natal care?).

To date, original monetary valuation studies have been conducted to value specific interventions, but the transferability of valuation results has not been explored. If BT can be successfully achieved in a healthcare setting, accessible methods to broaden the valuation space beyond the current QALY approach will be established.

Start Date: October 2016
Duration of Project: 4 years
Project Phase: 
Publications: –
Other Dissemination Activities: –
Methods of Benefit Valuation (MBV)

Our research developing and applying preference elicitation methods in health economics is recognised internationally as cutting edge.
Person-centred Care
**Project No:** MBV1.1  
**Completed**

**Project Title:** MRC/ESRC Postdoctoral Fellowship: Applying discrete choice experiments in pharmacy: applied and methodological issues.

**Grant Applicants / Principal Investigators (place of work):** Tinelli, M. (Student), Ryan, M. (HERU); Bond, C. (Academic Primary Care, University of Aberdeen).

**HERU Investigators:** Ryan, M., Tinelli, M.

**HERU Research Theme:** Methods of Benefit Valuation – Person-Centred Care

**Source of Funding and Total Awarded:** Medical Research Council (MRC)/Economics and Social Research Council (ESRC) Interdisciplinary Postdoctoral Fellowship – £140,092 and University of Aberdeen

**Amount of HERU Funding:** £140,092

**Objectives:** To explore the application of DCEs to pharmacy.

**Outline:** This postdoctoral fellowship funded the development of peer-reviewed papers from the PhD, as well as the development of research skills in three areas: development of DCEs; their application to pharmacy, and their impact on economic evaluations in healthcare. A key focus was the evaluation of pharmacy, taking account of the patient experience and the incorporation of patient experience with an economic evaluation framework.

**Outcome and Translation:** Findings have implications for DCE practitioners generally – when incorporating a DCE into an economic evaluation a number of questions are raised: what factors should be valued, whose values (trial-groups vs. all-trial-population) and when should they be elicited (still-receiving-the-intervention or afterwards). Consideration should also be given to status quo bias.

**Start Date:** December 2008

**Duration of Project:** 41 months
Publications:


Other Dissemination Activities:


Project No: MBV1.2  
Completed

Project Title: What healthcare experiences matter to patients and how can we assign value to them for policy making purposes?

Grant Applicants / Principal Investigators (place of work): Ryan, M., Kinghorn, P. (HERU); Francis, J., Fraser, C. (HSRU, University of Aberdeen); Entwistle, V. (Social Dimensions of Health Institute, University of Dundee).

HERU Investigators: Ryan, M., Kinghorn, P.

HERU Research Theme: Methods of Benefit Valuation – Person-Centred Care

Source of Funding and Total Awarded: Medical Research Council (MRC) Methodology Research Panel – £237,671 and University of Aberdeen

Amount of HERU Funding: £121,629

Objectives: To investigate what aspects of healthcare experience patients say matter, and how we can value these.

Outline: Healthcare policy leaders internationally recognise that people’s experiences of healthcare delivery are important, and invest significant resources to monitor and improve these. However, the value of particular aspects of these experiences – relative to each other and to other healthcare outcomes – is unclear. This project considered how economic techniques have been and might be used to generate quantitative estimates of the value of experiences of healthcare delivery. The project first developed a conceptual map of patients’ experiences. The map reflected insights from the capabilities approach. We conducted a systematic review of applications of economic techniques to healthcare delivery. We found that these techniques have been quite widely used to estimate the value of standardised features of healthcare systems and processes (e.g. of care delivery by a nurse rather than a doctor, or of a consultation of 10 minutes rather than 15 minutes), but not to estimate the value of the (potentially diverse) implications of these for patients’ experienced capabilities. To inform future research relating to the valuation of experiences of healthcare delivery, we organised a workshop for key stakeholders. Participants undertook and discussed ‘exercises’ that explored the use of different economic techniques with capabilities-based descriptions of experiences of healthcare delivery. The workshop identified a number of methodological issues that need careful attention, and highlighted some important concerns about the ways in which quantitative estimates of value might be used in relation to aspects of healthcare delivery. However, it confirmed enthusiasm for efforts to attend to experiences of capability associated with healthcare delivery.
Outcome and Translation:

It is hoped this research will provide an impetus for bodies such as NICE, and those involved in evaluation studies such as RCTs, to broaden their measure of value in line with what matters to patients in the provision of healthcare.

Start Date: March 2009

Duration of Project: 2 years

Publications:


Other Dissemination Activities:


Project No: MBV1.3

Project Title: Improving the public health sector in South Africa: eliciting public preferences using a discrete choice experiment.

Grant Applicants / Principal Investigators (place of work): McIntyre, D., Honda, A. (Health Economics Unit, University of Cape Town, South Africa); Ryan, M. (HERU); Van Nierkerk, R. (Rhodes University).

HERU Investigators: Ryan, M.

HERU Research Theme: Methods of Benefit Valuation – Person-Centred Care

Source of Funding: University of Aberdeen

Objectives: To elicit public preferences with respect to dimensions of quality of care for public health facilities in South Africa.

Outline: The proposed introduction of a national health insurance (NHI) scheme in South Africa is the most important issue currently on the health policy agenda in that country, with implications for the whole health system. The scheme aims to achieve universal health coverage. To date there has been little opportunity for public engagement in the development of health policy around this scheme. This study aimed to better understand the community’s preferences in relation to key aspects of healthcare services when selecting healthcare providers, in order to identify priority areas for reform in the supply of public healthcare. It used a discrete choice experiment to elicit public preferences of the community in the Western and Eastern Cape.

Outcome and Translation: Communities are prepared to tolerate public sector health service characteristics such as a long waiting time, poor staff attitudes and lack of direct access to doctors if they receive the medicine they need, a thorough examination and a clear explanation of the diagnosis and prescribed treatment from health professionals. These findings prioritise issues that the South African government must address in order to meet their commitment to improve public sector health-care service provision.

Start Date: February 2010

Duration of Project: 22 months
Publications:


Other Dissemination Activities:

This study assessed the attitudes and knowledge of the general public towards drug misuse and drug treatment strategies and the value they assign to these.

Research evidence is strong for opiate replacement treatment (ORT), and current policy is moving from harm reduction to rehabilitation. However, public opinion (attitudes) can be at odds with evidence. This study explored the relationships between attitudes, knowledge of drugs and a range of socio-demographic variables that potentially influence attitude. Values were elicited using willingness to pay (WTP).

The response rate was 38.1% (1,067/2,803). Less than 10% had personal experience of drug misuse but 16.7% had experience of drug misuse via a friend/acquaintance. Regression modelling revealed more positive attitudes towards drug users in those with personal experience of drug misuse, (p < 0.001), better knowledge of drugs (p = 0.001) and higher income (those earning >£50,000 per annum compared to <£15K; p = 0.01). Over half of respondents were not willing to pay anything for drug treatment, indicating they did not value these treatments. Respondents were willing to pay most for community rehabilitation and least for methadone maintenance treatment. Qualitative analysis of open responses indicated strong negative attitudes, doubts over the efficacy of methadone and consideration of addiction as self-inflicted. There was ambivalence with respondents weighing up negative feelings towards treatment against societal benefit.

There is a gap between public attitudes and evidence regarding drug treatment. Findings suggest a way forward might be to develop and evaluate treatment that integrates ORT with a community rehabilitative approach. Evaluation of public engagement/education to improve knowledge of drug treatment effectiveness is recommended.
**Publications:**


**Other Dissemination Activities:**


**Project No:** MBV1.5  
**Completed**

**Project Title:** Patients’ preferences for treatment of lower urinary tract symptoms: a discrete choice experiment.

**Grant Applicants / Principal Investigators (place of work):** Watson, V., Ikenwilo, D., Ryan, M., Heidenreich, S. (HERU)

**HERU Investigators:** Watson, V., Ikenwilo, D., Ryan, M., Heidenreich, S.

**HERU Research Theme:** Methods of Benefit Valuation – Person-Centred Care

**Source of Funding and Total Awarded:** Astellas Ltd – £72,247 and Chief Scientist Office (CSO) CORE  
**Amount of HERU Funding:** £72,247

**Objectives:** To investigate men’s preference for the treatment of lower urinary tract symptoms associated with BPH.

**Outline:** In this study, we used a mixed methods approach to establish men’s preferences for different lower urinary-tract symptoms (LUTS)/benign prostatic hyperplasia (BPH) treatment characteristics, the impact of LUTS and LUTS treatment on their quality of life, and the trade-offs men are prepared to make between treatment characteristics and quality of life. Our mixed methods approach combined online focus groups and a DCE. The mixed methods approach provided a rich data set that can be used to explore preferences for treatment of LUTS/BPH.

**Outcome and Translation:** We find LUTS have a large impact on many aspects of men’s quality of life. Many men were reluctant to take medication in general. However, men value treatment that improves day-time frequency of urination, night-time frequency, and urgency of urination. A medicine targeting a mix of symptoms, with a particular focus on improving urgency combining either reducing night-time frequency or substantially reducing day-time frequency, is likely to have the highest benefit for patients.

**Start Date:** June 2013

**Duration of Project:** 9 months

Other Dissemination Activities:  


*Denotes published after end of Review period on 31 October 2016.*
**Project No:** MBV1.6  
**Completed**

**Project Title:** A discrete choice experiment to value the personalisation of support for self-management of chronic pain.

**Grant Applicants / Principal Investigators (place of work):** Burton, C., Elliott, A., Porteous, T. (Centre of Academic Primary Care, University of Aberdeen); Entwistle, V. (HSRU, University of Aberdeen); Ryan, M., Krucien, N. (HERU).

**HERU Investigators:** Ryan, M., Krucien, N.

**HERU Research Theme:** Methods of Benefit Valuation – Person-Centred Care

**Source of Funding and Total Awarded:** Health Foundation – £159,812, Chief Scientist Office (CSO) CORE and University of Aberdeen

**Amount of HERU Funding:** £10,580

**Objectives:** To assess the value that people with long-term conditions place on different aspects of personalisation of support for self-management.

**Outline:** The context was the support people receive for self-management, firstly for chronic pain, then in a replication study, for chronic lung disease. The DCE included four attributes: *information* (‘relevant to you’ vs. ‘the same for everyone’); *communication style* (‘friendly and personal’ vs. ‘neutral professional’); *situation relevance* (‘makes suggestions which fit your situation’ vs. ‘takes little account of your situation’); and *what matters in life* (‘works with you on what you want to get from life’ vs. ‘seems to think everyone wants to get the same from life’). A cost attribute was included so that willingness to pay (WTP) could be estimated.

We recruited participants from an online panel: 517 with self-reported chronic pain and 200 with breathlessness. Participants revealed positive valuations for increased personalisation of all four attributes. Greater personalisation on the attributes relating to situation relevance (WTP £15.51) and what matters in life (WTP £14.10) were valued most highly; tailored information was valued less (WTP £10.86) and more friendly communication valued least (WTP £3.46). The replication study in breathlessness showed similar results. We also found heterogeneity in valuation, particularly around the relative value of tailored information.

**Outcome and translation:** Our results should lead healthcare providers to rethink how we make support for self-management properly person-centred. Person-centred healthcare must emphasise the substance of personalisation and not just the style.
Start Date: July 2014

Duration of Project: 16 months

Publications: –

Other Dissemination Activities:


**Project No:** MBV1.7  
**In Progress**

**Project Title:** Person-centred care.

**Grant Applicants / Principal Investigators** (place of work): Ryan, M., Watson, V., Krucien, N. (HERU).

**HERU Investigators:** Ryan, M., Watson, V., Krucien, N., Heidenreich, S.

**HERU Research Theme:** Methods of Benefit Valuation – Person-Centred Care

**Source of Funding:** Chief Scientist Office (CSO) CORE and University of Aberdeen

**Objectives:** To contribute to the research examining the importance of patient experience in the delivery of person-centred care.

**Outline:** Many healthcare services around the world aim to deliver person-centred care. In order that care is and can be responsive to the needs of people, we need to be able to measure what people want from their healthcare. We have undertaken research into the delivery of person-centred care and developed economic methods for eliciting population and patient preferences. Scotland’s Chief Medical Officer’s annual report on ‘Realistic Medicine’ calls for healthcare that focuses on outcomes that patients value and defines waste as interventions that do not add value for patients. Our research is important here.

**Duration of Project:** On-going

**Project Phase:**

**Publications:**


Other Dissemination Activities:  


**Ryan, M.** (2010) 'How is conjoint analysis being applied in health?', *3rd Conjoint Analysis in Health Conference*, Newport Beach, USA, October 2010.


*Denotes published after end of Review period on 31 October 2016.*
External Validity
Project No: MBV2.1  
Completed

Project Title: Demand revelation in a multi-attribute discrete choice task.

Grant Applicants / Principal Investigators (place of work): Watson, V. (HERU); Luchini, S. (GREQAM, Marseille).

HERU Investigators: Watson, V.

HERU Research Theme: Methods of Benefit Valuation – External Validity

Source of Funding and Total Awarded: University of Aberdeen – £5,400 and Chief Scientist Office (CSO) CORE

Amount of HERU Funding: £5,400

Objectives: To investigate the effect of choice context (hypothetical or real) on DCE responses.

Outline: The efficient provision of healthcare requires information about the costs and benefits of interventions. While many costs and benefits can be measured using market prices, many healthcare interventions are not traded in markets and consequently have no market price. In this instance, stated preference methods such as DCEs may be used to estimate the benefits. Few studies have compared hypothetical discrete choice experiment (DCE) responses with the equivalent real choices. Even when hypothetical choices and real choices are compared, it is impossible to conclude that choice differences result from the question type (hypothetical or real) and not preferences differences across the two groups. Techniques developed in experimental economics can disentangle the influence of choice context from individuals’ preferences. Using induced value experiments, this project compared hypothetical and real DCE responses, estimated the magnitude of hypothetical bias, and considered whether models of bounded rationality better explain responses to DCEs. Our results indicate that DCEs do not reliably measure individuals’ true valuation of the good. We find little evidence that individuals make different choices in hypothetical and incentivised settings. We find that choice complexity affects individuals’ ability to make correct choices and that individuals learn as they complete the task.

Outcome and Translation: Our results imply that researchers must take choice complexity and learning into account when designing stated preference studies.

Start Date: January 2009

Duration of Project: 55 months


Methods of Benefit Valuation

Project No: MBV2.2  Completed

Project Title: Does an oath improve demand revelation in discrete choice experiments?

Grant Applicants / Principal Investigators (place of work): Watson, V. (HERU); Luchini, S. (GREQAM); Jacquemet, N. (University of Paris); Shogren, J. (University of Wyoming).

HERU Investigators: Watson, V.

HERU Research Theme: Methods of Benefit Valuation – External Validity

Source of Funding: Chief Scientist Office (CSO) CORE

Objectives: To test the effect of ex ante corrections on demand revelation and hypothetical bias in discrete choice experiments.

Outline: This project considered the potential of ex ante corrections to improve demand revelation and reduce hypothetical bias in discrete choice experiments. Theories of social psychology emphasise that social context is important when individuals are asked to value non-market goods. We used an induced value experiment to investigate demand revelation and hypothetical bias in discrete choice experiment responses. This project drew on existing research of Drs Luchini and Jacquemet and Professor Shogren by asking participants to complete one of three oaths before taking part in the experiment. Commitment theory suggests that this should increase demand revelation and reduce hypothetical bias.

Outcome and translation: We find that an oath improves the reliability of responses to hypothetical DCE-type tasks. We find oaths that target honesty are more effective than those that target effort.

Start Date: January 2012

Duration of Project: 48 months

Publications:


### Project No: MBV2.3

**Project Title:** Task complexity and response certainty in discrete choice experiments.

**Grant Applicants / Principal Investigators** (place of work):
Regier, D. (University of British Columbia, Canada); Ungar, W., Burnett, H. (The Hospital for Sick Kids, Toronto, Canada).

**HERU Investigators:** Watson, V.

**HERU Research Theme:** Methods of Benefit Valuation – External Validity

**Source of Funding:** Chief Scientist Office (CSO) CORE

**Objectives:** To investigate the relationship between DCE task complexity and respondents’ choice certainty.

**Outline:** This study explores the behavioural and statistical links between utility balance and cognitive burden in discrete choice experiments (DCEs) by examining the relationship between respondents’ stated certainty about their DCE responses and the statistical precision of the econometric model. DCE experimental design emphasises utility balance across choice task alternatives, but this increases task complexity and respondents’ cognitive burden. A consequence of task complexity is response error, which increases response variability and decreases statistical efficiency.

**Outcome and Translation:** We find that increases in choice task utility balance decreases response certainty, and re-weighting the regression to favour respondents who are more uncertain of their choices increases the statistical precision of the econometric model.

**Start Date:** July 2012

**Duration of Project:** 2 years

**Publications:**

**Other Dissemination Activities:** –
**Project No:** MBV2.4  

**Project Title:** External validity of contingent valuation: comparing hypothetical and real payments.

**Grant Applicants / Principal Investigators (place of work):** Ryan, M., Heidenreich S. (HERU); Mentzakis, E. (Economics Department, University of Southampton); Jareinpituk, S. (Department of Dental Public Health, Mahidol University); Cairns, J. (Department of Health Services Research and Policy, London School of Hygiene and Tropical Medicine); Bond, C. (Academic Primary Care, University of Aberdeen); Glynn, D. (University of York).

**HERU Investigators:** Ryan, M., Heidenreich, S.

**HERU Research Theme:** Methods of Benefit Valuation – External Validity

**Source of Funding:** Chief Scientist Office (CSO) CORE

**Objectives:** To test the external validity of contingent valuation, i.e. do people behave in reality as they state in willingness-to-pay surveys.

**Outline:** Whilst willingness to pay (WTP) is increasingly used in economics to value benefits, questions remain concerning its external validity, i.e. do hypothetical responses match actual responses? We present results from two within sample field tests (Thailand and Scotland). Our Thailand experiment suggests that whilst Hypothetical No responses are always a No, Hypothetical Yes responses exceed Actual Yes responses. Certainty calibrations (verbal and numerical response scales) minimise hypothetical-actual discrepancies offering a useful solution. Failure to adjust may overstate monetary measures of value, and lead to inaccurate policy recommendations. In a follow-up study conducted in Scotland, qualitative investigation is currently taking place into why people do not behave in reality as they state in contingent valuation surveys.

**Start Date:** January 2013

**Duration of Project:** On-going

**Project Phase:**

Other Dissemination Activities:  


**Methods of Benefit Valuation**

**Project No:** MBV2.5  
**In Progress**

**Project Title:** PhD: Assessment of the external validity of discrete choice experiment: an application in pharmacy.

**Grant Applicants / Principal Investigators (place of work):** Chua, G.N. (PhD Student), Ryan, M. (HERU); Porteous, T. (HSRU, University of Aberdeen); Bond, C. (Academic Primary Care, University of Aberdeen).

**HERU Investigators:** Chua, G.N., Ryan, M.

**HERU Research Theme:** Methods of Benefit Valuation – External Validity

**Source of Funding and Total Awarded:** Commonwealth Scholarship Commission UK – £80,514 and Chief Scientist Office (CSO) CORE

**Amount of HERU Funding:** £15,000

**Objectives:** To assess the external validity of discrete choice experiments using a field experiment in the area of pharmacy practice.

**Outline:** The discrete choice experiment (DCE) technique has been applied extensively in the valuation of healthcare benefits to capture preferences. A key methodological question is if external validity i.e. the extent to which respondents’ choices made in a hypothetical DCE context, truly reflect their actual preferences. This thesis explores the external validity of DCEs within a pharmacy context. The thesis compares what respondents said they would do in a DCE survey with what they actually do when presented with the same scenario in real life and explores the roles of uncertainty and attitudes in explaining discrepancies. Qualitative research methods are also used to provide insight. This thesis extends the limited pool of empirical studies assessing external validity of DCEs.

**Start Date:** October 2013

**Duration of Project:** 38 months

**Project Phase:**

**Publications:** –
Other Dissemination Activities:


Valuation Task and Context
## Methods of Benefit Valuation

### Project No: MBV3.1 Completed

### Project Title: PhD: Testing methods to value health outcomes in low income countries using contingent valuation and discrete choice experiment methods.

### Grant Applicants / Principal Investigators (place of work):
- Ternent, L. (PhD student), McNamee, P. (HERU); Newlands, D. (Economics, University of Aberdeen Business School).

### HERU Investigators:
- Ternent, L., McNamee, P.

### HERU Research Theme:
- Methods of Benefit Valuation – Valuation Task and Context

### Source of Funding:
- Chief Scientist Office (CSO) CORE and University of Aberdeen

### Objectives:
To examine issues of theoretical validity and bias in contingent valuation (CV) and discrete choice experiment (DCE) methods in low-income countries.

### Outline:
This PhD contributed to the small body of literature on the application of CV and DCEs in low-income countries and in populations which have little or no formal education. Theoretical validity was examined by testing whether willingness to pay corresponded to theoretical expectations focussing on gender and willingness to pay, sensitivity to scope, starting point bias, and strategic bias in CV. The theoretical validity of the DCE method in populations with no formal education was also explored.

### Outcome and Translation:
Both CV and DCEs were found to be feasible and valid in populations with low levels of education when surveys were conducted using trained enumerators, administered using face-to-face interviews and using visual aids. However, iterative methods to elicit willingness to pay were prone to starting point bias and strategic bias.

### Start Date:
January 2005

### Duration of Project:
7 years (Part-Time)

### Publications:


**Other Dissemination Activities:**


**Project No:** MBV3.2

**Project Title:** Investigation of the value placed on the National Clinical Assessment Service services by referrers in the National Health Service.

**Grant Applicants / Principal Investigators** (place of work): Sussex, J. (Office of Health Economics); Watson, V. and Ryan, M. (HERU)

**HERU Investigators:** Watson, V., Ryan, M.

**HERU Research Theme:** Methods of Benefit Valuation – Valuation Task and Context

**Source of Funding and Total Awarded:** National Patient Safety Agency (NCAS) via the Office of Health Economics – £78,200, Chief Scientist Office (CSO) CORE and University of Aberdeen

**Amount of HERU Funding:** £38,238

**Objectives:** Investigation of the value placed on the National Clinical Assessment Service services by referrers in the National Health Service.

**Outline:** In 2008 around 800 performance concern cases were referred to the attention of the NHS National Clinical Assessment Service (NCAS) from all parts of the UK. These cases required NCAS support, which ranges from phone advice to major and multidimensional assessment with the possibility of suspending or excluding the healthcare professional. A ‘mixed methods’ approach was used to investigate NHS organisations’ preferences for the services provided by NCAS. The study combined interviews, discussion groups and a discrete choice experiment (DCE). The discussion groups explored which aspects of the services provided by NCAS are important and why, and the discussion groups were used to identify drivers of preference heterogeneity for NCAS services. The focus groups and discussion groups informed the DCE, which was administered during 2010. The final report was published in June 2010 by NCAS. This project informed NCAS about the value to NHS organisations of clinical performance support services.

**Outcome and Translation:** The results of this study can be used to assess the value for money of NCAS’s service, and can inform future changes to the range of services which they provide.

**Start Date:** April 2009

**Duration of Project:** 1 year
**Publications:**


**Other Dissemination Activities:**


Project No: MBV3.3

Project Title: Spending wisely: investigating survey mode effects in discrete choice experiment responses.

Grant Applicants / Principal Investigators (place of work): Watson, V., Ryan, M. (HERU); Porteous, T. (Academic Primary Care, University of Aberdeen).

HERU Investigators: Watson, V., Ryan, M.

HERU Research Theme: Methods of Benefit Valuation – Valuation Task and Context

Source of Funding and Total Awarded: Medical Research Council (MRC) (Methodology Research Panel) – £232,151 and Chief Scientist Office (CSO) CORE

Amount of HERU Funding: £232,151

Objectives:
To investigate the effect of survey mode on responses to a survey of the general population about their preferences for health care.

Outline:
We compared four survey modes: internet panel survey, mail survey, mail invitation to complete an internet survey and in-person interviews and compared responses to a survey designed to elicit preferences of a healthcare ‘good’ likely to be relevant to all members of the population: the use of community pharmacies for managing minor illness. Preference data were collected using a DCE. For each mode, we considered:

(1) How representative of the population were respondents to each mode?
(2) Did respondents’ preferences and willingness to pay vary across modes?
(3) Could statistical techniques be used to take account of differences in respondent characteristics?
(4) Did response validity vary across modes?

Outcome and Translation:
The mail invitation to complete an internet survey was not taken forward to the main study after an extremely low response rate to the pilot. None of the modes were representative of the general population. Each mode differed from the general population in different ways. For example, while respondents to the mail survey were older, on average, than the general population, respondents to the internet panel surveys were younger. Respondents’ preferences and willingness to pay differed across modes. Response validity also differed across modes. The results provide researchers with a characterisation and quantification of the advantages and disadvantages of each mode and thus allow them make an informed decision about which mode(s) to use in their research.

Start Date: February 2012

Duration of Project: 30 months
Publications:


Other Dissemination Activities:


Methods of Benefit Valuation

Project No: MBV3.4
Completed

Project Title: Integrating monetary and non-monetary approaches to assessing shared, plural and cultural values of ecosystems.

Grant Applicants / Principal Investigators (place of work): Pinard, M. (School of Biological Sciences, University of Aberdeen); Kentar, J. (Aberdeen Centre for Environmental Sustainability, University of Aberdeen); Watson, V. (HERU).

HERU Investigators: Watson, V., Ryan, M.

HERU Research Theme: Methods of Benefit Valuation – Valuation Task and Context

Source of Funding and Total Awarded: Birmingham City University as part of a Natural Environment Research Council – £323,012 and Chief Scientist Office (CSO) CORE

Amount of HERU Funding: £5,000

Objectives: This project aims to establish a clear understanding of shared values in the context of valuing nature and provide a means to assess these for decision-making at multiple scales. The research aims to evaluate the extent to which shared, plural and cultural values of the environment differ from individual values, and how they can be elicited.

Outline: By improving our understanding of the differences between individual, shared, plural and cultural values, and how to assess them, this research will provide policy-makers with the evidence and tools necessary to give social impacts more robust consideration in future policy decisions. The project includes three deliberative monetary- and non-monetary valuation case studies assessing the value of ecosystem services (the benefits of ecosystems to human well-being). These consider how social processes might shape shared values, and will test the merit of different monetary and non-monetary techniques for capturing these values. Although the project is largely framed around ecosystems and biodiversity, it will also review shared values around health and the project outcomes are expected to be valuable to all fields requiring social-economic valuation of non-marketed goods.
Outcome and Translation: Shared values are different from individual values and elicitation of shared values can have substantial advantages over conventional individual valuation. The ethical, moral and justice dimensions of many environmental issues necessitate approaches that allow for the elicitation of shared and plural values. However, there is widespread conflation and diversity of ways in which shared, plural, cultural and social values are used, but they are rarely conceptualised and often they are used interchangeably.

A mixed method approach is required to elicit the multiple dimensions of shared values. Deliberative and social learning processes can help people understand the values of others and can lead to increased sharing of values or greater acceptance of the decisions that emerge from such processes.

Start Date: May 2012
Duration of Project: 19 months
**Publications:**


Kenter, J.O. (2014) 'Integrating monetary and non-monetary approaches to the assessment of shared, plural and cultural values of ecosystem services', PhD Thesis, University of Aberdeen. 2014. [Ryan, M. was a PhD supervisor.]


**Other Dissemination Activities:**

*Denotes published after end of Review period on 31 October 2016.*

A comparison of discrete choice experiments and best–worst scaling methods to generate health utility indexes.

Health utility indices (HUIs) are widely used in economic evaluation. The best–worst scaling (BWS) method is used to value dimensions of HUIs. However, little is known about the properties of this method. We investigate the validity of the BWS method to develop HUI, comparing it to another ordinal valuation method, the discrete choice experiment (DCE). Using a parametric approach we find a low level of concordance between the two methods, with evidence of preference reversals. BWS responses are subject to decision biases, with significant effects on individuals’ preferences. Non-parametric tests indicate BWS data has lower stability, monotonicity and continuity compared to DCE data, suggesting the BWS provides lower quality data.

For both theoretical and technical reasons, practitioners should be cautious both about using the BWS method to measure health-related preferences, and about using HUI based on BWS data. Given existing evidence it seems that the DCE method is a better method, at least because its limitations (and measurement properties) have been extensively researched.


*Denotes published after end of Review period on 31 October 2016.
Methods of Benefit Valuation

Project No: MBV3.6
Completed

Project Title: Rethinking ‘the different perspectives that can be used when eliciting preferences in health’.

Grant Applicants / Principal Investigators (place of work): Tsuchiya, A. (ScHARR, University of Sheffield); Watson, V. (HERU).

HERU Investigators: Watson, V.

HERU Research Theme: Methods of Benefit Valuation – Valuation Task and Context

Source of Funding: Chief Scientist Office (CSO) CORE

Objectives: To rethink the Dolan, Olsen, Menzel and Richardson (DOMR) framework of perspective that can be used when eliciting preferences in health.

Outline: The 2003 Health Economics paper ‘An inquiry into the different perspectives that can be used when eliciting preferences in health’ presents a conceptual framework of six perspectives along two dimensions: preferences (personal, social and socially inclusive personal) and context (ex ante and ex post). We rethink this framework by asking four questions concerning: the patient, or the user of the treatment; the payer of the treatment; and the assessor of the value of treatment; and the timing of the illness and the nature of its risk. These questions refine the preference and context dimensions, and leads to the identification of perspectives not classified by the original framework. We propose an extended framework with five preferences (personal, non-use, proxy, social and socially inclusive personal) and five contexts (one of which is ex post and four ex ante), resulting in 22 possible perspectives.

Outcome and Translation: We show that the DOMR framework is imprecise and incomplete in both the preference and context dimensions. Our extended five-by-five framework will facilitate comparisons across empirical studies with more clarity at the conceptual level. Our extended framework has better coverage to accommodate the expanded range of contexts in which preference elicitation is applied.

Start Date: October 2014

Duration of Project: 2 years

Publications: Tsuchiya, A. and Watson, V. (2016) Re-thinking ‘the different perspectives that can be used when eliciting preferences in health’, Sheffield: School of Health and Related Research (ScHARR), University of Sheffield.

<table>
<thead>
<tr>
<th><strong>Project No:</strong></th>
<th>MBV3.7</th>
<th><strong>In Progress</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Project Title:</strong></td>
<td>Are responses to discrete choice experiments coherent, arbitrary or coherently arbitrary?</td>
<td></td>
</tr>
<tr>
<td><strong>Grant Applicants / Principal Investigators</strong> <em>(place of work):</em></td>
<td>Watson, V. (HERU).</td>
<td></td>
</tr>
<tr>
<td><strong>HERU Investigators:</strong></td>
<td>Watson, V, Ryan, M., Norwood, P.</td>
<td></td>
</tr>
<tr>
<td><strong>HERU Research Theme:</strong></td>
<td>Methods of Benefit Valuation – Valuation Task and Context</td>
<td></td>
</tr>
<tr>
<td><strong>Source of Funding:</strong></td>
<td>Chief Scientist Office (CSO) CORE</td>
<td></td>
</tr>
<tr>
<td><strong>Objectives:</strong></td>
<td>To investigate framing and ordering effects in DCE responses.</td>
<td></td>
</tr>
<tr>
<td><strong>Outline:</strong></td>
<td>This study investigates if responses to a discrete choice experiment are based on well-defined preferences. We compare responses to the same DCE for treatment across three different illnesses that differ in severity. We explore if preferences are coherent, i.e. a stronger preference for treatment for more severe illnesses. We also explore if preferences differ depending on the order in which the illnesses were presented.</td>
<td></td>
</tr>
<tr>
<td><strong>Start Date:</strong></td>
<td>January 2013</td>
<td></td>
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<tr>
<td><strong>Duration of Project:</strong></td>
<td>4 years</td>
<td></td>
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<tr>
<td><strong>Project Phase:</strong></td>
<td>☐ ☐ ☐</td>
<td></td>
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<tr>
<td><strong>Publications:</strong></td>
<td>–</td>
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</tr>
<tr>
<td><strong>Other Dissemination Activities:</strong></td>
<td>–</td>
<td></td>
</tr>
</tbody>
</table>
**Project No:** MBV3.8  
**Project Title:** Value transfer analysis in health care.  
**Grant Applicants / Principal Investigators (place of work):** Gerard, K. (University of Southampton); Watson, V. (HERU).  
**HERU Investigators:** Watson, V.  
**HERU Research Theme:** Methods of Benefit Valuation – Valuation Task and Context  
**Source of Funding:** Chief Scientist Office (CSO) CORE  
**Objectives:** To explore the feasibility of values transfer using stated preference elicited values in health care.  
**Outline:** This study considered the feasibility and potential of transferring stated preference values elicited in one context to value healthcare services provided in a different context. This study considered this using a case study to transfer values for pharmacy services geographically between Hampshire and the whole of the UK. The study explored the stages of a value transfer analysis and the (additional) data required to undertake a value transfer. The study provided insight into the potential transferability of healthcare values in the context of primary care.  
**Start Date:** April 2013  
**Duration of Project:** 4 years  
**Project Phase:**  
**Publications:** –  
**Other Dissemination Activities:** –
## Project No: MBV3.9  In Progress

### Project Title:
Gatekeeping in intensive care: understanding and improving the decision-making process surrounding admission to the intensive care unit.

### Grant Applicants / Principal Investigators (place of work):

### HERU Investigators:
Ryan, M., Krucien, N.

### HERU Research Theme:
Methods of Benefit Valuation – Valuation Task and Context

### Source of Funding and Total Awarded:
National Institute for Health Research (NIHR), Health Technology Assessment (HTA) Programme – £703,118, University of Aberdeen and Chief Scientist Office (CSO) CORE £104,433

### Amount of HERU funding:
£104,433

### Objectives:
Investigating how clinicians and outreach nurses make decisions about admitting a patient to intensive care.

### Outline:
A discrete choice experiment (DCE) is being used to establish factors determining consultants’ and outreach nurses’ referrals to intensive care units. Attributes for the DCE have been established through literature reviews, qualitative interviews and ethnographic research. They are: age of patient; health status; current situation on ward; views of other professionals; and family views. Data is currently being collected.

### Start Date:
January 2015

### Duration of Project:
3 years

### Project Phase:

<p>| | |</p>
<table>
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### Publications:
–

### Other Dissemination Activities:
–
Methods of Benefit Valuation

Project No: MBV3.10  In Progress

Project Title: PhD: Healthcare preferences and deliberation: the citizen’s perspective.

Grant Applicants / Principal Investigators (place of work): Sakowsky, R., (PhD Student), Ryan, M. (HERU); Entwistle, V. (HSRU, University of Aberdeen).

HERU Investigators: Sakowsky, R., Ryan, M.

HERU Research Theme: Methods of Benefit Valuation – Valuation Task and Context

Source of Funding and Total Awarded: Gavin Mooney PhD Studentship (via University of Aberdeen Development Trust) and the University of Sydney – £65,820 and Chief Scientist Office (CSO) CORE

Amount of HERU Funding: £65,820

Objectives:
The PhD’s impetus is influenced by Gavin Mooney’s observation that healthcare economics sees the patient not as a citizen, but as a consumer. The question of what the public wants from its healthcare system is thus mainly addressed by presenting a series of self-interested choices. An individual’s status as a political agent, with concerns relating to considerations of justice, fairness, and equality, is thus being neglected. This self-interested perspective is also largely oblivious to the collective nature of political decision-making and the deliberative dynamics that emerge from situations in which participants in a political debate have to justify and explain their preferences to each other.

Outline: Thesis Plan – To address these issues, the thesis will be split into four interconnected parts:
(1) A review of the current state of health economic preference research with a consideration of how such methods have considered deliberative processes and community/citizens’ preferences.
(2) A philosophical analysis of the normative and epistemological differences between preference research based on the self-interest of individuals, and more deliberative and communitarian approaches.
(3) A Citizens’ Jury will be conducted, concerned with the controversial issue of disinvestment in mammography screening. Using deliberative methods this study will yield insights into not only the what, but also the why of people’s values in this regard, and the potential causes of participants changing their minds.
(4) An empirical study applying deliberative methods within a health economic preference elicitation study.

Start Date: September 2015

Duration of Project: 3 years
Project Phase:

Publications:

Other Dissemination Activities:  


Health Information Processing
**Project No:** MBV4.1  
**Completed**

**Project Title:** PhD: Do I care or do I not? – An empirical assessment of decision heuristics in discrete choice experiments.

**Grant Applicants / Principal Investigators (place of work):** Heidenreich, S. (PhD Student), Ryan, M., Watson, V. (HERU); Phimister, E. (Economics, University of Aberdeen Business School).

**HERU Investigators:** Heidenreich, S., Ryan, M, Watson, V.

**HERU Research Theme:** Methods of Benefit Valuation – Health Information Processing

**Source of Funding and total rewarded:** Institute of Applied Health Science (IAHS), University of Aberdeen Flagship PhD Studentship – £76,871 and the Chief Scientist Office (CSO) CORE

**Amount of HERU Funding:** £76,871

**Objectives:** To improve the validity of Discrete Choice Experiments.

**Outline:** Discrete choice experiments (DCEs) are widely applied by health economists to elicit individuals’ preferences for healthcare services. The analysis of DCE data assumes that respondents consider and trade all attributes of the healthcare service under valuation when completing the hypothetical choice tasks. Over the last ten years, this assumption has been questioned and several studies suggest that respondents may ignore attributes as a simplifying choice heuristic. This PhD (1) investigates the presence of such decision heuristics in DCE responses, (2) explores causes of such behaviour and (3) evaluates methods to determine if a respondent used a particular heuristic.

Respondents are found to ignore DCE attributes and accounting for such behaviour may improve the validity of estimates. Current approaches assume that ignoring attributes is a heuristic to simplify choices. However, this PhD demonstrated that attributes may be ignored because they are not valued. Approaches that do not distinguish between non-valuation and heuristic are found to be potentially misleading. Furthermore, whilst respondents had difficulty reporting their information processing strategy, statistical methods could not distinguish between preference and heuristic. Future research could use process tracking techniques (e.g. eye-tracking and think aloud), pre-piloting and other qualitative methods (e.g. interviews) to better understand decision-making heuristics. The PhD also found that respondents’ use of heuristics may be caused by either a ‘too simple’ or ‘too difficult’ DCE design.

**Start Date:** October 2012

**Duration of Project:** 4 years


<table>
<thead>
<tr>
<th><strong>Project No:</strong></th>
<th>MBV4.2</th>
<th><strong>In Progress</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Project Title:</strong></td>
<td>Using induced experiments to infer decision making strategies in discrete choice experiments.</td>
<td></td>
</tr>
<tr>
<td><strong>Grant Applicants / Principal Investigators (place of work):</strong></td>
<td>Luchini, S. (University of Aix-Marseille); Watson, V. (HERU).</td>
<td></td>
</tr>
<tr>
<td><strong>HERU Investigators:</strong></td>
<td>Watson, V.</td>
<td></td>
</tr>
<tr>
<td><strong>HERU Research Theme:</strong></td>
<td>Methods of Benefit Valuation – Health Information Processing</td>
<td></td>
</tr>
<tr>
<td><strong>Source of Funding:</strong></td>
<td>Chief Scientist Office (CSO) CORE</td>
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<tr>
<td><strong>Objectives:</strong></td>
<td>To investigate decision making strategies used by DCE respondents.</td>
<td></td>
</tr>
<tr>
<td><strong>Outline:</strong></td>
<td>This study investigates the decision making strategies used by respondents when completing a discrete choice experiment (DCE). We address this question using an experimental economics technique: an induced value experiment. Our results indicate that a large proportion of respondents do not make pay-off (utility) maximising choices. We investigate the presence of satisficing behaviour and other non-utility maximising decision rules in both hypothetical and incentivised choices.</td>
<td></td>
</tr>
<tr>
<td><strong>Start Date:</strong></td>
<td>April 2013</td>
<td></td>
</tr>
<tr>
<td><strong>Duration of Project:</strong></td>
<td>48 months</td>
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<td><strong>Project Phase:</strong></td>
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<td><strong>Publications:</strong></td>
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<tr>
<td><strong>Other Dissemination Activities:</strong></td>
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</tbody>
</table>
Using eye tracking methods to understand decision-making heuristics in discrete choice experiments.

Outline:

Discrete choice experiments (DCEs) are widely applied in economics to study choice behaviour. Current research is limited in terms of understanding how individuals process information and make choices. We explore how novel eye-tracking methods can provide insight into decision-making processes underlying choices, as well as the implications for choice data analysis. Initial results show evidence of (i) top-to-bottom, (ii) left-to-right and (iii) first-to-last order biases in processing multi-attribute information. Experimental factors – whether attributes are defined as ‘best’ or ‘worst’, choice task complexity and attribute ordering – also influence information processing. Combining eye-tracking and choices data, the random regret minimisation (RRM) choice modelling framework was able to link participants’ information search and choices behaviour. New choice models describing both processes and outcomes of decision making are expected to provide a better account of individuals’ preferences.
Other Dissemination Activities:  


Ryan, M. (2015) 'Using eye-tracking to inform decision-making processes in choice based tasks: an application to lifestyle choices to reduce obesity', CHS/IPH Seminar Series, O’Brien Institute for Public Health & Department of Community Health Sciences, Cumming School of Medicine, University of Calgary, 27 February 2015.

How do individuals respond to DCEs? Alternatives to utility maximisation.


Methods of Benefit Valuation – Health Information Processing

Chief Scientist Office (CSO) CORE and University of Aberdeen

To explore alternatives to utility maximisation to explain how individuals respond to DCEs.

Discrete choice experiments (DCEs) are extensively used in health economics to elicit preferences, establish trade-offs and infer willingness to pay, and predict demand. Whilst analysis of DCE responses assumes subjects make utility-maximising choices, there is evidence that patients may adopt other decision making strategies. Current work is exploring whether respondents maximise utility or minimise regret when responding to DCEs; we are using existing DCE data sets applied to the area of cancer. Using a DCE data set from genetic testing of cancer risk we first compare the standard random utility maximisation (RUM) model with the recently proposed random regret minimisation (RRM) model. We compare the predictive performance, estimated choice elasticities, and marginal willingness-to-pay values. Second, we develop a new combined model that uses a latent class approach to simultaneously identify individuals’ preferences and decision rule. This allows us to relax the assumption implicit in previous models that all respondents use the same decision rule. We also estimate if individuals’ characteristics predict their decision rule. We find evidence of regret-based decision making in respondents’ choices with regret-based choices increasing the influence of temporal aspects of cancer-related procedures, such as waiting time. While utility-based and regret-based approaches perform equally well in terms of ability to predict observed choices (≈ 83%), allowing for regret-based choices increases estimated willingness-to-pay values. Having a high level of education decreases the probability of making regret-minimising decisions.
Other Dissemination Activities:  


**Methods of Benefit Valuation**

**Project No:** MBV4.5  
**In Progress**

**Project Title:** HERU Postdoctoral Fellowship: Methodological advancement of discrete choice experiments.

**Principal Investigator:** Heidenreich, S. (HERU).

**HERU Investigators:** Heidenreich, S., Ryan M., Watson V.

**HERU Research Theme:** Methods of Benefit Valuation – Health Information Processing

**Source of Funding and Total Awarded:** Health Economics Research Unit Postdoctoral Research Fellowship – £77,047

**Amount of HERU Funding:** £77,047

**Objectives:**

1. **To explore the methodological advancement of Discrete Choice Experiments (DCEs).**
2. **To apply DCEs in projects conducted by HERU.**
3. **To teach the conduct of DCEs.**
4. **To prepare an application for an externally funded research fellowship.**

**Outline:**

1. **The Methodological advancement of discrete choice experiments** – Research papers concerned with respondents’ use of simplifying decision heuristics in DCEs will be prepared and submitted for publication. These papers result from a PhD conducted by the principal investigator. Following this, the fellowship will explore differences in respondents’ understanding and valuation of healthcare costs in DCEs. This is important, because healthcare costs are used to derive monetary welfare measures of healthcare services for cost–benefit analysis and subsequent policy advice.

2. **Application of DCE in projects conducted by HERU** – Applied DCEs (e.g. as part of the MUNROS project) will be conducted during the fellowship. These DCEs aim to provide policy advice and are used to explore further methodological issues of DCEs.

3. **The Teaching of DCE** – The principal investigator of the fellowship will teach at HERU’s annual expert workshop about the conduct of DCEs and coordinate the updating of the course material.

4. **Preparation of an application for a research fellowship** – An application for an externally funded research fellowship will be prepared. This application will be based on the methods research conducted during the fellowship and will propose to bring this research forward in future studies.
Start Date: June 2016
Duration of Project: 24 months
Project Phase: 
Publications: –
PART 02

Publications and Presentations

HERU Publications and Presentations 2010–2016
Publications and presentations

We published 285 articles in peer-reviewed journals over the period of the Review. These are summarised in the table below (another nine articles were published from the end of the Review period at 31st October 2016 until the report was published in January 2017). We have published in the leading health economics journals (such as the *Journal of Health Economics* and *Social Science and Medicine*), the leading economics journals (such as *Economic Journal* and *Economics Letters*) and the leading clinical journals (such as *The Lancet*).

<table>
<thead>
<tr>
<th>Main Health Economics journals</th>
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<tbody>
<tr>
<td><em>Health Economics</em></td>
<td>17</td>
</tr>
<tr>
<td><em>Journal of Health Economics</em></td>
<td>3</td>
</tr>
<tr>
<td><em>Social Science and Medicine</em></td>
<td>10</td>
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</tbody>
</table>

| Other HE journals             | 17    |


| *Health Technology Assessment* | 30    |

| Clinical/Health Service journals | 180   |

| Other                          | 1     |

We have also been well represented at leading conferences, and have delivered 487 presentations over the period of the Review (with another 5 between the end of the Review and the report being published). Presentations over the Review period are summarised by type in the table below. We have presented at major healthcare and health economics conferences, policy events and workshops. HERU staff have also participated in a number of public engagement events (reported in Volume 1).

<table>
<thead>
<tr>
<th>Invited presentations</th>
<th>37</th>
</tr>
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<tbody>
<tr>
<td>Policy presentations</td>
<td>25</td>
</tr>
<tr>
<td>Workshop presentations</td>
<td>44</td>
</tr>
<tr>
<td>Conference presentations</td>
<td>242</td>
</tr>
<tr>
<td>Seminar presentations</td>
<td>64</td>
</tr>
<tr>
<td>Other presentations</td>
<td>10</td>
</tr>
<tr>
<td>Poster presentations</td>
<td>65</td>
</tr>
</tbody>
</table>
HERU Publications 2010 – 2016

PEER-REVIEWS JOURNAL ARTICLES

2010


2011


2012


2013


2014


2015


**2016**


*Denotes published after end of Review period on 31 October 2016.


Ludbrook, A. (2016) ‘Commentary: Cost of alcohol: better data will be justified if it is put to better use’, Addiction [Epub ahead of print].

*Denotes published after end of Review period on 31 October 2016.


Milders, M., Bell, S., Lorimer, A., Jackson, H. and McNamee, P. (2016) ’Improving access to a multi-component intervention for caregivers and people with dementia’, *Dementia* [Epub ahead of print].


Pol, M. van der, Hennessy, D. and Manns, B. (2016) ’The role of time and risk preferences in adherence to physician advice on health behavior change’, *European Journal of Health Economics* [Epub ahead of print].


*Denotes published after end of Review period on 31 October 2016.


2017

Glazener, C., Breeman, S., Elders, A., Hemming, C., Cooper, K., Freeman, R., Smith, A., Hagen, S., Montgomery, I., Kilonzo, M., Boyers, D., McDonald, A., McPherson, G., MacLennan, G. and Norrie, J. (2017) 'Clinical effectiveness and cost-effectiveness of surgical options for the management of anterior and/or posterior vaginal wall prolapse: two randomised controlled trials within a comprehensive cohort study – results from the PROSPECT Study', Health Technology Assessment, 20(95).*

*Denotes published after end of Review period on 31 October 2016.
BOOKS AND BOOK CHAPTERS

2010


2011


2012


2013


2014

N/A

2015


2016

REPORTS

2010


2011


2012


Khan, N.U., Quayyum, Z., Quayyum, T., Nasreen, H., Mahmud, S.N. and Ensor, T. (2012) Costs of providing maternal, new born and child health care: estimates from BRAC’s IMNCS programme in rural Bangladesh, Bangladesh: Research and Evaluation Division, BRAC.


2013


2014


2015


2016


Scotland, G., Hernández, R., Robertson, C., Scott, N. and Fraser, C. (2016) Radium-223 dichloride for treating hormone-relapsed prostate cancer with bone metastases (men who have not received docetaxel and for whom docetaxel is contraindicated or not suitable): ERG critique of the company submission for reconsideration of current CDF technologies under the new proposed CDF criteria. Report from Aberdeen Health Technology Assessment Group to NICE Appraisal Committee.


PHDS AWARDED


OTHER PUBLICATIONS

2010


2011


2012


2013


2014


2015


2016


Tsuchiya, A. and Watson, V. (2016) Re-thinking ‘the different perspectives that can be used when eliciting preferences in health’, Sheffield: School of Health and Related Research (ScHARR), University of Sheffield.
HERU BRIEFING PAPERS AND POLICY BRIEFS

2010


2011


2012


2013


2014


2015


2016


**Kilonzo, M.** (2016) 'Gallstones: wait and see or treat?', HERU Policy Brief, University of Aberdeen, April 2016.


HERU Presentations 2010–2016

INVITED PRESENTATIONS

2010


Ryan, M. (2010) 'How is conjoint analysis being applied in health?' 3rd Conjoint Analysis in Health Conference, Newport Beach, California, USA, October 2010.


2011


2012


2013

N/A

2014


2015


2016

N/A
CONFERENCE PRESENTATIONS

2010


2011


2012


2013


**2014**


Pol, M. van der (2014) 'Understanding inequalities: the role of time preference', *HERU Conference Celebrating 40 Years of Health Economics at Aberdeen University: a Tribute to Professor Gavin Mooney*, University of Aberdeen, Aberdeen, 21 October 2014.


Watson, V. (2014) 'Using laboratory experiments to test valuation methods', *HERU Conference Celebrating 40 Years of Health Economics at Aberdeen University: a Tribute to Professor Gavin Mooney*, University of Aberdeen, Aberdeen, 21 October 2014.


2015


Zvoníčková, M., Svobodová, H., Vlček, F. and the MUNROS Team (led by Elliott, R. and Bond, C.), (2015) 'Expanding role of paramedical staff in the Czech Republic and in selected European countries', Way to Modern Nursing XVII, Motol Teaching Hospital, Prague, Czech Republic, 17 September 2015.

2016


Aoki, Y. and Santiago, L. (2016) 'Education health and fertility of UK immigrants: the role of language skills', 25th European Workshop on Econometrics and Health Economics, Department of Business and Economics, Econometrics Group and COHERE, University of Southern Denmark, Nyborg, Denmark, 31 August-3 September 2016.


*Denotes published after end of Review period on 31 October 2016.


Tsuchiya, A. and Watson, V. (2016) 'Re-thinking the different perspectives that can be used when eliciting preferences in health', Health Economists’ Study Group (HESG) Meeting, University of Manchester, Manchester, England, 6–8 January 2016.
OTHER PRESENTATIONS

2010
N/A

2011


2012


2013
N/A

2014


Ejebu, O.-Z. (2014) 'Minimum unit pricing (MUP) for alcohol: who are the predominant purchasers of cheap alcohol in Scotland?', PechaKucha Aberdeen (Public engagement), Belmont Filmhouse, Aberdeen, 2 December 2014.

2015


2016


*Denotes published after end of Review period on 31 October 2016.


2011


2012


2013


2014


2015


Hoddinott, P. on behalf of the BIBS Study Team (Ludbrook, A. and Farrar, S. are members of the BIBS Study Team) (2015) 'Benefits of Incentives for Breastfeeding and Smoking cessation in pregnancy (BIBS): a mixed-methods study to inform trial design', Researching Complex Interventions in Health: the State of the Art, Rougemont Hotel, Exeter, 14–15 October 2015.


2016


**SEMINAR PRESENTATIONS**

2010


2011


**Elliott, R.** (2011) 'Local labour markets, nurse recruitment and retention and skill mix in English hospitals', *Monash University*, Melbourne, Australia, April 2011.


**Ryan, M.** (2011) 'Valuing the patient experience in economic evaluations: going beyond QALYs', *Division of Health Sciences*, University of Warwick, Coventry, England, October 2011.


**2012**


**Ryan, M.** (2012) 'Discrete choice experiments in health economics: an application to lifestyle interventions', *Community Health Sciences, Centre of Health Economics Research*, University of Southern Denmark, Odense, Denmark, April 2012.

**Ryan, M.** (2012) 'Discrete choice experiments in health economics: an application to lifestyle interventions', *Community Health Sciences Seminar*, University of Calgary, Calgary, Canada, April 2012.

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2011


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2013


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2010


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