

contents

PART 1: PROJECT SUMMARIES – COMPLETED AND IN-PROGRESS*

WORKFORCE AND ORGANISATION OF CARE (WOC)

WOC1 Workforce and Organisational Behaviour

WOC1.1	22
PhD: Studies of the job satisfaction and labour supply of hospital consultants.	
WOC1.2	23
A study of nurse labour markets: preferences for pecuniary and non-pecuniary rewards.	
WOC1.3	25
PhD: Personal and professional motivation and the supply of health care.	
WOC1.4	27
Testing the validity of discrete choice experiment responses for predicting workforce behaviour.	
WOC1.5	28
Payment by results: key outcomes and variations across HRGs, providers and patients in 2006/07 and 2007/08.	
WOC1.6	30
How to attract health workers to rural areas in low- and middle-income countries: findings from discrete choice experiments.	
WOC1.7	33
The staff market forces factor component of the resource allocation weighted capitation formula.	
WOC1.8	35
Impact of revalidation on clinical and non-clinical activity.	
WOC1.9	37
An examination of changes introduced in the Quality and Outcomes Framework in 2006/07 and their effects on the delivery of primary care in Scotland.	
WOC1.10	39
Attitudes to regulatory guidelines among clinicians in three countries: the UK dimension.	
WOC1.11	41
The role of pay competitiveness and nurse agency staffing.	
WOC1.12	42
Understanding push-pull factors in medical careers-decision making.	

WOC1.13	44
HERU Postdoctoral Fellowship: Impact of job satisfaction, mental illness and absenteeism in the public sector.	
WOC1.14	45
PhD: A mixed-methods study of career-decision making in Foundation Programme doctors.	
WOC1.15	46
MFF 2: Updating the staff Market Forces Factor.	

WOC2 Organisation and Performance

WOC2.1	48
PhD: Developing a needs-based resource allocation model for healthcare expenditure in Bangladesh.	
WOC2.2	50
EVEREST: Explaining the Variation in Epidemiology of Renal replacement therapy (RRT) outcomes through Expert opinion, Secondary data sources and Technology adoption.	
WOC2.3	52
PhD: NHS staff skills mix and local labour markets: the role of reward structures, shortages and competition in determining the mix of the NHS workforce.	
WOC2.4	54
Telemetric support self-monitoring of long-term conditions.	
WOC2.5	56
Data envelopment analysis: an application to investigate differences in performance in NHS Scotland.	
WOC2.6	58
Feasibility study of use of direct payments for informal care.	
WOC2.7	59
PhD: Government purchasing of health care from not-for-profit providers: a review of service level agreements in Malawi.	
WOC2.8	61
Eye care services in Scotland: did the Scots get it right?	
WOC2.9	63
The use of global position satellite tracking in wandering patients with dementia: feasibility study.	

WOC2.10	65
Evaluating the effect of free dental check-ups in Scotland.	
WOC2.11	66
APHID: Are 'potentially Preventable Hospitalisations' a valid InDicator of the quality and affordability of primary and community care in Australia?	
WOC2.12	68
An evaluation of the effect of informal care targeting the elderly on elderly mortality.	
WOC2.13	71
Preferences for primary care delivery in Portugal.	
WOC2.14	73
ASH: Avoidable Scottish Hospitalisations.	
WOC2.15	75
Using discrete choice experiments to investigate optimal skill mix.	
WOC2.16	77
MUNROS: health care reform: the iMPact on practice, oUtcomes and costs of New roles for health pROfeSsionals.	
WOC2.17	81
Understanding healthcare professionals' and carers' perceptions of risk factors leading to crisis for people with dementia.	
WOC2.18	82
PhD: Enhancing quality in social care through economic analysis.	
WOC2.19	84
Health economic evaluation of the Lothian high demand service.	

HEALTH BEHAVIOR AND INEQUALITY (HBI)

HBI1 Understanding Health Behaviour

HBI1.1	88
PhD: Economic analysis of dietary and physical activity behaviours: consequences for obesity interventions (MRC Capacity Building PhD).	
HBI1.2	90
ICDC: Improving the efficient and equitable care of patients with chronic medical conditions; Interdisciplinary Chronic Disease Collaboration.	
HBI1.3	92
MRC Early Career Fellowship: The intergenerational transfer of eating habits, physical activity, behaviour and body composition, evidence from the UK.	

HBI1.4	95
PhD: Time preference for future health events.	
HBI1.5	97
EOPIC: Engaging with Older People to develop and deliver Interventions for the self-management of Chronic pain.	
HBI1.6	100
Investigating the Glasgow effect.	
HBI1.7	102
Socio-economic inequalities in health and behaviour: application of novel approaches to identify health inequalities in Scotland and England to inform policy.	
HBI1.8	104
TOPS: Technologies to support Older People at home: maximising personal and Social interaction.	
HBI1.9	106
Analysis of choice behaviour and potential mechanisms of change.	
HBI1.10	108
The socio-economic status and integration of immigrants in the UK: the role of language skills and education.	
HBI1.11	111
The nature and extent of food poverty/ insecurity in Scotland.	
HBI1.12	113
PhD: Economic aspects of food choice and its association with health inequalities in Scotland and the UK.	
HBI1.13	116
SanteMed: Measurement and determinants of inequalities in health and well-being in the Middle Eastern and North African region.	
HBI1.14	118
PhD: The role of time preference in the medical-decision making context.	
HBI1.15	120
PhD: Applying economic methods to optimise self-management.	
HBI1.16	122
PhD: Using insights into time preference and present bias to develop an intervention to improve adherence to exercise.	
HBI1.17	124
Food culture and dietary choice.	

HBI1.18	125
Modelling purchasing behaviour for alcohol.	
HBI1.19	126
The effect of early-life health shocks on later-life outcomes.	
HBI1.20	127
Mental health and the PATH midlife.	
HBI1.21	128
Time preferences and health behaviours.	

HBI2 Evaluating Health Behaviour Interventions

HBI2.1	132
An economic evaluation of obesity prevention for UK adults.	
HBI2.2	136
Local evaluation of Keep Well in Aberdeen city Community Health Partnership.	
HBI2.3	137
Economic appraisal of the choice and targeting of lifestyle interventions to prevent disease in deprived populations.	
HBI2.4	140
Smarter choices, smarter places programme.	
HBI2.5	141
Weigh Well: MRC IES Platform Grant, scoping and feasibility preparation for an RCT on post-partum weight loss.	
HBI2.6	143
An evaluation to assess the effectiveness of 'quit 4 U', a smoking cessation service in Dundee combining financial incentives and behavioural support.	
HBI2.7	145
Avoidable cost of alcohol project.	
HBI2.8	146
BeWel: The impact of a body-weight and physical activity intervention on adults at risk of developing colorectal adenomas.	
HBI2.9	148
Screening and brief interventions for alcohol misuse delivered in the community pharmacy setting: a pilot study.	

HBI2.10	149
Scoping study of the economic impact on the alcohol industry of pricing and non-price policies to regulate the affordability and availability of alcohol in Scotland.	
HBI2.11	150
Economic aspects of alcohol policy.	
HBI2.12	152
InegSante: Tackling inequalities in health and access to health care in African and Middle Eastern countries, challenges of measurement and explanation.	
HBI2.13	154
ROMEIO: Systematic reviews and integrated report on the quantitative and qualitative evidence base for the management of obesity in men.	
HBI2.14	158
PhD: An economic perspective of the social determinants of health and health inequalities in Malawi.	
HBI2.15	160
Study to analyse and evaluate health, social and environmental impact of a possible EU intervention on the protection of workers' health from risks related to exposure of environmental tobacco smoke.	
HBI2.16	161
BIBS: Benefits of Incentives for Breastfeeding and Smoking cessation – a platform study for a trial.	
HBI2.17	164
Implementation of a psychosocial programme of support and training for people with dementia and their family caregivers.	
HBI2.18	165
DEDIPAC: DEterminants of Diet and Physical Activity.	

HBI3 Design and Evaluation of Interventions

HBI3.1	168
MAmMOTH: MAintaining MuscuOskeleTal Health study.	
HBI3.2	170
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.	
HBI3.3	171
LIFT: Lessening the Impact of Fatigue: Therapies for inflammatory rheumatic diseases.	

ASSESSMENT OF TECHNOLOGIES (AOT)

AOT1 Technology Design Phase

AOT1.1	176
Development of practice-based, pharmacist-led management of chronic pain in primary care for evaluation by a randomised controlled trial.	
AOT1.2	178
The Glaucoma Screening Platform Study (GPS): Developing the intervention and outcome components for a proposed RCT on screening for open angle glaucoma.	
AOT1.3	180
FEST: feasibility study for a trial of proactive telephone support for breastfeeding women in disadvantaged areas provided by a specialised FEeding Support Team.	
AOT1.4	182
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.	
AOT1.5	184
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.	
AOT1.6	186
PETER-FEST: Proactive TELEphone caRe for breastfeeding women delivered by a dedicated FEeding Support Team in a rural community.	
AOT1.7	187
Is utilisation of a community pharmacy for provision of directing antivirals a feasible delivery model for hepatitis C treatment in substance misusers?	
AOT1.8	188
A model-based cost-effectiveness analysis of opportunistic screening for identifying (undetected) atrial fibrillation (AF).	
AOT1.9	189
Vitamin K supplementation to reduce falls in older people – a multicentre trial.	

AOT2 Technology Adoption Phase

AOT2.1	192
Technology Assessment Reviews (TARs) contract (2011–2016).	
AOT2.2	193
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.	
AOT2.3	195
STA: Eltrombopag for the treatment of chronic idiopathic (immune) thrombocytopenic purpura (ITP): a single technology appraisal.	
AOT2.4	197
STA: Denosumab for the prevention of osteoporotic fractures in post-menopausal women (Single Technology Assessment for NICE).	
AOT2.5	199
STA: Pazopanib for the first-line treatment of patients with advanced and/or metastatic renal cell carcinoma: a single technology appraisal.	
AOT2.6	201
TAR Project: Elucigene FH20 and LIPOchip for the diagnosis of familial hypercholesterolemia.	
AOT2.7	203
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.	
AOT2.8	205
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.	
AOT2.9	207
TAR Project: Collagenase clostridium histolyticum for treating Dupuytren's contracture.	
AOT2.10	209
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.	

AOT2.11	211
STA: Alirocumab for treating primary hypercholesterolaemia and mixed dyslipidaemia (Single Technology Assessment for NICE).	
AOT2.12	213
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).	
AOT2.13	215
Technology Assessment Reviews (TARs) contract (2016–2021)	
AOT2.14	216
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.	
AOT2.15	217
The Catheter Trial: Types of urethral catheter for reducing symptomatic urinary tract infections in hospitalised adults requiring short-term catheterisation: multicentre randomised controlled trial of antibiotic- and antiseptic-impregnated urethral catheters.	
AOT2.16	219
Improving the value of screening for diabetic macular oedema using surrogate photographic markers.	
AOT2.17	221
Cost-effectiveness of exercise training in older patients with heart failure.	
AOT2.18	223
FOCCUS: Pragmatic multicentre 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.	
AOT2.19	226
MUSICIAN: Managing Unexplained Symptoms (chronic widespread pain) In primary Care: Involving traditional and Accessible New approaches.	
AOT2.20	228
Improving maternal, neonatal and child survival: a partnership approach to achieve Millennium Development Goals in Bangladesh.	
AOT2.21	230
Screening for disorders of glucose regulation in cystic fibrosis.	

AOT2.22	231
EAGLE: Effectiveness, in Angle closure Glaucoma, of Lens Extraction.	
AOT2.23	233
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.	
AOT2.24	235
GATE: Glaucoma Automated Tests Evaluation: comparative study of new imaging technologies for the diagnosis of glaucoma.	
AOT2.25	238
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).	
AOT2.26	240
eTHoS: eiTher Haemorrhoidectomy or Stapled haemorrhoidopexy for haemorrhoidal disease: a pragmatic multicentre randomised controlled trial comparing stapled haemorrhoidopexy to conventional excisional haemorrhoidectomy.	
AOT2.27	242
STITCH: Surgical Trial In Traumatic interCerebral Haemorrhage.	
AOT2.28	244
Maintained physical activity and physiotherapy in the management of distal arm pain.	
AOT2.29	246
SIMS – PILOT: Single Incision Mini-Slings versus standard midurethral slings in surgical management of female stress urinary incontinence.	
AOT2.30	248
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.	
AOT2.31	250
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.	
AOT2.32	252
BSRBR-AS: British Society for Rheumatology Biologics Register in Ankylosing Spondylitis.	

AOT2.33	254
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.	
AOT2.34	256
VUE: Vault or Uterine prolapse surgery Evaluation: two parallel randomised controlled trials of surgical options for upper-compartment (uterine or vault) pelvic organ prolapse.	
AOT2.35	258
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.	
AOT2.36	260
MASTER: Male synthetic sling versus Artificial urinary Sphincter Trial for men with urodynamic stress incontinence after prostate surgery: Evaluation by Randomised trial.	
AOT2.37	261
HEALTH: Hysterectomy or Endometrial Ablation Trial for Heavy menstrual bleeding. A multicentre randomised controlled trial comparing laparoscopic supracervical hysterectomy with second-generation endometrial ablation for the treatment of heavy menstrual bleeding.	
AOT2.38	263
Got-it-trial: a pragmatic adaptive sequential placebo-controlled randomised trial to determine the effectiveness of glycerine triturate for retained placenta.	
AOT2.39	264
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.	
AOT2.40	265
REBALANCE: REview of Behaviour And Lifestyle interventions for severe obesity: AN evidenCE synthesis.	
AOT2.41	267
LENS: Lowering Events in Non-proliferative retinopathy in Scotland.	
AOT2.42	268
RAACENO: Reducing Asthma Attacks in Children using Exhaled Nitric Oxide as a biomarker to inform treatment strategy – a randomised controlled trial.	

AOT3 In-Use Technology Phase

AOT3.1	272
OTIS: Prospective collaborative study of patients with intestinal segments transposed into urinary tract following surgery for bladder cancer or benign end-stage bladder disease.	
AOT3.2	273
Prognosis and management of intracranial vascular malformations and non-traumatic intracerebral haemorrhage in adults.	
AOT3.3	274
The clinical effectiveness and cost-effectiveness of different surveillance mammography regimes after the treatment of primary breast cancer.	
AOT3.4	276
Optimal surveillance regimes for individuals with ocular hypertension (OHT): modelling and economic evaluation.	
AOT3.5	278
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.	
AOT3.6	280
Clinical and short-term NHS costs of maternal obesity for maternity services in Scotland.	
AOT3.7	282
Assessment of the cost-effectiveness of magnetic resonance including diffusion-weighted brain imaging in patients with transient ischaemic attack and minor stroke.	
AOT3.8	284
Frequency of visual field testing when monitoring patients newly diagnosed with glaucoma.	
AOT3.9	286
nAMD: Systematic review and economic modelling of optical coherence tomography (OCT) for the diagnosis, monitoring and guiding of treatment for neovascular Age-related Macular Degeneration.	
AOT3.10	288
Cost-effectiveness of fertility diagnosis and treatment in women of different BMI groups.	
AOT3.11	289
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.	

AOT3.12	291
Modelling the cost-effectiveness of adopting risk-stratified screening intervals within the national diabetic retinopathy screening programme in Scotland.	
AOT3.13	293
STA: Ezetimibe for treating primary (heterozygous-familial and non-familial) hypercholesterolaemia (Single Technology Assessment for NICE).	
AOT3.14	295
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.	
AOT3.15	297
INTERVAL: Investigation of NICE Technologies for Enabling Risk-Variable-Adjusted-Length dental recalls trial (pilot and follow-on study).	
AOT3.16	298
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.	
AOT3.17	300
EDNA: Early Detection of Neovascular Age-related macular degeneration.	
AOT3.18	301
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.	
AOT3.19	303
The PUrE RCT: The clinical and cost-effectiveness of surgical interventions for stones in the lower pole calyces of the kidney.	
AOT3.20	305
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.	
AOT3.21	307
TAR project: Surveillance following endovascular aortic aneurysm repair.	

AOT4 Broader Measures of Value

AOT4.1	310
PhD: Broadening the valuation space in health technology assessment: the case of monitoring individuals with ocular hypertension.	
AOT4.2	313
PhD: Elicitation and application of preference values in economics evaluation: case studies in reproductive health.	
AOT4.3	315
PhD: External validity of DCEs: a case study of dental care.	
AOT4.4	317
PhD: Exploring the role for patients' values in health technology assessment: a mixed methods approach.	
AOT4.5	319
PhD: Using existing data to incorporate broader measures of benefit in economic evaluation.	

METHODS OF BENEFIT VALUATION (MBV)

MBV1 Person-centred Care

MBV1.1	324
MRC/ESRC Postdoctoral Fellowship: Applying discrete choice experiments in pharmacy: applied and methodological issues.	
MBV1.2	326
What healthcare experiences matter to patients and how can we assign value to them for policy making purposes?	
MBV1.3	328
Improving the public health sector in South Africa: eliciting public preferences using a discrete choice experiment.	
MBV1.4	330
Public attitudes towards drug misuse and drug treatment strategies.	
MBV1.5	332
Patients' preferences for treatment of lower urinary tract symptoms: a discrete choice experiment.	
MBV1.6	334
A discrete choice experiment to value the personalisation of support for self-management of chronic pain.	

MBV1.7	336
Person-centred care.	

MBV2 External Validity

MBV2.1	340
Demand revelation in a multi-attribute discrete choice task.	
MBV2.2	342
Does an oath improve demand revelation in discrete choice experiments?	
MBV2.3	343
Task complexity and response certainty in discrete choice experiments.	
MBV2.4	344
External validity of contingent valuation: comparing hypothetical and real payments.	
MBV2.5	346
PhD: Assessment of the external validity of discrete choice experiment: an application in pharmacy.	

MBV3 Valuation Task and Context

MBV3.1	350
PhD: Testing methods to value health outcomes in low-income countries using contingent valuation and discrete choice experiment methods.	
MBV3.2	352
Investigation of the value placed on the National Clinical Assessment Service services by referrers in the National Health Service.	
MBV3.3	354
Spending wisely: investigating survey mode effects in discrete choice experiment responses.	
MBV3.4	356
Integrating monetary and non-monetary approaches to assessing shared, plural and cultural values of ecosystems.	
MBV3.5	359
Health state valuation using discrete choice experiments and best-worst scaling: a comparison of methods.	
MBV3.6	360
Re-thinking 'the different perspectives that can be used when eliciting preferences in health'.	

MBV3.7	361
Are responses to discrete choice experiments coherent, arbitrary or coherently arbitrary?	
MBV3.8	362
Value transfer analysis in health care.	
MBV3.9	363
Gatekeeping In intensive care: understanding and improving the decision-making process surrounding admission to the intensive care unit.	
MBV3.10	364
PhD: Healthcare preferences and deliberation: the citizen's perspective.	

MBV4 Health Information Processing

MBV4.1	368
PhD: Do I care or do I not? – An empirical assessment of decision heuristics in discrete choice experiments.	
MBV4.2	370
Using induced experiments to infer decision-making strategies in discrete choice experiments.	
MBV4.3	371
Using eye-tracking methods to understand decision-making heuristics in discrete choice experiments.	
MBV4.4	373
How do individuals respond to DCEs? Alternatives to utility maximisation.	
MBV4.5	375
HERU Postdoctoral Fellowship: Methodological advancement of discrete choice experiments.	

***PROJECTS IN-PROGRESS**

-  **Initial Phase:** Literature review, scoping the empirical work, obtaining data
-  **Analytical Phase:** Empirical and theoretical analysis
-  **Final Phase:** Production and delivery of the final report and associated dissemination

PART 2: PUBLICATIONS AND PRESENTATIONS

HERU PUBLICATIONS 2010–2016

Peer-Reviewed Journal Articles.....	379
Books and Book Chapters.....	407
Reports.....	408
PhDs Awarded	415
Other Publications	416
HERU Briefing Papers and Policy Briefs	418

HERU PRESENTATIONS 2010–2016

Invited Presentations.....	421
Conference Presentations.....	425
Other Presentations	446
Poster Presentations	448
Seminar Presentations.....	455
Workshop presentations	460
Policy Presentations.....	464

Workforce and Organisation of Care (WOC)



We are the only health economics group with a theme dedicated to researching workforce issues.



Workforce and Organisational Behaviour



WOC1 Workforce and Organisational Behaviour

Project No:	WOC1.1	Completed
Project Title:	PhD: Studies of the job satisfaction and labour supply of hospital consultants.	
Grant Applicants / Principal Investigators (place of work):	Ikenwilo, D. (PhD student), Scott, A., Sutton, M., Skåtun, D., Elliott, B. (HERU).	
HERU Investigators:	Ikenwilo, D., Scott, A., Sutton, M., Skåtun, D., Elliott, B.	
HERU Research Theme:	Workforce and Organisation of Care – Workforce and Organisational Behaviour	
Source of Funding:	Chief Scientist Office (CSO) CORE	
Objectives:	This PhD thesis analysed the pecuniary and non-pecuniary factors that motivate consultants in their supply of labour to the National Health Service.	
Outline:	Consultants are part of a team of medical and non-medical personnel involved in the production of healthcare and are paid to deliver a specific minimum number of hours of their labour to the National Health Service (NHS) in the United Kingdom (UK). This thesis explored issues around motivation, and specifically looks at the effects of pay and non-pay factors on the labour supply of consultants in NHS Scotland, using data from two national surveys of consultants conducted in Scotland. It is written as three distinct empirical chapters looking at determinants of job satisfaction, and the supply of (usual and extra) labour by consultants in NHS Scotland before and after new consultant contracts were introduced.	
Outcome and Translation:	PhD Awarded in November 2010. This research found that pay increases for consultants only result in small increases in hours worked. Those currently working above the median number of hours are much less responsive to changes in earnings.	
Start Date:	September 2005	
Duration of Project:	5 years (Part-Time)	
Publications:	Ikenwilo, D. (2010) 'Studies of the job satisfaction and labour supply of hospital consultants', <i>PhD Thesis</i> , University of Aberdeen, 2010. Ikenwilo, D., Scott, A. (2007) 'The effects of pay and job satisfaction on the labour supply of hospital consultants', <i>Health Economics</i> , vol 16 (12), 1303–1318.	
Other Dissemination Activities:	PhD and internal HERU seminars and conference presentation (iHEA Beijing, 2009). Ikenwilo, D. (2009) 'Longitudinal data analyses of normal and extra contracted hours among senior doctors following contractual reform', <i>7th World Congress of the IHEA</i> . July 2009.	

Project No:	WOC1.2	Completed
Project Title:	A study of nurse labour markets: preferences for pecuniary and non-pecuniary rewards.	
Grant Applicants / Principal Investigators (place of work):	Skåtun, D., Elliott, R. (HERU); Scott, A. (University of Melbourne).	
HERU Investigators:	Skåtun, D., Elliott, R., Ikenwilo, D.	
HERU Research Theme:	Workforce and Organisation of Care – Workforce and Organisational Behaviour	
Source of Funding and Total Awarded:	Economic and Social Research Council (ESRC) – £116,505 and Chief Scientist Office (CSO) CORE	
Amount of HERU Funding:	£116,505	
Objectives:	This study investigated the importance of non-pay aspects within the reward structure for nurses in the UK.	
Outline:	<p>This study investigated the importance of non-pay aspects within the reward structure for nurses in the UK. A crucial requirement of the current modernisation of the National Health Service (NHS) is the supply of an adequate number of nurses. A key policy question is whether an increase in resources devoted to recruiting and retaining nurses is best spent on wages or upon improving working conditions. There is some evidence of the effect of wages on nursing labour supply, but little on the value placed by nurses on working conditions. Working conditions may become a more important policy instrument in the future with the introduction of the new, more uniform pay structures agreed in 'Agenda for Change'. The study distinguished the 'price' that nurses are willing to pay to improve their working conditions. It identified how nurses trade pay off against other working conditions.</p>	
Outcome and Translation:	<p>The research results have been disseminated to both the chief economist and statistician of the NHS Pay Review Body and the Head of Workplace Health, Employment Services at NHS Employers. The research provides evidence for the relationship between pay and conditions for the nursing workforce and provides valuable information for policy makers and employers. In particular, individual tastes for job characteristics such as the flexibility, predictability and the timing of hours have an important and significant impact on hours of work supplied. While it might be difficult to change individual tastes or preferences over job-specific characteristics, recognising that these features are important determinants of the labour supply can be utilised to adapt management practices to take these tastes into consideration where possible. This can provide an important additional instrument apart from wages to influence labour supply.</p>	

Start Date: January 2006

Duration of Project: 5 years

Publications: **Skåtun, D.** and **Elliott, R.** (with Geue, C., **Eberth, B.** and **Ikenwilo, D.**) (2009) Nurse Labour Markets: Preferences for pecuniary and non-pecuniary rewards. *Economic and Social Research Council*. Final Report.

Eberth, B., **Elliott, R.** and **Skåtun, D.** (2016) 'Pay or conditions? The role of workplace characteristics in nurses' labor supply', *European Journal of Health Economics*, 17(6), 771–785.

Other Dissemination Activities: **Skåtun, D., Elliott, R.** and Geue, C. The role that working conditions play in the employment decisions of nurses. "Delivering better health services". *Health Services Research Network and National Institute for Health Research Service Delivery and Organisation (NIHR SDO) Programme Annual Conference*. Birmingham. June 2009.

Skåtun, D., Eberth, B. and **Elliott, R.** Pay or conditions? The role of workplace characteristics in nurses' labour supply. *Scottish Economic Society Conference*. Perth. April 2010.

Project No:	WOC1.3	Completed
Project Title:	PhD: Personal and professional motivation and the supply of health care.	
Grant Applicants / Principal Investigators (place of work):	Feng, Y. (PhD Student), Farrar, S., Ma, A. (HERU); Sutton, M. (University of Manchester).	
HERU Investigators:	Feng, Y., Farrar, S., Ma, A.	
HERU Research Theme:	Workforce and Organisation of Care – Workforce and Organisational Behaviour	
Source of Funding and Total Awarded:	Division of Applied Health Sciences (DAHS), University of Aberdeen Studentship – £39,000 and University of Aberdeen	
Amount of HERU Funding:	£39,000	
Objectives:	This project identified the effect on intrinsic motivation of explicit financial mechanisms for performance improvement in the UK NHS.	
Outline:	The project included a comprehensive review of the theoretical and empirical literature with the objectives (i) to identify different existing models of intrinsic motivation and consider their relevance to the healthcare sector and (ii) to review empirical analysis of applications of this theory and again consider what lessons can be learned from this for the design of future analysis. Models of intrinsic motivation with testable hypotheses for application to the healthcare sector were developed. Opportunities to test these models were identified within the changing policy and contractual environment of the UK NHS.	
Outcome and Translation:	Financial incentives are extensively used within healthcare to improve the performance of organisations and individuals. The outcomes of this research provided evidence of whether such incentives have unintended effects on motivation and hence performance. For instance, an increase in the rate of performance target payments was found to effectively motivate Scottish GPs' healthcare supply, but it also 'crowded out' GPs' intrinsic motivation. Further, a change in the level of target thresholds motivated low-performing GPs significantly more than their high-performing counterparts.	
Start Date:	October 2006	
Duration of Project:	39 months	

Publications:

Feng, Y. An economic analysis of intrinsic and extrinsic motivation in the supply of health care, *PhD Thesis*, University of Aberdeen. 2010.

Feng, Y., **Farrar, S., Ma, A.** and Sutton, M. (2011) The effect of an increase in the rate of payment on general practitioners' intrinsic and extrinsic motivation. Office of Health Economics Research Paper 11/05. OHE Research Paper Series. Office of Health Economics.

Feng, Y., **Ma, A., Farrar, S.** and Sutton, M. (2012) The tougher the better: the effect of an increased performance threshold on the performance of general practitioners. Office of Health Economics Research Paper 12/02. OHE Research Paper Series. Office of Health Economics.

Feng, Y., **Ma, A., Farrar, S.** and Sutton, M. (2015) 'The tougher the better: an economic analysis of increased payment thresholds on the performance of general practices', *Health Economics*, 24(3), 353–371.

Other Dissemination Activities:

Feng, Y. (2007) 'Microeconomic analysis of health care datasets: an economic analysis of extrinsic and intrinsic motivation in the supply of health care. University of Aberdeen/Dundee.' Scottish Institute for Research In Economics (SIRE) Health Economics PhD Workshop, Arbroath, May 2007.

Feng, Y., Farrar, S., Sutton, M. and **Ma, A.** (2008) 'The effect of a pay for performance system on GPs' monetary and non-monetary motivations', Joint Meeting of the UK HESG and the Nordic HESG, Aberdeen, August 2008.

Feng, Y. (2008) 'An economic analysis of extrinsic and intrinsic motivation in the supply of health care', University of Aberdeen IAHS PhD Symposium, Aberdeen, December 2008.

Feng, Y., Farrar, S., Ma, A. (2012) 'The supply of unpaid work', UK HESG, Oxford, June 2012.

Project No:	WOC1.4	Completed
Project Title:	Testing the validity of discrete choice experiment responses for predicting workforce behaviour.	
Grant Applicants / Principal Investigators (place of work):	Skåtun, D., Eberth, B. (HERU); Sutton, M. (University of Manchester).	
HERU Investigators:	Skåtun, D.	
HERU Research Theme:	Workforce and Organisation of Care – Workforce and Organisational Behaviour	
Source of Funding:	Chief Scientist Office (CSO) CORE	
Objectives:	This study investigated whether employment behaviour can be predicted using stated preferences.	
Outline:	Using data on consultants' behaviour from survey data in 2001 and 2006, we examined whether stated preference data eliciting valuations of job characteristics using discrete choice experiments are validated by changes in employment behaviour. Analysis was extended to explore the use of alternative econometric analysis to gain a deeper understanding of sources of preference heterogeneity in consultants' preferences for contract characteristics.	
Outcome and Translation:	To understand further how DCEs can be used as an instrument to inform future contract negotiations with the NHS workforce.	
Start Date:	January 2008	
Duration of Project:	3 years	
Publications:	–	
Other Dissemination Activities:	Sutton, M., Eberth, B. and Skåtun, D. (2008) 'Really revealing? A follow up on the preferences stated by hospital doctors for hypothetical jobs', <i>Health Economics Bergen</i> , University of Bergen, April 2008.	

Project No:	WOC1.5	Completed
Project Title:	Payment by results: key outcomes and variations across HRGs, providers and patients in 2006/07 and 2007/08.	
Grant Applicants / Principal Investigators (place of work):	Farrar, S. (HERU); Chalkley, M. (University of York).	
HERU Investigators:	Farrar, S.	
HERU Research Theme:	Workforce and Organisation of Care – Workforce and Organisational Behaviour	
Source of Funding and Total Awarded:	Department of Health – £293,696	
Amount of HERU Funding:	£280,120	
Objectives:	The project identified the medium-term consequences of the Payments by Results (PbR) policy.	
Outline:	<p>This project identified the medium-term consequences of activity-based funding for hospitals in the English NHS. It built on a completed project examining the implementation and early effects of the Payment by Results policy. Activity-based funding systems in other countries, similar to PbR, have been shown to have significant effects on the costs, quality and volume of care. Research on some of these payment systems shows the effects to be short-lived. Using micro-econometric techniques we: (i) charted the evolving impact of the new financial regime on key indicators of activity, cost and quality; (ii) rolled forward previous work using Scotland (where the policy is not being implemented) as a comparator; and (iii) investigated the variability of the effects across three key dimensions: (a) patient group; (b) provider organisation; and (c) type of treatment.</p>	
Outcome and Translation:	This research directly informed the Department of Health in England of the variation in impact of PbR, informing the future development of the policy.	
Start Date:	July 2008	
Duration of Project:	2 years	

Publications:

Farrar, S., Yi, D., Chalkley, M., **Ma, A.** and Sutton, M. (2009) *Interim report on the medium term consequences of payment by results*, Department of Health.

Farrar, S., Yi, D., Sutton, M., Chalkley, M., Sussex, J. and Scott, A. (2009) 'Has payment by results affected the way that English hospitals provide care? Difference-in-differences analysis', *BMJ*, 339:b3047.

Farrar, S., Chalkley, M., **Yi, D.** and **Ma, A.** (2010) *Payment by results: consequences for key outcomes measures and variations across HRGs, providers and patients. Report for the Department of Health*, Department of Health.

Farrar, S., Yi, D. and Boyle, S. (2011) 'Payment by results ' in Mays, N., Dixon, A. and Jones, L., eds., *Understanding New Labour's Market Reforms of the English NHS*, London: King's Fund.

Farrar, S. (2011) '*Using national tariffs to pay for hospital care*', HERU Briefing Paper, University of Aberdeen, February 2011.

Other Dissemination Activities:

Yi, D., Farrar, S., Sutton, M., Scott, A. and **Chalkley, M.** (2007) 'Do hospitals become more efficient under a new prospective payment system? Effects of Payment by Results on length of stay in English hospitals', *Health Economist's Study Group*, Brunel University, September 2007.

Farrar, S., Yi, D., Ma, A., Sutton, M. and **Chalkley, M.** (2009) 'Behaviour of English hospitals in the early stage of implementing Payment by Results: difference-in-differences analysis using Scotland as control. Exploiting Existing Data for Health Research', *Scottish Health Informatics Programme*, St Andrews, September 2009.

Farrar, S., Yi, D., Chalkley, M., **Ma, A.** and Sutton, M. (2009) 'Impact of Payment by Results on providers and services: latest findings from the national evaluation. Department of Health PRP Health Reforms and Evaluation Programme', *London School of Hygiene and Tropical Medicine*, London, November 2009.

Farrar, S., Yi, D., Chalkley, M., **Ma, A.,** Sutton, M. and Sussex, J. (2010) 'Payment by Results: impact and policy implications. DoH PRP Health Reforms and Evaluation Programme', *Symposium on Policy Implications of Emerging Findings for the English NHS*, King's Fund, London, February 2010.

Farrar, S., Yi, D., Ma, A., Chalkley, M. and Sutton, M. (2010) 'Measuring the impact of activity based hospital financing across patient group', *ECHE*, Helsinki, July 2010.

Project No:	WOC1.6	Completed
Project Title:	How to attract health workers to rural areas in low- and middle-income countries: findings from discrete choice experiments.	
Grant Applicants / Principal Investigators (place of work):	Ryan, M., Krucien, N. (HERU); Amaeda, A. (World Bank); Alfano, M. (University College London); Honda, A. (University of Cape Town); Nagai, M., Fujita, N. (National Centre for Global Health and Medicine, Japan).	
HERU Investigators:	Ryan, M., Krucien, N.	
HERU Research Theme:	Workforce and Organisation of Care – Workforce and Organisational Behaviour	
Source of Funding:	Chief Scientist Office (CSO) CORE and University of Aberdeen	
Objectives:	To understand preferences of health workers for working in rural areas in low- and middle-income countries.	
Outline:	<p>One of the biggest challenges for policy makers in the health sector in both developed and developing countries is attracting health workers to rural areas. Globally, approximately one-half of the population lives in rural areas, but these areas are served by only 38 per cent of the total nursing workforce and by less 25 per cent of the total physician workforce. This lack of qualified health workers in rural areas is a significant barrier to service delivery, impeding access to healthcare services for a significant percentage of the population. In low- and middle-income countries such shortages slow progress towards attaining the Sustainable Development Goals and challenge the aspiration of achieving health for all. This project, carried out in collaboration with a number of external bodies (World Bank; World Health Organization; Health Economics Unit, University of Cape Town; National Centre for Global Health and Medicine, Japan) explored the use of discrete choice experiments to better understand health worker preferences in low- and middle-income countries. DCEs have been conducted in Liberia, Vietnam, India and Senegal.</p>	
Outcome and Translation:	<p>This work provides guidance to policy makers on optimal contracts to induce health workers to live in remote and rural areas. We have also produced a 'User Guide on How to Conduct a Discrete Choice Experiment for Health Workforce Recruitment and Retention in Remote and Rural Areas' (http://who.int/hrh/resources/dceguide/en/). This should be useful for those considering using a DCE to address issues around health worker recruitment and retention.</p>	
Start Date:	March 2009	
Duration of Project:	42 months	

Publications:

Rao, K., Ramani, S., Murthy, S., Hazarik, I., Khandpur, N., Choskshi, M., Khanna, S., Vujicic, M., Berman, P. and **Ryan, M.** (2010) *Health worker attitudes towards rural services in India: results from qualitative research. Health, Nutrition and Population Discussion Paper, HNP, World Bank.*

Vujicic, M., Alfano, M., **Ryan, M.**, Sanford Wesseh, C. and Brown-Annan, J. (2010) *Policy options to attract nurses to rural Liberia: evidence from a discrete choice experiment. Health, Nutrition and Population Discussion Paper, HNP, World Bank.*

Rao, K., Shroff, Z., Ramani, S., Khandpur, N., Murthy, S., Hazarika, I., Choksi, M., **Ryan, M.**, Berman, P. and Vijuic, M. (2012) *How to attract health workers to rural areas. Findings from a discrete choice experiment from India, World Bank.*

Ryan, M., Kolstad, J., Rockers, P. and Dolea, C. (2012) *How to conduct a discrete choice experiment for health workforce recruitment and retention in remote and rural areas: a user guide with case studies, Geneva: World Health Organization and World Bank.*

Ramani, S., Rao, K. D., **Ryan, M.**, Vujicic, M. and Berman, P. (2013) 'For more than love or money: attitudes of student and in-service health workers towards rural service in India', *Human Resources for Health*, 11(1), 58.

Rao, K.D., **Ryan, M.**, Shroff, Z., Vujicic, M., Ramani, S. and Berman, P. (2013) 'Rural clinician scarcity and job preferences of doctors and nurses in India: a discrete choice experiment', *PLoS One*, 8(12), e82984.

**Other Dissemination
Activities:**

Alfano, M., Vujcic, M. and **Ryan, M.** (2011) 'Formulating effective policies for health worker recruitment to rural areas: a joint estimation of preferences, costs, motivation and attitudes', *International Health Economic Association Conference*, Toronto, July 2011.

Vujcic, M., **Ryan, M.** and Alfano, M. (2011) 'Estimating conditional and unconditional demand using discrete choice experiments: an application to nurse location decisions in Liberia', *International Choice Modelling Conference*, *Institute of Transport Studies*, University of Leeds, July 2011.

Ryan, M. (2011) 'Policy options to attract health workers to rural Liberia: evidence from a discrete choice experiment', *Yunus Centre for Social Business and Health*, Glasgow Caledonian University, November 2011.

Ryan, M. (2012) 'Using discrete choice experiments to inform health services research: an application to health worker choices in rural Liberia', *Centre for Clinical Epidemiology and Evaluation*, *University British Columbia*, Vancouver, Canada, March 2012.

Rao, K., Shroff, Z., Ramani, S., Khandpur, N., Murthy, S., Hazarika, I., Choski, **Ryan, M.**, Berman, P. and Vijuvic, M. (2012) 'How to attract health workers to rural areas? Findings from a discrete choice experiment from India', *Bringing Evidence into Public Health Policy (EHPH) Conference*, Bangalore, India, October 2012.

Project No:	WOC1.7	Completed
Project Title:	The staff market forces factor component of the resource allocation weighted capitation formula.	
Grant Applicants / Principal Investigators (place of work):	Elliott, R., Skåtun, D., Ma, A. (HERU); Sutton, M. (University of Manchester); Rice, N. (University of York); Morris, S. (UCL); McConnachie, A. (University of Glasgow).	
HERU Investigators:	Elliott, R., Skåtun, D., Ma, A.	
HERU Research Theme:	Workforce and Organisation of Care – Workforce and Organisational Behaviour	
Source of Funding and Total Awarded:	Department of Health – £68,983 and Chief Scientist Office (CSO) CORE	
Amount of HERU Funding:	£50,277	
Objectives:	The focus of this project was on providing new staff MFFs for PCTs and hospital trusts based on the latest data available from ONS and using the General Labour Market approach.	
Outline:	Previous research by HERU commissioned by the Advisory Committee on Resource Allocation (ACRA) led to important changes in the way the staff MFF was estimated. The MFF is an element of the formula that funds PCTs in England and Wales. More recent estimates were required, using the latest data and incorporating any refinements to method that would increase the reliability and robustness of the method. This research provided up to date MFF values and, within the general framework, reviewed and where appropriate suggested refinements to the method for estimating the MFF.	
Outcome and Translation:	ACRA recommended that the staff market forces factor (MFF) was updated in line with the figures provided by the study. This recommendation was accepted by the Department of Health and the updated staff MFF values were used in the PCT allocations from 2011–12. Two research reports were published by the Department of Health as Resource Allocation Working Papers to accompany the announcement of the PCT allocations.	
Start Date:	February 2010	
Duration of Project:	8 months	

Publications:

Elliott, R., Ma, A., McConnachie, A., Morris, S., Rice, N. and **Skåtun, D.** (2010) *The staff market forces factor component of the resource allocation weighted capitation formula: new estimates. Phase 1. Report to the Advisory Committee on Resource Allocation (ACRA), Advisory Committee on Resource Allocation (ACRA).*

Elliott, R., Sutton, M., **Ma, A.,** McConnachie, A., Morris, S., Rice, N., and **Skåtun, D.** (2010) 'The role of the staff market forces factor in distributing NHS funding: taking account of differences in local labour market conditions'. *Health Economics*. 19(5); 532–548.

Ma, A., Elliott, R., Morris, S., Rice, N. and **Skåtun, D.** (2010) *The staff market forces factor component of the resource allocation weighted capitation formula: refinements to method. Phase 2. Report to the Department of Health, Department of Health.*

Other Dissemination Activities:

Elliott, R., Ma, A., McConnachie, A., Morris, S., Rice, N. and **Skåtun, D.** The staff market forces factor component of the resource allocation weighted capitation formula: new estimates. *Technical Advisory Group (TAG), Department of Health*. London. April 2010.

Elliott, R., Ma, A., McConnachie, A., Morris, S., Rice, N. and **Skåtun, D.** The staff market forces factor component of the resource allocation weighted capitation formula: new estimates. *Advisory Committee Resource Allocation (ACRA), Department of Health*. London. May 2010.

Project No:	WOC1.8	Completed
Project Title:	Impact of revalidation on clinical and non-clinical activity.	
Grant Applicants / Principal Investigators (place of work):	Frier, B., Tait, E., Pottinger, C. (Royal College of Physicians of Edinburgh); Skåtun, D., Ikenwilo, D. (HERU); Youngston, G., Rooney, A. (The Royal College of Surgeons of Edinburgh); Nothcote, R. (The Royal College of Physicians and Surgeons of Glasgow); Starke, I. (The Royal College of Physicians of London); Dodds, C. (The Royal College of Anaesthetists); Cunliffe, B., Rodgers, K. (NHS North East); French, F. (NHS Education for Scotland (NES) / Information Services Division (ISD)).	
HERU Investigators:	Skåtun, D., Ikenwilo, D.	
HERU Research Theme:	Workforce and Organisation of Care – Workforce and Organisational Behaviour	
Source of Funding and Total Awarded:	The Royal College of Physicians of Edinburgh – £110,622 and Chief Scientist Office (CSO) CORE	
Amount of HERU Funding:	£95,397	
Objectives:	This project examined the possible consequences of the introduction of a mandatory revalidation processes on the working lives of consultants and Staff and Associate Specialist (SAS) doctors.	
Outline:	<p>Revalidation is the new process required for doctors to confirm periodically that they are continuing to practise at the level required by their regulatory body, the General Medical Council (GMC). The process centres around an enhanced appraisal with doctors providing supporting evidence of their fitness to practise. This project assessed the potential impact of this mandatory participation in strengthened appraisal and revalidation on patients, on the NHS, and on the professional, non-clinical supporting professional activities (SPAs) responsibilities of doctors within the NHS. Using a survey, the project aimed to achieve a greater understanding of how consultants (and SAS doctors) currently use their time across the variety of activities they undertake. It elicited the priority given by doctors to different SPA activities (including the current appraisal system) through two methods: the actual time spent in activities (given their current job plan) and the second through a discrete choice experiment using hypothetical scenarios.</p> <p>The study showed no strong evidence that direct patient care by consultants will be compromised in the short term by the requirements of new appraisal and revalidation processes but suggested SAS doctors may find it more difficult to protect direct patient care. However, with various pressures on medical time and once the full requirements of revalidation in practice are known, further modelling will be required to quantify the full impact on wider professional responsibilities.</p>	

Outcome and Translation: The information gained from the survey helped understand the likely impact of mandatory participation in revalidation on the availability of this time and provided information to predict the likely impact of revalidation on different groups of doctors and across the spectrum of professional activity.

Start Date: June 2010

Duration of Project: 30 months

Publications: **Skåtun, D.** and **Ikenwilo, D.** (2012) *Impact of revalidation on the clinical and non-clinical activity of hospital doctors. Research Report to the Academy of Medical Royal Colleges*, Academy of Medical Royal Colleges.

Ikenwilo, D. and **Skåtun, D.** (2014) 'Perceived need and barriers to continuing professional development among doctors', *Health Policy*, 117(2), 195–202.

Other Dissemination Activities: **Ikenwilo, D.** and **Skåtun, D.** (2013) 'Job satisfaction and intentions to alter contracted hours among doctors in Scotland', *Nordic Health Economists Study Group*, Oslo, Norway, 14–16 August 2013.

Project No:	WOC1.9	Completed
Project Title:	An examination of changes introduced in the Quality and Outcomes Framework in 2006/07 and their effects on the delivery of primary care in Scotland.	
Grant Applicants / Principal Investigators (place of work):	Ma, A., Skåtun, D. (HERU); Sutton, M. (University of Manchester); Guthrie, B. (University of Dundee); Gravelle, H. (University of York).	
HERU Investigators:	Ma, A., Skåtun, D.	
HERU Research Theme:	Workforce and Organisation of Care – Workforce and Organisational Behaviour	
Source of Funding and Total Awarded:	The Scottish Government – Chief Scientist Office (CSO) Health Services Research Committee – £49,132 and CSO CORE	
Amount of HERU Funding:	£43,322	
Objectives:	This project investigated the incentive structure of treatment provision by General Practitioners using administrative data generated under the Quality and Outcomes Framework. It explored how the knowledge learnt from this exercise could inform future adjustments to the QOF.	
Outline:	<p>The Quality and Outcomes Framework (QOF) was introduced in 2004 across the UK National Health Service. It is an expensive and elaborate performance-related pay scheme for general practices. All participating practices report their achievements on almost 150 quality indicators to receive a performance-related bonus that could increase their income by up to 25%.</p> <p>Most of the quality indicators are related to clinical diagnosis and treatment. Rewards increase linearly with the proportion of patients treated to provide an incentive to practices to treat more patients up to a maximum threshold. Changes in the reward structure were introduced in 2006/7, 2007/8 and 2009/10.</p> <p>Using data from 1,000 practices in Scotland and 8,000 in England, we examined how general practices responded to these changes. We then modelled treatment rates in later years as functions of earlier years' treatment rates and changes to the reward functions across the years. This will inform future adjustments to the QOF.</p>	
Outcome and Translation:	This research indicated that practices are responsive to even small changes in financial rewards and suggests that even small changes to the design of pay-for-performance schemes can stimulate further improvements in quality.	

Start Date: July 2010

Duration of Project: 12 months

Publications: **Ma, A., Skåtun, D.,** Sutton, M., Guthrie, B. and Gravelle, H. (2011) *An examination of changes introduced in the Quality and Outcomes Framework in 2006/07 and their effects of the delivery of primary care in Scotland*. Chief Scientist Office Final Report, Edinburgh: Scottish Government Chief Scientist Office.

Other Dissemination Activities: –

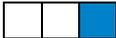
Project No:	WOC1.10	Completed
Project Title:	Attitudes to regulatory guidelines among clinicians in three countries: the UK dimension.	
Grant Applicants / Principal Investigators (place of work):	Carlsen, B., Kolstad, J.R. (University of Bergen); Bringedal, B. (Research Institute of the Norwegian Medical Association); Hansen, D.G., Kjellberg, P.K. (Danish Institute for Health Services Research); Hole, A.R. (University of Sheffield); Holm, S. (University of Oslo and University of Manchester); Skåtun, D. (HERU).	
HERU Investigators:	Skåtun, D.	
HERU Research Theme:	Workforce and Organisation of Care – Workforce and Organisational Behaviour	
Source of Funding and Total Awarded:	University Research Bergen (Norway) – £7,580 and Chief Scientist Office (CSO) CORE	
Amount of HERU Funding:	£7,580	
Objectives:	This study examined the role of effectiveness, cost and preferences in GP prescribing behaviour.	
Outline:	The study explored whether, how and why attitudes to economic considerations in clinical decision making vary between different groups of medical doctors in different healthcare systems. The research comprised of a discrete choice experiment to elicit preferences on prescribing behaviour of GPs in Norway, Denmark, England and Scotland.	
Outcome and Translation:	This cross-country study of stated prescription behaviour allowed researchers to examine the influence of different organisational cultures on individual prescribing behaviour across the four countries surveyed. The influence of the institutional framework in GP decision making is an importance area to understand, where drug expenditures continue to be a significant component of health budgets. We find that GPs in different countries respond differently to information about societal costs, benefits and effectiveness.	
Start Date:	August 2011	
Duration of Project:	24 months	
Publications:	<p>Riise, J., Hole, A.R., Gyrd-Hansen, D. and Skatun, D. (2015) <i>GPs' implicit prioritization through clinical choices – evidence from three national health services</i>, Working Paper in Economics, No. 2/15: University of Bergen.</p> <p>Riise, J., Hole, A.R., Gyrd-Hansen, D. and Skåtun, D. (2016) 'GPs' implicit prioritization through clinical choices: evidence from three national health services', <i>Journal of Health Economics</i>, 49, 169–183.</p>	

**Other Dissemination
Activities:**

Hole, A.R., Gyrð-Hansen, D., Riise, J. and **Skåtun, D.** Medical doctors' priorities in complex choice situations: a cross country comparison. *Third Applied Health Econometrics Symposium*. University of Leeds. 18 October 2013.

Kolstad, J., Gyrð-Hansen, D., Hole, A.R. and **Skåtun, D.** Implicit prioritisation through prescription choices among GPs: evidence from Great Britain, Denmark and Norway. *European Conference on Health Economics*. Zurich. July 2012.

Kolstad, J., Gyrð-Hansen, D., Hole, A.R. and **Skåtun, D.** (2012) 'GPs' prescription patterns in four countries; implicit prioritizations and shifting agencies', *Dilemmas in the doctor's role: findings, methods and future challenges*, Legeforeningens Forskningsinstitutt, Oslo, December 2012.

Project No:	WOC1.11	In Progress
Project Title:	The role of pay competitiveness and nurse agency staffing.	
Grant Applicants / Principal Investigators (place of work):	Skåtun, D. (HERU); Combes, J-B. (Aix-Marseille Université).	
HERU Investigators:	Skåtun, D.	
HERU Research Theme:	Workforce and Organisation of Care – Workforce and Organisational Behaviour	
Source of Funding:	Chief Scientist Office (CSO) CORE	
Objectives:	This study investigates the role of the competitiveness of nurses' pay on the use of nursing agency staff and in turn the use of agency staff on outcomes.	
Outline:	This research will provide evidence on the use of alternative staff configurations and in particular of the use of agency staff to fill gaps in staffing by health providers to resolve staff shortages.	
Start Date:	June 2013	
Duration of Project:	4 years	
Project Phase:		
Publications:	–	
Other Dissemination Activities:	Combes, J-B. and Skåtun, D. (2014) 'Is the use of agency staff the consequence of local labour market conditions? Does it have consequences on outcomes?', <i>Sciences Economiques et Sociales delas Santé & Traitement de l'Information Médicale Seminar</i> , Marseille, France, 2014.	

Project No:	WOC1.12	In Progress
Project Title:	Understanding push-pull factors in medical careers-decision making.	
Grant Applicants / Principal Investigators (place of work):	Cleland, J. (Medical Education, University of Aberdeen); Rees, C. (University of Dundee); Skåtun, D., Watson, V. (HERU); Mattick, K. (University of Exeter); Johnston, P. (NHS Education for Scotland (NES)).	
HERU Investigators:	Skåtun, D., Watson, V., Krucien, N.	
HERU Research Theme:	Workforce and Organisation of Care – Workforce and Organisational Behaviour	
Source of Funding and Total Awarded:	NHS Education for Scotland (NES) – £29,292, Chief Scientist Office (CSO) CORE and University of Aberdeen	
Amount of HERU Funding:	£17,575	
Objectives:	The NHS is changing in terms of structure, job roles and terms and conditions. These changes mean supporting trainee doctors in strategic careers-decision making is more important than ever. To do this requires identifying the important factors in their career-decision making.	
Outline:	<p>Existing research indicates factors such as the perceived benefits of particular specialities, wish for quality of life, and demographic factors, such as gender, are influential. However, we do not know the most important ‘push-pull’ careers-decision making factors for the current generation of UK medical students and trainees. What drives medical students and trainees away from a place or a speciality? What draws them to a new location or a different speciality? To what extent are specific factors important at different transitions? What sources of information underpin medical careers-decision making?</p> <p>The project uses two, brief, anonymous, online surveys to gather contemporary UK data on these issues from medical trainees. The first survey is exploratory and qualitative, to identify key factors. The second survey uses an established quantitative methodology to identify the most important push-pull factors in medical careers-decision making. A further study elicits the preferences from medical students.</p>	
Start Date:	June 2013	
Duration of Project:	48 months	
Project Phase:		

Publications:

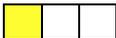
Cleland, J., Johnston, P., Mattick, K., Rees, C., **Skåtun, D., Watson, V.** and **Krucien, N.** (2013) *Understanding push-pull factors in medical careers decision making. Final Report*, NHS Education for Scotland

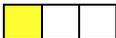
Cleland, J., Johnston, P., **Watson, V., Krucien, N.** and **Skåtun, D.** (2016) 'What do UK doctors in training value in a post? A discrete choice experiment', *Medical Education*, 50(2), 189–202.

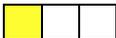
Skåtun, D., Watson, V., Krucien, N., Johnston, P. and Cleland, J. (2016) 'Junior doctors training: is it really location, location, location?', HERU Policy Brief, University of Aberdeen, September 2016.

Other Dissemination Activities:

Cleland, J., **Skåtun, D., Watson, V., Krucien, N.** and Johnston, P. (2014) 'Novel use of a Discrete Choice Experiment (DCE) in medical education', *General Practice and Primary Care (NADEGS) National Conference*, Carnoustie, 23–24 January 2014.

Project No:	WOC1.13	In Progress
Project Title:	HERU Postdoctoral Fellowship: Impact of job satisfaction, mental health and absenteeism in the public sector.	
Grant Applicants / Principal Investigators (place of work):	Ejebu, O-Z., Skåtun, D. (HERU).	
HERU Investigators:	Ejebu, O-Z.	
HERU Research Theme:	Workforce and Organisation of Care – Workforce and Organisational Behaviour	
Source of Funding and Total Awarded:	Health Economics Research Unit Postdoctoral Research Fellowship – £77,000	
Amount of HERU Funding:	£77,000	
Objectives:	This postdoctoral fellowship will seek to explore the role of job satisfaction and mental illness on absenteeism in the public workforce including the healthcare sector.	
Outline:	<p>The public sector is facing increasing staff shortages and diminishing resources while the demand for public services is intensifying. This may contribute to increasing levels of stress and absenteeism rates.</p> <p>Mental health contributes to a significant number of lost working days and also accounts for one of the greatest areas of cost arising from long-term sickness absence. Recent research suggests absenteeism rates attributable to mental illness are higher in the public sector than in the private sector. The literature also suggests employees' motivation, retention and performance are strongly associated with their job satisfaction, which may in turn be critical to providing high-quality health service.</p>	
Start Date:	August 2016	
Duration of Project:	2 years	
Project Phase:		
Publications:	–	
Other Dissemination Activities:	Ejebu, O.-Z. and Skåtun, D. (2015) 'Mental illness and sickness absenteeism among workers: evidence from the BHPS', <i>Nordic Health Economists' Study Group (NHESG)</i> , Uppsala University, Sweden, 19–21 August 2015.	

Project No:	WOC1.14	In Progress
Project Title:	PhD: A mixed-methods study of career-decision making in Foundation Programme doctors.	
Grant Applicants / Principal Investigators (place of work):	Scanlan, G. (PhD Student) (Medical Education); Skåtun, D. (HERU); Cleland, J. (Medical Education, University of Aberdeen); Johnston, P., Walker, K. (NHS Education for Scotland (NES)).	
HERU Investigators:	Skåtun, D.	
HERU Research Theme:	Workforce and Organisation of Care – Workforce and Organisational Behaviour	
Source of Funding and Total Awarded:	Scottish Medical Education Research Consortium (via NHS Education for Scotland (NES)) – £73,000 and Chief Scientist Office (CSO) CORE	
Objectives:	This PhD aims to explore the factors influencing trainee career-decision making to inform workforce planning and to benefit trainees and service delivery.	
Outline:	Medical workforce training and planning are at the forefront of policy and practice discussions. Difficulties in recruiting and retaining trainees threaten the reliable delivery of care and have massive long-term implications for the NHS in Scotland. This project will employ a discrete choice experiment (DCE) to explore the factors influencing medical trainee career-decision making to better understand the flow of trainees through the training pathway. It forms part of a broader PhD research project led by Medical Education entitled 'A mixed-methods study of career-decision making in Foundation Programme doctors'.	
Start Date:	October 2015	
Duration of Project:	36 months	
Project Phase:		
Publications:	–	
Other Dissemination Activities:	–	

Project No:	WOC1.15	In Progress
Project Title:	MFF 2: Updating the staff Market Forces Factor.	
Grant Applicants / Principal Investigators (place of work):	Skåtun, D., Elliott, B. (HERU).	
HERU Investigators:	Skåtun, D., Elliott, B., Ejebu O-Z.	
HERU Research Theme:	Workforce and Organisation of Care – Workforce and Organisational Behaviour	
Source of Funding and Total Awarded:	NHS Improvement – £70,755	
Amount of HERU Funding:	£23,088	
Objectives:	The study will provide an up-to-date staff Market Forces Factor index for use in the NHS within England.	
Outline:	The staff Market Forces Factor (sMFF) is the mechanism in England by which both funding allocated to commissioners of healthcare and the tariff that providers of healthcare can charge are adjusted to reflect the unavoidable costs of commissioning/providing health care across different geographical locations. The current sMFF is based on estimates of spatial wage differentials using 2007–2009 Annual Survey of Hours and Earnings (ASHE) data. The focus of this project will be on providing a new updated Staff MFF index based on the latest data available from ASHE. This ensures funding and pricing reflects the current labour market conditions faced by commissioners and providers of healthcare.	
Start Date:	July 2016	
Duration of Project:	7 months	
Project Phase:		
Publications:	–	
Other Dissemination Activities:	–	

WOC2

Organisation and Performance



WOC2 Organisation and Performance

Project No:	WOC2.1	Completed
Project Title:	PhD: Developing a needs-based resource allocation model for healthcare expenditure in Bangladesh.	
Grant Applicants / Principal Investigators (place of work):	Quayyum, Z. (PhD student), Olajide, D. (HERU); Ensor, T., Newlands, D. (Economics, University of Aberdeen Business School (UABS)); Campbell, N. (Division of Applied Health Sciences (DAHS), University of Aberdeen).	
HERU Investigators:	Quayyum, Z., Olajide, D.	
HERU Research Theme:	Workforce and Organisation of Care – Organisation and Performance	
Source of Funding:	University of Aberdeen	
Objectives:	The allocations of healthcare resources in Bangladesh are not based on the needs of the population. Equality in healthcare expenditure can be achieved by the use of needs-based resource allocation formulae. Applying such methods in Bangladesh can provide an essential guideline to achieve equality in resource allocation. This thesis examined the prospect of developing a needs-based allocation of healthcare resources.	
Outline:	It addressed the counterfactual question of what would have been the allocation to each district had the needs of the population been accounted for. Two alternative approaches were considered. The first used a simple capitation formula in which weights for the adjustment of the current allocation are generated directly based on the relative values of proxies for needs. The second approach predicted adjustment weights from the estimation of a standard econometric model of needs, controlling for a range of determinants including individual, household and district characteristics. Important predictors of current allocation were found to be the number of hospital beds and health workers rather than need factors. Important predictors of needs include demographic and socio-economic characteristics. The findings suggest that a needs-based allocation can be developed for Bangladesh. This research provides an alternative approach to generating weights showing systematic relationships between the need adjustment factors. The robustness of the methods used will be sensitive to the quality of the data and the assumptions of the models.	
Outcome and Translation:	As these approaches are based on sound economic analysis and are open to independent assessment, they will help to inform policy debate and can reduce the influence of politically motivated allocations. A gradual process of implementation and regular review of the methods used would be a way forward. Future areas of research may include: re-analysing data at smaller-area level and use of different components of allocations.	

Start Date: January 2005

Duration of Project: 7 years (Part-Time)

Publications: Quayyum, Z. (2012) 'Developing a needs-based resource allocation model for health care expenditure in Bangladesh 2012', *PhD Thesis*, University of Aberdeen.

Other Dissemination Activities: –

Project No:	WOC2.2	Completed
Project Title:	EVEREST: Explaining the Variation in Epidemiology of Renal replacement therapy (RRT) outcomes through Expert opinion, Secondary data sources and Technology adoption.	
Grant Applicants / Principal Investigators (place of work):	Caskey, F.J. (North Bristol NHS Trust, University of Bristol); MacLeod, A.M. (School of Medicine & Dentistry, University of Aberdeen); Jager, K. (European Renal Association, Amsterdam); Elliott, R. (HERU) .	
HERU Investigators:	Elliott, R.	
HERU Research Theme:	Workforce and Organisation of Care – Organisation and Performance	
Source of Funding and Total Awarded:	European Renal Association – European Dialysis and Transplant Association (ERA-EDTA) Registry, Amsterdam Medical Centre – £16,000 and Chief Scientist Office (CSO) CORE	
Amount of HERU Funding:	£16,000	
Objectives:	The EVEREST Study was an international collaborative project involving nephrologists, epidemiologists and health economists in different countries and examined how much of the variation in RRT incidence is explained by economic and organisational factors rather than medical factors.	
Outline:	Having collected information on the organisation of healthcare systems and delivery of renal services, EVEREST quantified the influence of non-medical factors on RRT incidence independent of population need. Analyses also identified the characteristics of healthcare systems and renal services that are most strongly associated with higher rates of RRT, information that is relevant to policy makers in all countries, especially those in countries with developing economies.	
Outcome and Translation:	The systematic approach that has been adopted to establish the key medical and non-medical factors behind the worldwide variation in RRT will enable future research and policy to target these factors, refining their measurement and improving our understanding of how they act.	
Start Date:	January 2008	
Duration of Project:	3 years	

Publications:

Caskey, F., Jager, K., **Elliott, R.** and MacLeod, A.M., for the EVEREST Study Group (2009) The EVEREST study: explaining variation in RRT through expert opinion secondary data sources and trend analysis, *ERA-EDTA Registry Newsletter*. February 2009.

Caskey, F.J., Stel, V.S., **Elliott, R.**, Jager, K.J., Covic, A., Cusumano, A., Geue, C., Kramer, A., Stengel, B. and MacLeod, A.M. (2009) 'The EVEREST study: an international collaboration,' *Nephrology Dialysis Transplantation (NDT) Plus*. October 2009.

Caskey, F., Jager, K., **Elliott, R.** and MacLeod, A.M., for the EVEREST Study Group (2009) 'The EVEREST study: explaining variation in RRT through expert opinion secondary data sources and trend analysis,' *NDT Educational*.

Caskey, F.J., Stel, V.S., **Elliott, R.**, Jager, K.J., Covic, A., Cusumano, A., Geue, C., Kramer, A., Stengel, B. and MacLeod, A.M. (2010) 'The EVEREST study: an international collaboration,' *Nephrology Dialysis Transplantation (NDT) Plus*, 3(1); 28–36.

Kramer, A., Stel, V.S., Caskey, F. J., Stengel, B., **Elliott, R.**, Covic, A., Geue, C., Cusumano, A., MacLeod, A.M. and Jager, K.J. (2012) 'Exploring the association between macroeconomic indicators and dialysis mortality', *Clinical Journal of the American Society of Nephrology*, 7(10), 1655-1663.

van de Luitgaarden, M.W., Jager, K.J., Stel, V.S., Kramer, A., Cusumano, A., **Elliott, R.**, Geue, C., MacLeod, A.M., Stengel, B., Covic, A. and Caskey, F.J. (2013) 'Global differences in dialysis modality mix: the role of patient characteristics, macroeconomics and renal service indicators', *Nephrology Dialysis Transplantation*, 28(5), 1264-1275.

Other Dissemination Activities:

Caskey, F.J., MacLeod, A.M. Health care organisation and RRT outcomes around the World. The ERA-EDTA Registry Symposium, *ERA-EDTA Annual Congress*, Stockholm, May 2008.

Caskey, F.J., Jager, K., **Elliott, R.**, Covic, A., Cusumano, A., Geue, C., Kramer, A., Stengel, B., Stel, V. and MacLeod, A.M. The EVEREST Study: Explaining variation in RRT through expert opinion, secondary data sources and trend analysis. *Renal Week – American Society of Nephrology*. Philadelphia. November 2008.

Caskey, F., Stel, V.S., Jager, K.F., Kame, A., McLeod, A., **Elliott, R.** and Geue, C. The EVEREST study: exploring the worldwide variation in RRT incidence. *World Congress of Nephrology*, Milan, May 2009.

Project No:	WOC2.3	Completed
Project Title:	PhD: NHS staff skills mix and local labour markets: the role of reward structures, shortages and competition in determining the mix of the NHS workforce.	
Grant Applicants / Principal Investigators (place of work):	Combes, J-B., (PhD Student); Elliott, R., Skåtun, D. (HERU).	
HERU Investigators:	Combes, J-B., Elliott, R., Skåtun, D.	
HERU Research Theme:	Workforce and Organisation of Care – Organisation and Performance	
Source of Funding and Total Awarded:	Medical Research Council ((MRC) (Capacity Building PhD Studentship) – £59,863 and Chief Scientist Office (CSO) CORE	
Amount of HERU Funding:	£59,863	
Objectives:	The study examined the hypothesis that skill mix is driven by local labour-market conditions.	
Outline:	The NHS has undergone rapid changes in recent years. These have had a significant impact on the pay and work of all major staff groups in the NHS including medical and nursing staff. The drivers of change include the new consultant contract and the introduction of Agenda for Change – the new system of pay for all non-medical staff. These changes come at a time when there are shortages of staff in some areas of the country. Research undertaken has revealed how local labour-market conditions impact on the NHS workforce. Health providers faced with staff shortages but unable to adjust pay, as a means of alleviating the shortage, will find alternative ways of resolving the problem. One way is to adjust skill mix, to change the relative contributions of health professionals by workforce restructuring.	
Outcome and Translation:	This research provided evidence on the use of alternative staff configurations by health providers as an instrument to resolve staff shortages as opposed to pay. In particular it extended the analysis to France where a significant private hospital sector exists. The wage competition from this private sector does not have a significant impact on public sector hospitals, suggesting that it is non-wage competition that plays an important role between the public and private sector nursing-labour market.	
Start Date:	November 2008	
Duration of Project:	4 years	

Publications:

Combes, J-B. (2012) 'An investigation of the impact of the local labour markets on staff shortages and staff mix of hospitals in England and France', *PhD Thesis*, University of Aberdeen.

Combes, J-B., Delattre, E., **Elliott, R.** and **Skåtun, D.** (2014) 'Hospital staffing and local pay: an investigation into the impact of local variations in the competitiveness of nurses' pay on the staffing of hospitals in France', *European Journal of Health Economics*, 16(7), 763–780.

Other Dissemination Activities:

Combes, J-B., Elliott, R. and **Skåtun, D.** (2009) 'Skill mix and labour market competition: how hospitals adjust the nursing skill mix in response to local labour market conditions', *Health Economist's Study Group*, Sheffield, 2009.

Combes, J-B. (2010) 'Nursing workforce skill mix and the competitiveness of qualified nurses pay: a local labour market analysis,' *Ecole Nationale de la Statistique et de l'Analyse de l'Information*, *Seminar Health Economics*, Rennes, France, January 2010.

Combes, J-B., Elliott, R. and **Skåtun, D.** (2010) 'Nursing workforce skill mix and the competitiveness of qualified nurses pay: a local labour market analysis', *Econometrics of Healthy Human Resources*, Rome, May 2010.

Elliott, R. (2011) 'Local labour markets, nurse recruitment and retention and skill mix in English hospitals', *Melbourne Institute of Applied Economic and Social Research*, Melbourne, April 2011.

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

Combes, J-B. (2011) 'The effect of the local labour force on the NHS workforce', *University of Aberdeen PhD Symposium*, Aberdeen, June 2011.

Elliott, R., Combes, J-B. and **Skåtun, D.** (2011) 'Local labour markets and nursing skills mix in England', *iHEA*, Toronto, July 2011.

Combes, J-B., Elliott, R. Delattre, E. and **Skåtun, D.** (2012) 'Hospital staffing, skill mix and local pay: an investigation into the impact of local variations in the competitiveness of nursing-pay on the staffing of hospitals in France', *HESG/CES*, Marseille, January 2012.

Project No:	WOC2.4	Completed
Project Title:	Telemetric support self-monitoring of long-term conditions.	
Grant Applicants / Principal Investigators (place of work):	McKinstry, B., MacNee, W., Sheikh, A., Pagliari, C., Pinnock, H., Wild, S., Sudlow, C. (University of Edinburgh); Padfield, P., McKnight, J. (Lothian Health); Hanley, J. (Napier University); Auld, S. (Scottish Centre for Telehealth); Kelly, D. (NHS Lothian); Pol, M. van der (HERU).	
HERU Investigators:	Pol, M. van der	
HERU Research Theme:	Workforce and Organisation of Care – Organisation and Performance	
Source of Funding and Total Awarded:	NHS Applied Research Programme Grant – £930,277 and University of Aberdeen	
Amount of HERU Funding:	£3,888	
Objectives:	To assess the effectiveness and cost-effectiveness of telemetry systems in a range of long-term conditions.	
Outline:	Four different trials were conducted, one for each of the following conditions: uncontrolled high blood pressure in patients who do not have diabetes, kidney problems or previous stroke; uncontrolled blood pressure in patients who have had strokes; patients with chronic obstructive pulmonary disease (COPD); patients with several uncontrolled conditions (diabetes/blood pressure/obesity).	
Outcome and Translation:	Hypertension, COPD, diabetes and stroke directly and indirectly are responsible for a large proportion of morbidity and NHS costs in Scotland. Changing the way care is organised through the use of telemetry systems has the potential to improve the quality of control for patients with long-term conditions and release much-needed resources to be used in other ways for patient care.	
Start Date:	March 2009	
Duration of Project:	51 months	

Publications:

Pinnock, H., Hanley, J. Lewis S., MacNee W., Pagliari C., **Pol, M. van der.**, Sheikh A., McKinstry B. (2009) 'The impact of a telemetric Chronic Obstructive Pulmonary Disease monitoring service: randomised controlled trial with economic evaluation and nested qualitative study' [protocol], *Primary Care Respiratory Journal*, 18 (3): 233–235.

Pinnock, H., Hanley, J., McCloughan, L., Todd, A., Krishan, A., Lewis, S., Stoddart, A., **Pol, M. van der**, MacNee, W., Sheikh, A., Pagliari, C. and McKinstry, B. (2013) 'Effectiveness of telemonitoring integrated into existing clinical services on hospital admission for exacerbation of chronic obstructive pulmonary disease: researcher blind, multicentre, randomised controlled trial', *BMJ*, 347:f6070.

Stoddart, A., **Pol, M. van der**, Pinnock, H., Hanley, J., McCloughan, L., Todd, A., Krishan, A. and McKinstry, B. (2015) 'Telemonitoring for chronic obstructive pulmonary disease: a cost and cost-utility analysis of a randomised controlled trial', *Journal of Telemedicine and Telecare*, 21(2), 108–118.

Other Dissemination Activities: –

Project No:	WOC2.5	Completed
Project Title:	Data envelopment analysis: an application to investigate differences in performance in NHS Scotland.	
Grant Applicants / Principal Investigators (place of work):	Farrar, S. (HERU); Tavakoli, M. (University of St Andrews); Rosko, M. (Widener University, USA).	
HERU Investigators:	Farrar, S.	
HERU Research Theme:	Workforce and Organisation of Care – Organisation and Performance	
Source of Funding:	University of Aberdeen	
Objectives:	To measure hospital efficiency in Scotland using data envelopment analysis (DEA) and to determine the practical uses of such a measure to policy makers.	
Outline:	<p>Hospital performance in Scotland is usually measured using uni-dimensional approaches, e.g. cost per case, length of stay. These can be useful indicators. However, because hospitals are multi-dimensional in their output this rarely captures an overall picture of how efficiently a hospital is functioning. This study investigated the application of a multi-dimensional approach to measuring hospital efficiency in Scotland: data envelopment analysis. This is a non-parametric method of measuring efficiency in organisations, most commonly used where the relative efficiency of a small number of organisations (such as hospitals in Scotland) is being analysed. We estimated the relative technical efficiency (TE) of Scottish hospitals under the assumptions of variable (VRS) and constant returns to scale (CRS) and tested for the importance of controlling for case-mix. We found that teaching and large general hospitals were the most efficient and that there was no discernible improvement in efficiency over time. Case-mix adjustment had a small impact on efficiency scores but for some individual hospitals this had a substantial impact on their ranking and TE score. Using time-series regression analysis to gauge changes without the obfuscation by white noise we found a definite and statistically significant trend of improvement, from 2003 to 2007.</p>	
Outcome and Translation:	<p>The findings of this study addressed questions and objectives raised in the NHS Scotland Efficiency and Productivity Delivery Framework. They informed the SGHD via the Efficiency and Productivity Information Development Group. The research identified differences in efficiency of NHS organisations and the characteristics of those organisations. Such information is vital for targeting improvements in performance.</p>	
Start Date:	June 2009	
Duration of Project:	30 months	

Publications:

Valdmanis, V., Rosko, M., Mancuso, P., Tavakoli, M. and **Farrar, S.** (2016) 'Measuring performance change in Scottish hospitals: a Malmquist and times-series approach', *Health Services and Outcomes Research Methodology*, 1–14, [Epub ahead of print].

**Other Dissemination
Activities:**

Rosko, M., Tavakoli, M. and **Farrar, S.** (2012) 'Variations in relative efficiency in Scottish hospitals: a DEA approach', *European Conference on Health Economics*, Zurich. July 2012.

Rosko, M., Tavakoli, M. and **Farrar, S.** (2012) 'Variations in relative efficiency in Scottish hospitals: a DEA approach', *Efficiency and Productivity Information and Development Group, Scottish Government Health Department*, Edinburgh, August 2012.

Project No:	WOC2.6	Completed
Project Title:	Feasibility study of use of direct payments for informal care.	
Grant Applicants / Principal Investigators (place of work):	Ludbrook, A., McNamee, P. (HERU).	
HERU Investigators:	Ludbrook, A., McNamee, P., Feng, Y.	
HERU Research Theme:	Workforce and Organisation of Care – Organisation and Performance	
Source of Funding and Total Awarded:	The Scottish Collaboration for Public Health Research and Policy (SCPHRP) – £19,737, Chief Scientist Office (CSO) CORE and University of Aberdeen	
Amount of HERU Funding:	£19,737	
Objectives:	This project aimed to identify whether a policy of use of direct payments to pay for informal care would be acceptable to older people and their carers (or potential carers) and whether direct payments to pay for informal care might increase the supply of informal care.	
Outline:	The study involved a review of relevant literature to inform the design of a questionnaire for older people and their carers or potential carers. The questionnaires collected a range of information about older people and their carers and related this to their attitudes towards the use of direct payments and how these would affect the supply of care. The results showed that there was little enthusiasm for modifications to the current system of self-directed support payments; that is, moving to a system that would allow direct payments to be used to support unpaid care provided by family members.	
Outcome and Translation:	The result of the study informed government policy about care for older people in their own homes and provides a basis for further research.	
Start Date:	March 2010	
Duration of Project:	1 year	
Publications:	Ludbrook, A. and McNamee, P. (2011) <i>Feasibility study of use of direct payments for informal care. Chief Scientist Office final report</i> , Scottish Government Chief Scientist Office (CSO).	
Other Dissemination Activities:	McNamee, P. and Ludbrook, A. (2010) 'Feasibility study of use of direct payments for informal care', <i>Scottish Collaboration for Public Health Research and Policy</i> , Edinburgh, November 2010.	

Project No:	WOC2.7	Completed
Project Title:	PhD: Government purchasing of health care from not-for-profit providers: a review of service level agreements in Malawi.	
Grant Applicants / Principal Investigators (place of work):	Manthalu, G. (PhD Student), Farrar, S. (HERU).	
HERU Investigators:	Manthalu, G., Farrar, S.	
HERU Research Theme:	Workforce and Organisation of Care – Organisation and Performance	
Source of Funding and Total Awarded:	Wellcome Trust, the UK Department for International Development (DFID) Health Research Capacity Strengthening Initiative (HRCSI) for Malawi – £55,500 and University of Aberdeen – £3,000	
Amount of HERU Funding:	£3,000	
Objectives:	To assess the impact of service level agreements on maternal and child health care within Malawi.	
Outline:	<p>The Government of Malawi has entered into service level agreements (SLAs) with the CHAM healthcare facilities in order to expand access to a basic package of healthcare services. The objectives of the package are to guarantee universal access and improve equity of access to healthcare. Under the SLAs, pregnant women, and children aged less than 5 years, are exempted from paying the user fees charged at the CHAM health centres. The government in turn reimburses the providers. It is, however, not known what the impact of the SLAs has been. This study assessed the effect of the SLAs on <i>utilisation</i> – whether use of health services covered in SLAs increased; <i>equity</i> – who, between the poor and the better-off, has benefited from SLAs; and <i>health outcomes</i> for targeted populations. Health and healthcare indicators were compared before and after introduction of the SLAs for CHAM providers with and without SLAs. The results of this study provided evidence on whether government investment in SLAs has yielded positive benefits.</p>	
Outcome and Translation:	<p>This research informed the proposal in the current health sector strategic plan (HSSP) 2011–2016 to increase the number of SLAs. The research received a prize from the African Health Economics & Policy Association (AfHEA) Scientific Review Committee to present at the AfHEA biennial conference in 2016. The prize included a substantial cash prize and a sponsorship package to attend the conference.</p>	
Start Date:	March 2011	
Duration of Project:	3 years	

Publications:

Manthalu, G. (2014) 'The impact of user fee exemption on maternal health care utilisation and health outcomes at mission health care facilities in Malawi', *PhD Thesis*, University of Aberdeen.

Manthalu, G., Yi, D., **Farrar, S.** and Nkhoma, D. (2016) 'The effect of user fee exemption on the utilization of maternal health care at mission health facilities in Malawi', *Health Policy and Planning*, 31(9), 1184–1192.

Other Dissemination Activities: –

Project No:	WOC2.8	Completed
Project Title:	Eye care services in Scotland: did the Scots get it right?	
Grant Applicants / Principal Investigators (place of work):	Zangelidis, A., Dickey, H. (Economics, University of Aberdeen Business School (UABS)); Ikenwilo, D., Watson, V. (HERU) .	
HERU Investigators:	Ikenwilo, D., Watson, V. , Norwood, P.	
HERU Research Theme:	Workforce and Organisation of Care – Organisation and Performance	
Source of Funding and Total Awarded:	Chief Scientist Office (CSO) (Health Service Research Grant Scheme) – £43,035 and Chief Scientist Office (CSO) CORE	
Amount of HERU funding:	£21,518	
Objectives:	To assess the success of free eye care in Scotland and to examine people's response to the policy both as eye-care patients and consumers in the optician market.	
Outline:	In April 2006 the Scottish Executive introduced free eye care in Scotland and commissioned private ophthalmic optician practices to perform eye examinations. The introduction of free NHS eye examinations in Scotland was expected to encourage wider use of optometry services and to benefit the majority of patients from regular sight testing. We evaluated the impact of this policy. Until 2006 eye-care service delivery was the same in Scotland and England; the introduction of this policy could be viewed as a natural experiment. We exploited this experimental element to identify the effects of the policy.	
Outcome and Translation:	The policy succeeded in getting more people to have their eyes tested but socio-economic differences suggest that the policy has not reached the more vulnerable segments in society to the same extent, in particular, those with low education and low income. As a result, inequalities in utilisation of eye care services have widened in Scotland since the free eye care policy was introduced.	
Start Date:	July 2011	
Duration of Project:	1 year	

Publications:

Zangelidis, A., Dickey, H., **Ikenwilo, D.** and **Watson, V.** (2011) 'Eye care services in Scotland: did the Scots get it right?', *SIRE Focus*, 2011-SIRE-02.

Dickey, H., **Ikenwilo, D.**, **Norwood, P.**, **Watson, V.** and Zangelidis, A. (2012) *Utilisation of eye care services: examining the effect of Scotland's eye care policy*, Edinburgh: Scottish Government Chief Scientists Office (CSO).

Dickey, H., **Ikenwilo, D.**, **Norwood, P.**, **Watson, V.** and Zangelidis, A. (2012) 'Utilisation of eye-care services: the effect of Scotland's free eye examination policy', *Health Policy*, 108(2-3), 286-293.

Dickey, H., **Ikenwilo, D.**, **Norwood, P.**, **Watson, V.** and Zangelidis, A. (2016) 'Doctor my eyes: a natural experiment on the demand for eye care services', *Social Science and Medicine*, 150, 117-127.

Other Dissemination Activities:

Dickey, H., **Ikenwilo, D.**, **Norwood, P.**, **Watson, V.** and Zangelidis, A. (2014) 'Did the Scots get it right? A natural experiment on the demand for eye care services', *Health Economics in the Age of Longevity: a Joint iHEA & ECHE Congress*, Trinity College, Dublin, 13–16 July 2014.

Project No:	WOC2.9	Completed
Project Title:	The use of global position satellite tracking in wandering patients with dementia: feasibility study.	
Grant Applicants / Principal Investigators (place of work):	McKinstry, B., Sheikh, A. (University of Edinburgh); Mead, G. (Royal Infirmary Edinburgh); Star, J. (Royal Victoria Hospital Edinburgh); Hanley, J. (Centre for Integrated Healthcare Research); Corscadden, P. (City of Edinburgh Council); Pol, M. van der (HERU).	
HERU Investigators:	Pol, M. van der	
HERU Research Theme:	Workforce and Organisation of Care – Organisation and Performance	
Source of Funding and Total Awarded:	Chief Scientist Office (CSO) (Health Service Research Grant Scheme) – £46,685 and University of Aberdeen	
Amount of HERU Funding:	£1,139	
Objectives:	To explore the acceptability to patients and carers of satellite tracking, the suitability of instruments to measure outcomes such as carer stress, accidents and resource use, and recruitment feasibility to inform a future RCT.	
Outline:	In people with dementia, wandering often triggers admission to long-term care, and causes harm and carer stress. There is no robust evidence that alternative community interventions can reduce wandering episodes safely. One potential solution is to use satellite tracking, which can locate users and inform carers if they have left a pre-defined 'safe zone'. However, it is not clear what constitutes a 'safe zone', or whether satellite tracking reduces harm and carer stress or delays long-term admissions. This pilot study explored the acceptability to patients and carers of satellite tracking, the suitability of instruments to measure outcomes such as carer stress, accidents and resource use, and recruitment feasibility. The study found that although GPS tracking is perceived as both useful and acceptable to carers, the relative paucity of current deployment, variation in how it is used, difficulties in collecting social-care data and impracticality of current quality-of-life measures will challenge a RCT in this area.	
Outcome and Translation:	Dementia is a rapidly growing problem in Scotland. Wandering is a major cause of stress to carers and one of the main reasons why people with dementia are admitted to long-term care. GPS tracking offers a potential method of both relieving carer stress and potentially delaying admission to long-term care.	
Start Date:	July 2011	
Duration of Project:	12 months	

Publications:

Milne, H., McKinstry, B., Flemming, D., Hanley, J., Mead, G., **Pol, M. van der.**, Sheikh, A., Starr, J. and McCloughan, L. (2012) *The use of global position satellite tracking in wandering people with dementia: feasibility study. Report to CSO*, Edinburgh: Scottish Government Chief Scientist Office.

Milne, H., **Pol, M. van der**, McCloughan, L., Hanley, J., Mead, G., Starr, J., Sheikh, A. and McKinstry, B. (2014) 'The use of global positional satellite location in dementia: a feasibility study for a randomised controlled trial', *BMC Psychiatry*, 14, 160.

Other Dissemination Activities: –

Project No:	WOC2.10	Completed
Project Title:	Evaluating the effect of free dental check-ups in Scotland.	
Grant Applicants / Principal Investigators (place of work):	Ikenwilo, D. (HERU).	
HERU Investigators:	Ikenwilo, D.	
HERU Research Theme:	Workforce and Organisation of Care – Organisation and Performance	
Source of Funding:	Chief Scientist Office (CSO) CORE	
Objectives:	To evaluate the impact of the policy introducing free check-ups on utilisation of NHS dental check-ups in Scotland, using a difference-in-difference approach.	
Outline:	<p>The Scottish Government introduced free NHS dental check-ups in April 2006 as a way of encouraging utilisation and improving the oral health of residents. We used data from the British Household Panel Survey (BHPS), a nationally representative data set covering 117,761 individual respondents in the United Kingdom, over the period between 2001 and 2008 to evaluate the impact of this policy on utilisation of NHS dental check-ups in Scotland, using a difference-in-difference approach.</p> <p>This project provided the first systematic evidence of the effect of the introduction of free dental check-ups introduced in Scotland in April 2006. Results showed that there was a 3–4 per cent increase in NHS dental check-up in Scotland, compared to the rest of the UK.</p>	
Outcome and Translation:	Results suggested that a removal of financial barrier to dental check-ups does indeed lead to a modest increase in utilisation, and may have wider implications for the delivery of dental care in Scotland.	
Start Date:	September 2011	
Duration of Project:	1 year	
Publications:	<p>Ikenwilo, D. (2013) 'A difference-in-differences analysis of the effect of free dental check-ups in Scotland', <i>Social Science and Medicine</i>, 83, 10-18.</p> <p>Ikenwilo, D. (2013) 'Abolishing charges for check-ups within NHS Scotland: two case-studies', HERU Briefing Paper, University of Aberdeen, December 2013.</p>	
Other Dissemination Activities:	–	

Project No:	WOC2.11	Completed
Project Title:	APHID: Are 'potentially Preventable Hospitalisations' a valid Indicator of the quality and affordability of primary and community care in Australia?	
Grant Applicants / Principal Investigators (place of work):	Jorm, L. (University of Western Sydney); Leyland, A., Blyth, F. (MRC Social and Public Health Sciences Unit, Glasgow); Elliott, R., Olajide, D., Pol, M. van der (HERU); Douglas, K. (Royal North Shore Hospital, Sydney); Redman, S. (The Mater Hospital, Sydney).	
HERU Investigators:	Elliott, R., Pol, M. van der., Olajide, D.	
HERU Research Theme:	Workforce and Organisation of Care – Organisation and Performance	
Source of Funding:	National Health and Medical Research Council (NHMRC), Australia, University of Aberdeen and Chief Scientist Office (CSO) CORE.	
Objectives:	To validate potentially preventable hospitalisation as a measure of health system performance in Australia.	
Outline:	Rates of potentially preventable hospitalisations (PPH) are regarded as an indicator of the quality and affordability of primary and community care. They are increasingly being used to track the progress of health reform in Australia and internationally. This project validated PPH as a measure of health system performance in Australia. Using linked person-level data, we explored relationships between frequency, volume, nature and costs of primary care services; hospital admissions for PPH diagnoses; health outcomes; and factors that confound and mediate these relationships. Using multilevel modelling techniques we quantified the contributions of person-, geographic- and service-level factors to variation in PPH rates, including socio-economic status, country of birth, geographic remoteness, physical and mental health status, availability of general practitioner (GP) and other services, and hospital characteristics.	
Outcome and Translation:	Our findings will inform the ongoing use of PPH to track the progress of health reform in Australia and internationally.	
Start Date:	January 2012	
Duration of Project:	4 years	

Publications:

Jorm, L.R., Leyland, A.H., Blyth, F.M., **Elliott, R.**, Douglas, K.M.A., Redman, S. and On behalf of the Aphid Investigators (2012) 'Assessing Preventable Hospitalisation InDicators (APHID): protocol for a data-linkage study using cohort study and administrative data', *BMJ Open*, 2, e002344.

Falster, M. O., Jorm, L. R., Douglas, K. A., Blyth, F. M., **Elliott, R.** and Leyland, A. H. (2015) 'Sociodemographic and health characteristics, rather than primary care supply, are major drivers of geographic variation in preventable hospitalizations in Australia', *Medical Care*, 53(5), 436-445.

Other Dissemination Activities:

Elliott, R. (2012) 'Developing measures of the supply and efficiency of the health workforce', *APHID (Assessing Preventable Hospitalisation InDicators) Reference Group*, Sydney, Australia, November 2012.

Project No:	WOC2.12	Completed
Project Title:	An evaluation of the effect of informal care targeting the elderly on elderly mortality.	
Grant Applicants / Principal Investigators (place of work):	Aoki, Y. (HERU).	
HERU Investigators:	Aoki, Y.	
HERU Research Theme:	Workforce and Organisation of Care – Organisation and Performance	
Source of Funding:	University of Aberdeen	
Objectives:	<p>The project aimed to reveal the causal effect on elderly mortality of volunteer work providing daily assistance to the elderly. Moreover, it aimed to explore the mechanisms through which the informal care reduces mortality of the elderly.</p>	
Outline:	<p>Exogenous variation in volunteering caused by an earthquake was used to identify the causal effect of volunteering on mortality. The level of volunteering considerably increased in municipalities hit by the earthquake, while other municipalities did not experience such a sharp increase in volunteering. The identification was based on a comparison of mortality between the municipalities with no or little loss of life attributable to the earthquake, that experienced the sharp increase in the level of volunteering, and the nearby municipalities that were not hit by the earthquake.</p> <p>The UK government has been promoting ‘a culture of generosity’, which encourages the public to volunteer to help improve life for all. It spent £13.9 billion on voluntary organisations in 2009/10, corresponding to approximately 2 per cent of total spending. Over the past decade, government spending on the voluntary sector has grown by 61 per cent in real terms, showing a growing importance of the voluntary sector in providing public services. Results aided in assessing whether citizens (volunteers) can contribute to the well-being of the elderly.</p>	

The results indicated that volunteering significantly reduced the mortality of people in their 70s and 80s or older. Furthermore, supplementary regressions to infer the mechanisms through which volunteering reduces mortality suggested that volunteering is likely to have reduced elderly mortality by improving general health conditions of the elderly. Following the manual on the measurement of volunteer work (International Labour Office, 2011), it is estimated that approximately \$71,360 worth of labour was used to save the lives of two individuals aged 70 or older in a given year. Broadly, these results yielded various important policy implications. For instance, by encouraging volunteer work for the elderly, a government may be able to curb public healthcare expenditures without compromising health support for the elderly.

Outcome and Translation:

This could be an important policy measure amid the ongoing population ageing and resulting increase in healthcare expenditures across the world. Similarly, in countries with limited provision of public healthcare services, a government, by supporting volunteer activity for the elderly, may still be able to improve the health of the elderly who cannot afford private healthcare.

Start Date:

September 2012

Duration of Project:

2 years

Publications:

Aoki, Y. (2014) Donating time to charity: not working for nothing. *IZA Discussion Paper No. 7990*, Bonn, Germany: Institute for the Study of Labor (IZA).

Aoki, Y. (2016) 'Donating time to charity: working for nothing?', *Oxford Economic Papers*, 69(1), 97-117.

-
- Other Dissemination Activities:** **Aoki, Y.** (2013) 'An outcome of free labour supply: effect of volunteer work on mortality. A natural experiment using earthquake shocks in Japan', *Scottish Institute for Research in Economics Young Researchers' Forum*, Edinburgh, 8 March 2013.
- Aoki, Y.** (2013) 'An outcome of free labour supply: effect of volunteer work on mortality. A natural experiment using earthquake shocks in Japan', *Scottish Economics Society Annual Conference*, Perth, 8–10 April 2013.
- Aoki, Y.** (2013) 'An outcome of free labour supply: effect of volunteer work on mortality. A natural experiment using earthquake shocks in Japan,' *8th Annual CEDI Conference: Economics of Disasters - Natural and Man-made*, London, 22 May 2013.
- Aoki, Y.** (2013) 'An outcome of free labour supply: effect of volunteer work on mortality. A natural experiment using earthquake shocks in Japan', *Annual Conference of the European Society for Population Economics*, Aarhus, Denmark, 12–15 June 2013.
- Aoki, Y.** (2013) 'Donating time to charity: not working for nothing. Social externality of volunteer work', *Stirling University Economics Department Seminar*, Stirling University, September 2013.
- Aoki, Y.** (2013) 'Donating time to charity: not working for nothing. Social externality of volunteer work', *TEPP Conference: Research on Health and Labour*, Le Mans, France, 26–27 September 2013.
- Aoki, Y.** (2013) 'Donating time to charity: not working for nothing. Social externality of volunteer work', *Newcastle University Economics Department and Institute of Health & Society Joint Seminar*, Newcastle University, October 2013.
- Aoki, Y.** (2015) 'Donating time to charity: not working for nothing', *Heriot-Watt University, Economics Department Seminar*, Heriot-Watt University, Edinburgh, 16 January 2015.

Project No:	WOC2.13	Completed
Project Title:	Preferences for primary care delivery in Portugal.	
Grant Applicants / Principal Investigators (place of work):	Viega, P., Correia, I. (University of Minho); Watson, V. , Norwood, P. (HERU).	
HERU Investigators:	Watson, V. , Norwood, P.	
HERU Research Theme:	Workforce and Organisation of Care – Organisation and Performance	
Source of Funding:	Chief Scientist Office (CSO) CORE	
Objectives:	To elicit the general public's preferences for primary healthcare services in Portugal.	
Outline:	<p>In the past few years there have been substantial changes to the delivery of primary care in many countries as healthcare reforms introduce new models of care. This began in Portugal in 2005 with the on-going reform of the primary healthcare. Although recent reforms have been accompanied by an effort to monitor the users' satisfaction based on pre-defined attributes and scales, little is known about population preferences on primary healthcare services and its prioritization. This study used a mixed methods approach to elicit the preferences of the general public for primary healthcare services in Portugal. The study developed valid and reliable measures of primary care attributes relevant to Portugal. These were used to develop a discrete choice experiment to examine preferences and priorities among these attributes among a sample of Portuguese patients. Public preferences were compared with the political choices necessitated by fiscal austerity.</p>	
Outcome and Translation:	<p>The structural reform of primary healthcare delivery in Portugal began in 2005 but political choices necessitated by fiscal austerity mean that the reform is incomplete. We found patients supported publicly provided primary care and were concerned about its future. They wished to keep the core principles of the Portuguese health service, mainly equity and solidarity. Although the reform was designed to improve efficiency and access in primary care delivery it has not substantially improved primary care delivery and has had a negative impact on equity. The incomplete nature of the reforms has led to a three-tiered model of care (patients with a Family Doctor (FD) and Family Health Unit (FHU), patients with a FD and Primary Care Health Unit (PCHU), patients without a FD and PHCU). This raises equity concerns that must be addressed.</p>	
Start Date:	November 2012	
Duration of Project:	21 months	

Publications:

Norwood, P., Watson, V., Veiga, P. and Correira, I. (2013) *What do patients want from primary care services? Final report*, Ministério da Saude, INSA.

Other Dissemination Activities:

Watson, V., Norwood, P., Benesch, P. V. and Correira, I. (2013) 'Population preferences in primary health care in Portugal' [Poster], *Associação Portuguesa de Economia da Saúde / Portuguese Health Economics Association*, Braga, Portugal, 10–12 October 2013.

Project No:	WOC2.14	Completed
Project Title:	ASH: Avoidable Scottish Hospitalisations.	
Grant Applicants / Principal Investigators (place of work):	Pol, M. van der, Elliott, B., Olajide, D. (HERU); Dusheiko, M. (University of York); Guthrie, B. (University of Dundee); Jorm, L. (University of Western Sydney); Leyland, A. (MRC/CSO Social and Public Health Sciences Unit).	
HERU Investigators:	Pol, M. van der, Elliott, R., Olajide, D., Konstantinidou, M.	
HERU Research Theme:	Workforce and Organisation of Care – Organisation and Performance	
Source of Funding and Total Awarded:	Chief Scientist Office (CSO), Health Service and Population Health Research Committee – £187,821, University of Aberdeen and the Chief Scientist Office (CSO) CORE	
Amount of HERU Funding:	£170,803	
Objectives:	The aim of the project was to test the robustness of admissions for Ambulatory Care Sensitive Conditions (ACSC) as indicators of the quality of primary care in Scotland and where appropriate to propose methods for refining ACSC measures so that they might be better used to set targets for and monitor health system performance.	
Outline:	Admissions for ACSC are those that could potentially be prevented by timely and effective disease management within primary care. ACSC admissions are increasingly used within Scotland as NHS performance indicators. However, key questions remain about the validity of these measures. The aim of the project was to test the robustness of ACSC admissions as indicators of the quality of primary care in Scotland and where appropriate to propose methods for refining these measures so that they might be better used to set targets for and monitor health system performance. Using practice-level data, we explored relationships between quality of and access to primary care services, hospital admissions for a range of ACSCs, and factors that confound and mediate these relationships. The results showed that higher achievement on some quality measures of primary care was associated with reduced ACSC admissions while access to primary care was also associated with ACSC admissions. However, the effects were small and inconsistent and ACSC admissions were associated with several confounding factors such as composition of the practice population.	
Outcome and Translation:	Our findings can inform the use of ACSC admissions as a health system performance measure in Scotland and internationally. The research identified refinements to the ACSC admissions indicator to improve its utility as a performance measure.	
Start Date:	September 2013	
Duration of Project:	24 months	

Publications:

Pol, M. van der, Olajide, D., Dusheiko, M., Guthrie, B., **Elliott, R.,** Jorm, L.R. and Leyland, A.H. (2015) *Avoidable Scottish Hospitalisations (ASH). Final report submitted to Chief Scientist Office.*

Pol, M. van der, Olajide, D., Dusheiko, M., Guthrie, B., **Elliott, R.,** Jorm, L.R. and Leyland, A.H. (2015) The impact of quality and accessibility of primary care on admissions for Ambulatory Care Sensitive Conditions (ACSCs) in Scotland, *CSO Focus on Research*, Edinburgh: Chief Scientist Office.

Pol, M. van der, Olajide, D., Dusheiko, M., **Elliott, R.,** Guthrie, B., Jorm, L.R. and Leyland, A.H. (2016) 'Does quality and accessibility of primary care reduce admissions for Ambulatory Care Sensitive Conditions (ACSCs) in Scotland?' HERU Policy Brief, University of Aberdeen, June 2016.

Other Dissemination Activities:

Konstantinidou, M., Olajide, D. and Pol, M. van der (2014) 'The relationship between provider and patient reported quality of primary care', *Health Economics in the Age of Longevity: a Joint iHEA & ECHE Congress*, Trinity College, Dublin, 13–16 July 2014.

Olajide, D., Konstantinidou, M. and Pol, M. van der (2015) 'The relative influence of practice characteristics, patient access, and disease management in primary care on potentially preventable hospitalisations in Scotland', *International Health Economics Association (iHEA) 11th World Congress*, Milan, Italy, 12–15 July 2015.

Project No:	WOC2.15	In Progress
Project Title:	Using discrete choice experiments to investigate optimal skill mix.	
Grant Applicants / Principal Investigators (place of work):	Porteous, T., Bond, C., Elliott, A., Hannaford, P., Murchie, P. (Academic Primary Care, University of Aberdeen); Ryan, M. (HERU) .	
HERU Investigators:	Ryan, M. , Watson, V. , Norwood, P.	
HERU Research Theme:	Workforce and Organisation of Care – Organisation and Performance	
Source of Funding:	Chief Scientist Office (CSO) CORE	
Objectives:	Discrete choice experiments (DCEs) are used to investigate preferences for different skill mixes in the delivery of health care.	
Outline:	With increasing demands on health services policy is looking at alternative ways of providing healthcare. Examples include extending the role of pharmacists and nurses in the management of common ailments, promoting self-care of symptoms indicative of self-limiting illness, and extending the roles of specialist nurses and physician associates in some clinical areas. We use discrete choice experiments (DCEs) to investigate preferences in the management of different illnesses. We are currently collaborating with the MUNROS project (WOC2.16). A general finding is that, whilst individuals often prefer to see a doctor or consultant, improvements in other aspects of care (reduced waiting time, continuity of care, longer consultation times) can compensate them for not seeing their preferred health worker.	
Start Date:	October 2006	
Duration of Project:	Ongoing	
Project Phase:		

Publications:

Porteous, T., **Ryan, M.**, Bond, C. and Hannaford, P. (2006) 'Preferences for self-care or consulting a health professional in minor illness: a discrete choice experiment', *British Journal of General Practice*, 56, 911-917.

Ryan, M. and Porteous, T. Preferences for self-care or consulting a health professional in minor illness. *HERU Briefing Paper*, University of Aberdeen, July 2007.

Rennie, L., Porteous, T. and **Ryan, M.** (2012) 'Preferences for managing symptoms of differing severity: a discrete choice experiment', *Value in Health*, 15(8), 1069-1076.

Murchie, P., **Norwood, P. F.**, Pietrucin-Materek, M., Porteous, T., Hannaford, P. C. and **Ryan, M.** (2016) 'Determining cancer survivors' preferences to inform new models of follow-up care', *British Journal of Cancer*, 115, 1495-1503.*

Other Dissemination Activities:

Porteous, T. and **Ryan, M.** (2006) 'Factors influencing the choice between self-care and health professional advice in minor illness: a discrete choice experiment' *Health Sciences Research and Pharmacy Practice Conference*, University of Bath, April 2006.

Porteous, T. and **Ryan, M.** (2006) 'Factors influencing the choice between self-care and health professional advice in minor illness: a discrete choice experiment', *Social Dimensions of Health Institute Conference*, University of Dundee, May 2006.

McAteer, A., Elliott, A.M., **Yi, D.**, **Watson, V.** and **Ryan, M.** (2009) 'Investigation preferences for symptom management using Discrete Choice Experiment', [poster] *Society for Academic Primary Care Conference*, St Andrews, July 2009.

Rennie, L., **Porteous, T.** and **Ryan, M.** (2011) 'Preferences for managing different types of symptoms – self care or health professional advice?', *Health Services and Pharmacy Practice Research Conference*, Norwich, May 2011.

Pietrucin-Materek, M., Murchie, P., **Porteous, T.** and Hannaford, P.C. (2012) 'What do cancer patients want from their follow-up? A discrete choice experiment (DCE) study to investigate preferences for cancer follow-up amongst people with breast, prostate, colorectal cancer and cutaneous melanoma', *Society for Academic Primary Care (SAPC) Celebrating Difference Conference*, Glasgow, October 2012.

*denotes published after end of Review period on 31 October 2016

Project No:	WOC2.16	In Progress			
Project Title:	MUNROS: health care reform: the iMPact on practice, oUtcomes and costs of New roles for health pROfeSsionals.				
Grant Applicants / Principal Investigators (place of work):	Elliott, R. (HERU); Bond, C. (Academic Primary Care, University of Aberdeen); de Bont, A. (Erasmus University); Busse, R. (Technische Universität Berlin); Ruggeri, M. (Università Cattolica del Sacro Cuore); Mijal, M. (University of Warsaw); Svobodová, H. (Charles University Prague); Ökem, G. (Economic Policy Research Foundation of Turkey); Askildsen, J.E. (University Research Norway); Sutton, M. (University of Manchester).				
HERU Investigators:	Elliott, R., Bruhn, H., Kopasker, D.				
HERU Research Theme:	Workforce and Organisation of Care – Organisation and Performance				
Source of Funding and Total Awarded:	European Commission FP7 – £2,369,731 and University of Aberdeen				
Amount of HERU Funding:	£363,000				
Objectives:	The proposed research responds to the call for research into the ‘Quality, Efficiency and Solidarity of Health Systems’. European countries are reforming their health systems to improve healthcare delivery. One of the ways they are doing this is by changing skill mix within teams delivering health services by extending the roles of existing health professions and introducing new ones.				
Outline:	This project is undertaking a systematic evaluation of the impact of these ‘new professional roles’ on practice, outcomes and costs in a range of different healthcare settings within European Union and associate countries. It details the nature, scope and contribution of the new professional roles, evaluates their impact on clinical practice and outcomes, and identifies their scope to improve the integration of care. It conducts economic evaluation to identify the cost-effectiveness of the new professional roles, identifies optimal models for delivery of healthcare and the consequences of these for management of human resources and workforce planning. Study design is cross-sectional and multi-level. A mixed methods approach combines analysis of routinely collected data and primary data generated through interviews and questionnaires to health professionals, managers and patients. Data analysis employs multi-level modelling techniques.				
Start Date:	October 2012				
Duration of Project:	54 months				
Project Phase:	<table border="1" style="display: inline-table; vertical-align: middle;"> <tr> <td style="width: 20px; height: 15px;"></td> <td style="width: 20px; height: 15px;"></td> <td style="width: 20px; height: 15px; background-color: blue;"></td> </tr> </table>				

Publications:

Tsiachristas, A., Wallenburg, I., Bond, C.M., **Elliott, R.**, Busse, R., van Exel, J., Rutten-van Molken, M.P. and de Bont, A. (2015) 'Costs and effects of new professional roles: evidence from a literature review', *Health Policy*, 119(9), 1176–1187.

Bond, C., **Bruhn, H.**, de Bont, A., van Exel, J., Busse, R., Sutton, M., **Elliott, R.** and the MUNROS team (2016) 'The iMpaCt on praCtice, oUtcomes and costs of New roles for health pROfeSSionals' [protocol], *BMJ Open*, 6, e010511.

Other Dissemination Activities:

Bond, C. (2013) 'MUNROS project: overview', *Stakeholder Workshop*, Karolinum of the Charles University, Ovocny Trh. 3, Prague, 26th September 2013.

de Bont, A. and MUNROS Team (led by **Elliott, R.** and Bond, C.) (2014) 'Changing skill mix within teams delivering integrated health services', *EU Chronic Care Summit*, Brussels, 3rd April 2014.

Archibald, D., Bond, C. and **Elliott, R.** (2014) 'Identifying the drivers of new professional roles in European health systems', *Health Economics in the Age of Longevity: a Joint iHEA & ECHE Congress*, Trinity College, Dublin, 13–16 July 2014.

Tsiachristas, A., Wallenburg, I., de Bont, A., **Archibald, D.**, Bond, C. and **Elliott, R.** (2014) 'Costs and effects of health service redesign: evidence from a literature review' *Health Economics in the Age of Longevity: a Joint iHEA & ECHE Congress*, Trinity College, Dublin, 13–16 July 2014.

Elliott, R. (2014) 'MUNROS: challenging terrain for economists', *Workshop to mark 60th birthday of Jan Erik Askildsen*, Department of Economics, University of Bergen, 14 November 2014.

de Bont, A., Wallenburg, I. and MUNROS Team (led by **Elliott, R.** and Bond, C.) (2014) 'On health care reform: the iMpaCt on praCtice, oUtcomes and costs of New roles for health pROfeSSionals', *Working Group on Health Workforce*, Brussels, 24 November 2014.

de Bont, A., Wallenburg, I. and MUNROS Team (led by **Elliott, R.** and Bond, C.) (2014) 'On health care reform: the iMpaCt on praCtice, oUtcomes and costs of New roles for health pROfeSSionals', *Zorgplatform*, Utrecht, 3rd December 2014.

Elliott, R. (2014) 'MUNROS project – the iMpaCt on praCtice, oUtcomes and costs of New roles for health pROfeSSionals', *Joint Action Health Workforce Planning and Forecasting, Conference on improving planning methodologies and data across Europe*, Rome, Italy, 4 December 2014.

de Bont, A. and the MUNROS Team (led by **Elliott, R.** and Bond, C.) (2015) 'Invited presentation about the MUNROS project for EC Directorate-General for Health Healthcare Systems Unit – Workforce Team', *Summit on Innovation for Active and Healthy Ageing*, Brussels, Belgium, 9–10 March 2015.

de Bont, A. and the MUNROS Team (led by **Elliott, R.** and Bond, C.) (2015) 'New professional roles in Europe', *International Sociological Association (ISA) RC52, Professions Bonds and Boundaries: Visioning a Globalising, Managed and Inclusive Professionalism*, Università Cattolica del Sacro Cuore, Milan, Italy, 19–21 March 2015.

Bond, C. and the MUNROS Team (led by **Elliott, R.** and Bond, C.) (2015) 'MUNROS overview presentation', *15th International Health Workforce Conference*, Royal College of Physicians, London, England, 12–13 May 2015.

Ökem, G. and the MUNROS Team (led by **Elliott, R.** and Bond, C.) (2015) 'New professional roles in care pathways in diabetes II, breast cancer and acute myocardial infarction in some selected European countries and Turkey: initial results of MUNROS project', *9th International Congress on Quality in Healthcare, Accreditation and Patient Safety*, Antalya, Turkey, 13–16 May 2016.

Bond, C. and the MUNROS Team (led by **Elliott, R.** and Bond, C.) (2015) 'The iMPact on practice, oUtcomes and costs of New ROles for health care professionalS: results from the MUNROS study', *44th Annual Scientific Meeting of Society for Academic Primary Care (SAPC), Evidence and Innovation in Primary Care*, University of Oxford, Oxford, England, 8–10 July 2015.

Elliott, R. (2015) 'The impact of the new professional roles on clinical practice and the organisation of care: emerging results. Organised session', *International Health Economics Association (iHEA) 11th World Congress*, Milan, Italy, 12–15 July 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.

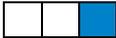
de Bont, A., Bond, C. and the MUNROS Team (led by **Elliott, R.** and Bond, C.) (2015) 'The MUNROS project: exploring the introduction of new professions and professional roles', *Joint meeting EU Chief Medical Officers and Chief Nursing Officers*, Luxemburg, 12 October 2015.

de Bont, A. and the MUNROS Team (led by **Elliott, R.** and Bond, C.) (2015) 'The impact on practice of new roles for health professionals: MUNROS study', *20th World Organization of National Colleges, Academies and Academic Associations of General Practitioners/Family Physicians (WONCA) Europe Conference*, Istanbul, Turkey, 22–25 October 2015.

Elliott, R. and Bond, C. (2016) 'The MUNROS Study: changing health care roles in breast cancer care', *Scottish Cancer Trials Breast Group Meeting*, Hilton Hotel, Edinburgh Airport, Edinburgh, 28 January 2016.

Sutton, M. and the MUNROS Team (led by **Elliott, R.** and Bond, C.) (2016) 'Towards a more efficient use of health human resources OECD', *Organisation for Economic Co-operation and Development (OECD) Workshop*, OECD Conference Centre, Paris, France, 27 June 2016.

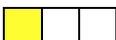
Elliott, R., Bond, C. and Sutton, M. (2016) 'New roles for health professionals: findings from the MUNROS project', *European Union Directorate Knowledge Hour, Presentation to invited members of Directorate-General Research and Employment*, Brussels, Belgium, 6 September 2016.

Project No:	WOC2.17	In Progress
Project Title:	Understanding healthcare professionals' and carers' perceptions of risk factors leading to crisis for people with dementia.	
Grant Applicants / Principal Investigators (place of work):	Toot, S. (North East London NHS Foundation Trust); Orrell, M. (Institute of Mental Health)	
HERU Investigators:	Ryan, M., Watson, V.	
HERU Research Theme:	Workforce and Organisation of Care – Organisation and Performance	
Source of Funding and Total Awarded:	Chief Scientist Office (CSO) CORE	
Objectives:	To identify the perceived relative importance of risk factors which contribute towards a crisis risking admission.	
Outline:	<p>Perceptions of crisis risk amongst people with dementia need to be better understood. A survey of care professionals working with people with dementia and family carers was used to understand the relative importance placed on factors that could lead to crisis/possible hospital admission. Data were gathered using an innovative multi-attribute tool. Both care professionals and carers perceived that the person's physical health was the most prominent risk factor that results in crisis leading to a possible admission to hospital. According to family carers, increased risks/hazards in the home also had a pronounced effect on increasing the perceived risk of a crisis, whereas healthcare professionals reported aggressive behaviour to be a significant risk factor to increase perceived risk of crisis. There is a recognised need for identifying physical health problems in people with dementia and early intervention is necessary in order to prevent these potentially avoidable hospital admissions. Older people's mental health services should be integrated with other healthcare services including intermediate care, social welfare and primary care.</p>	
Start Date:	June 2014	
Duration of Project:	36 months	
Project Phase:		
Publications:	–	
Other Dissemination Activities:	–	

Project No:	WOC2.18	In Progress
Project Title:	PhD: Enhancing quality in social care through economic analysis.	
Grant Applicants / Principal Investigators (place of work):	Momanyi, K. (PhD Student), McNamee, P., Skåtun, D. (HERU).	
HERU Investigators:	Momanyi, K., McNamee, P., Skåtun, D.	
HERU Research Theme:	Workforce and Organisation of Care – Organisation and Performance	
Source of Funding and total awarded:	Scottish Government/ESRC – £54,096, University of Aberdeen and Chief Scientist Office (CSO) CORE	
Amount of HERU funding:	£54,096	
Objectives:	The overall objective of the PhD thesis is to inform policies that would enable social care clients in Scotland to live independently in their own homes, and maintain a good quality of life.	
Outline:	<p>Population ageing has motivated policy makers around the world to focus on how best to organise health and social care services to meet an anticipated growing demand on services. Two popular initiatives are re-ablement and telecare. Re-ablement is an approach within homecare that enables older individuals with social care needs to improve their functional performance and live independently. Telecare, on the other hand, involves use of devices to monitor individuals' health and safety, and provide response when needed. Evidence from the existing literature suggests that there are few economic studies investigating the effects of re-ablement and telecare, especially in Scotland. The generalisability of the existing studies is also questionable given that most of them have small sample sizes and high attrition rates. To this end, we are undertaking economic analyses of linked administrative health and social care data in Scotland. Our estimation strategy will control for potential selectivity bias, endogeneity of key variables and unobserved heterogeneity in tandem. The findings from this thesis will inform the factors associated with better outcomes; help identify the groups of people that are most likely to benefit from the interventions; and show the relative importance of re-ablement and telecare in improving outcomes.</p>	
Start Date:	October 2015	
Duration of Project:	3 years	
Project Phase:		
Publications:	–	

Other Dissemination Activities: **Momanyi, K., McNamee, P. and Skåtun, D.** (2016) 'Enhancing quality in social care through economic analysis', *PhD Health and Social Care Symposium*, Farr Institute, NHS National Services Scotland, Edinburgh 22 June 2016.

Momanyi, K., McNamee, P. and Skåtun, D. (2016) 'Enhancing quality in social care through economic analysis', *Institute of Applied Health Sciences (IAHS) Postgraduate Research Student Symposium*, University of Aberdeen, Aberdeen, 24 June 2016.

Project No:	WOC2.19	In Progress
Project Title:	Health economic evaluation of the Lothian high demand service.	
Grant Applicants / Principal Investigators (place of work):	Steel, R. (NHS Lothian); McNamee, P. (HERU).	
HERU Investigators:	McNamee, P., Sechel C.	
HERU Research Theme:	Workforce and Organisation of Care – Organisation and Performance	
Source of Funding and Total Awarded:	NHS Lothian – £50,000 and University of Aberdeen	
Amount of HERU Funding:	£50,000	
Objectives:	This study will estimate the costs and cost savings of a system of Anticipatory Care Plans (ACPs) implemented in NHS Lothian amongst individuals at high risk of future hospital admission.	
Outline:	<p>Reducing ‘avoidable unscheduled attendances and admissions to hospital’ is recognised as one of the eight key areas of improvement in NHS Scotland’s <i>Shifting the Balance of Care Improvement Framework</i>. The Improvement Framework identifies a variety of approaches to achieve shifts in the balance of care, two elements of which include the identification of patients who are most at risk of hospital admission, and the development of patient care plans. Such care plans are built on the understanding that a substantial proportion of individuals who arrive in A&E departments, or have other forms of unplanned hospital admissions, do not require, or want, acute hospital care, suggesting that it may be possible to reduce acute care costs by providing alternative approaches to acute care. Furthermore, a small number of individuals account for a large proportion of such hospital admissions (often termed ‘high-demand’ patients). In 2014, NHS Lothian initiated a service to identify and manage ‘high-demand’ patients, by implementing a system of ACPs amongst those at high risk of future hospital admission. We are undertaking a comparative before-and-after study of hospital admissions, together with estimation of the additional staffing costs involved in running the system, to provide an estimate of the overall service impact.</p>	
Start Date:	April 2016	
Duration of Project:	12 months	
Project Phase:		
Publications:	–	
Other Dissemination Activities:	–	

HBI

Health Behaviour and Inequality (HBI)



We use economics to understand health behaviour and to design and evaluate health behaviour interventions. We lead research on behavioural economics and developing rigorous methods for measuring inequalities.



HBI1

Understanding Health Behaviour



Project No:	HBI1.1	Completed
Project Title:	PhD: Economic analysis of dietary and physical activity behaviours: consequences for obesity interventions (MRC Capacity Building PhD).	
Grant Applicants / Principal Investigators (place of work):	Becker, F., (PhD Student); Ludbrook, A., Eberth, B. (HERU).	
HERU Investigators:	Becker, F., Ludbrook, A., Eberth, B.	
HERU Research Theme:	Health Behaviour and Inequality – Understanding Health Behaviour	
Source of Funding and Total Awarded:	Medical Research Council (MRC) (Capacity Building PhD Studentship) – £58,645, University of Aberdeen and Chief Scientist Office (CSO) CORE	
Amount of HERU Funding:	£58,645	
Objectives:	To study individuals' combined diet and physical activity behaviours, the factors influencing those behaviours and their responses to changes in the choice factors, using a range of data sources.	
Outline:	Diet and physical activity are two of the five key risk factors being addressed to improve health in the UK. The evidence base relating to the effectiveness and cost-effectiveness of public health interventions designed to influence such behaviours is weak. In other lifestyle behaviours, such as smoking and alcohol use, empirical models of behaviour based on secondary data have been developed. Studies have considered models of single-lifestyle behaviours with varying concentration on the roles of prices, information, regulation and peers. With respect to diet and physical activity there has been less research. This thesis has examined individuals' combined diet and physical activity behaviours and the factors influencing those behaviours, including social status and deprivation. The effect of diet and physical activity on obesity, measured by BMI, has been examined using a range of data sources and modelling approaches, and policy implications have been identified.	
Outcome and Translation:	This PhD project improved understanding of the economic factors that affect diet and physical activity choices to inform the development of policy interventions. Simultaneous estimation of diet and physical activity suggested that low activity-uptake was associated with significantly higher BMI in overweight and obese individuals regardless of diet quality. Whilst there was evidence that diet quality is important for individual body weight, physical activity had a major influence on BMI, especially in the upper quantiles of the BMI distribution, i.e. amongst those with the most excess weight. This was found even for levels of physical activity below recommended levels, suggesting that any physical activity has a benefit for overweight and obese individuals. This finding may be useful in developing future information and advice.	

Start Date:	October 2008
Duration of Project:	42 months
Publications:	Becker, F. (2012) 'Economic dietary analysis and physical activity behaviours in relation to obesity', <i>PhD Thesis</i> , HERU, University of Aberdeen.
Other Dissemination Activities:	Becker, F. (2009) 'Patterns in dietary and physical activity behaviour in Scotland consequences for obesity intervention', <i>Annual Public Health Conference</i> , Peebles, November 2009. Becker, F., Ludbrook, A. and Eberth, B. Determinants of diet and physical activity: empirical evidence from the Scottish Health Survey. <i>ECHE</i> . Helsinki. July 2010. Becker, F. Determinants of diet and physical activity: empirical evidence from the Scottish Health Survey. <i>University of Aberdeen PhD Symposium</i> . Aberdeen. February 2011. Becker, F. Diet and physical therapy: simultaneous determinants of BMI. <i>HERU Workshop on Obesity</i> . Aberdeen. May 2011. Becker, F. and Eberth, B. Decomposition of changes in BMI distributions using quantile regression: empirical evidence from the HILDA survey. <i>NHESG</i> . Kuopio, Finland. August 2012.

Project No:	HBI1.2	Completed
Project Title:	ICDC: Improving the efficient and equitable care of patients with chronic medical conditions; Interdisciplinary Chronic Disease Collaboration.	
Grant Applicants / Principal Investigators (place of work):	Hemmelgarn, B., Manns, B.J., Campbell, N.R., King, K.M., McLaren, L., McLaughlin, K. (University of Calgary); Tonelli, M.A., Bowen, S., Timothy, A., Caulfield, T.A., Johnson, J.A., Klarenbach, S.W., McAlister, F.A., Plotnikoff, R.C., Tsuyuki, R.T. (University of Alberta); Gordon, D. (University of Alberta Hospital); Lewanczuk, R.Z., Sargious, P., Viner, S. (Alberta Health Services); Huserau, D. (Canadian Agency for Drugs & Technologies in Health); Sanmartin, C. (Statistics Canada); Straus, S.E. (University of Toronto); Rosenberg, M.W. (Queen's University); Pol, M. van der (HERU).	
HERU Investigators:	Pol, M. van der	
HERU Research Theme:	Health Behaviour and Inequality – Understanding Health Behaviour	
Source of Funding:	University of Aberdeen	
Objectives:	To investigate the social, educational, geographic, economic, cultural and psychological factors that influence people with chronic diseases to make unhealthy choices.	
Outline:	Obesity, smoking, physical inactivity and an ageing population have contributed to an epidemic of high blood pressure, diabetes, kidney disease and vascular disease. These chronic conditions, which often occur together, are major causes of death and disability. Effective treatments exist but many patients do not adhere to the prescribed treatment and/or their lifestyle choices reduce the effectiveness of the treatments. A survey of 1849 patients with one or more chronic diseases living in Western Canada was conducted in 2012. The survey focused on various aspects of healthcare delivery, financial barriers, geographic barriers and use of information technology as they relate to the care and management of patients with chronic disease. The economics component of this study investigated the correlation between individuals' time preference and risk attitude, and adherence to advice on health behaviours. The results showed that time and risk preferences play a role in adherence to some but not all health behaviours.	
Outcome and Translation:	The research identified several potentially modifiable barriers that, if addressed through health policy, could further optimise care of individuals with chronic disease.	
Start Date:	April 2009	
Duration of Project:	3 years	

Publications:

Pol, M. van der, Hennessey, 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].

Other Dissemination Activities:

Pol, M van der, Hennessey, D. (2013) 'The role of time and risk preferences in adherence to physician advice on lifestyle behaviour change', *Nordic Health Economists' Study Group (NHESG)*, Oslo, August 2013.

Project No:	HBI1.3	Completed
Project Title:	MRC Early Career Fellowship: The intergenerational transfer of eating habits, physical activity, behaviour and body composition, evidence from the UK.	
Grant Applicants / Principal Investigators (place of work):	Brown, H. (HERU).	
HERU Investigators:	Brown, H.	
HERU Research Theme:	Health Behaviour and Inequality – Understanding Health Behaviour	
Source of Funding and Total Awarded:	Medical Research Council (MRC) Early Career Fellowship – £127,308	
Amount of HERU Funding:	£127,308	
Objectives:	To increase the understanding of behaviours related to obesity.	
Outline:	<p>This Postdoctoral Fellowship allowed for the development of peer-reviewed papers from PhD research, in three areas: spousal correlations in BMI, labour supply and BMI, and the economic determinants of physical activity behaviour.</p> <p>Further research was conducted on the intergenerational transfer of BMI and lifestyle characteristics using the Panel Study of Income Dynamics and the National Child Development Survey. The research looked at how to disentangle the family effects from the neighbourhood effects. The analysis controlled for time-invariant individual and family effects as well as neighbourhood characteristics.</p>	
Outcome and Translation:	This project improved our understanding of the determinants of the obesity epidemic and potential policy interventions.	
Start Date:	August 2009	
Duration of Project:	2 Years	

Publications:

Brown, H., Hole, A.R. and Roberts, J. (2010) 'Going the same 'weigh': spousal correlations in obesity in the UK', *Sheffield Economic Research Paper Series* (SERP 2010012).

Brown, H. and Roberts, J. (2011) 'Exercising choice: the economic determinants of physical activity behaviour of an employed population', *Social Science and Medicine*, 73(3), 383-390.

Brown, H. (2011) 'Marriage, BMI, and wages: a double selection approach', *Scottish Journal of Political Economy*, 58(3), 347-377.

Brown, H. and Roberts, J. (2012) 'Exploring the factors contributing to sibling correlations in BMI: study using the panel study of income dynamics', *Obesity*, 20(5), 978-984.

Brown, H. and **Pol, M. van der.** (2014) 'The role of time preferences in the intergenerational transfer of smoking', *Health Economics*, 23(12), 1493-1501.

-
- Other Dissemination Activities:** **Brown, H.** (2010) 'Marriage, BMI, and wages: a double selection approach', *Scottish Economic Society Conference*, Perth, April 2010.
- Brown H.** and Roberts J. (2010) 'Born to be wide: examining maternal and adolescent correlations in BMI', *European Conference on Health Economics*, Helsinki, July 2010.
- Brown H.** and Roberts J. (2010) 'Going the same way? Spousal correlation in obesity', *European Conference on Health Economics*, Helsinki, July 2010.
- Brown, H.** (2010) 'He ain't heavy he's my brother: examining sibling correlations in BMI', *Michigan University*, September 2010.
- Brown, H.** (2010) 'The role of lifestyle characteristics in influencing correlations in BMI for two cohorts of siblings', *PSID Conference on Health and SES*, USA, September 2010.
- Brown, H.** (2010) 'He ain't heavy he's my brother: examining sibling correlations in BMI', *University of Leeds*, November 2010.
- Brown, H.** and **Pol, M. van der.** (2011) 'Intergenerational transfer of health: the role of time and risk preferences', *Health Economists' Study Group (HESG)*, York, January 2011.
- Brown, H.** (2011) 'Born to be wide: examining maternal and adolescent correlations in BMI', *HERU Workshop on Obesity*, Aberdeen, May 2011.
- Brown, H.** (2011) 'Examining the pathways contributing to the intergenerational transmission of smoking', *Understanding Society/BHPS Conference*, Essex, June 2011.
- Brown, H.** and **Pol, M. van der.** (2011) 'Intergenerational transfer of health: the role of time and risk preferences', *iHEA*, Toronto, July 2011.

Project No:	HBI1.4	Completed
Project Title:	PhD: Time preference for future health events.	
Grant Applicants / Principal Investigators (place of work):	Gray, E. (PhD student), Pol, M. van der (HERU); Phimister, E. (Department of Economics, University of Aberdeen).	
HERU Investigators:	Gray, E., Pol, M. van der	
HERU Research Theme:	Health Behaviour and Inequality – Understanding Health Behaviour	
Source of Funding and Total Awarded:	Medical Research Council ((MRC) (Doctoral Training Grant), Division of Applied Health Sciences (DAHS) – £41,928 and £12,719 respectively and University of Aberdeen	
Amount of HERU Funding:	£54,647	
Objectives:	The aim of this thesis was to develop and test a new survey method for eliciting time preferences that more accurately reflects the health system resource allocation decision-making context; estimate the effect of time preferences on smoking behaviour in a cross-sectional data set controlling for personality measures; and estimate the effect of time preferences on risk of becoming obese using panel data.	
Outline:	A novel choice task called the portfolio choice was developed and piloted in a student sample. This differed from previous time preference elicitation tasks in two aspects of question framing: the use of multiple choice within a set (portfolio choice) and outcomes described as sequences rather than single occurrences. The effect of time preferences on smoking behaviour was estimated in general population cross-sectional data. The analysis includes several explanatory variables potentially correlated with time preferences and health behaviours. These include demographic and socio-economic status measures and four psychological measures of traits found to be associated with health behaviours (self-efficacy, sense of coherence, life orientation and risk attitude). The role of time preferences in obesity was investigated using a Household Survey Panel data set. This approach utilised variations in time preference and BMI over time to allow estimation of the effect of time preferences unbiased by all time-invariant omitted variables.	
Outcome and Translation:	Increasing our understanding of individuals' time preference for health is critical for devising appropriate interventions to address health behaviours and will inform discounting practices in economic evaluation of health interventions. The research addressed several of the remaining key questions.	
Start Date:	October 2009	
Duration of Project:	3 years	

Publications: **Gray, E.** (2012) 'Time preference for future health events', *PhD Thesis*, University of Aberdeen.

Other Dissemination Activities: **Gray, E.** (2010) 'Time preferences for future health events', *University of Aberdeen PhD Symposium*, Aberdeen, June 2010.

Gray, E. and **Pol, M. van der.** (2011) 'A novel method of eliciting social time preferences for health', *Health Economists' Study Group (HESG)*, York, January 2011.

Gray, E. (2011) 'The influence of time preference on the onset of obesity: evidence from a general population longitudinal survey in the Netherlands', *HERU workshop on obesity*, Aberdeen, May 2011.

Gray, E. (2011) 'The influence of time preferences on the onset of obesity: evidence from a general population', *Faculty of Public Health conference*, Aviemore, November 2011.

Gray, E. (2012) 'The influence of time preferences on the onset of obesity: evidence from a general population longitudinal survey', *College des Economistes de la Sante (CES) / Health Economists' Study Group (HESG)*, Marseille, January 2012

Project No:	HBI1.5	Completed
Project Title:	EOPIC: Engaging with Older People to develop and deliver Interventions for the self-management of Chronic pain.	
Grant Applicants / Principal Investigators (place of work):	Smith, B. (University of Dundee); Schofield, P. (University of Greenwich); Clarke, A., Jones, D. (University of Northumbria); McNamee, P. (HERU) ; Martin, D. (University of Teeside).	
HERU Investigators:	McNamee, P., Boyers, D.	
HERU Research Theme:	Health Behaviour and Inequality – Understanding Health Behaviour	
Source of Funding and Total Awarded:	Medical Research Council (Strategic Grant) – £1,058,605, Chief Scientist Office (CSO) CORE and University of Aberdeen	
Amount of HERU Funding:	£75,757	
Objectives:	To achieve a better understanding of the consequences of ageing with chronic pain and, through this, to develop innovative ways in which older people can possess the knowledge, skills and confidence to live independently at home in the presence of self-managed pain.	
Outline:	Taking a multi-disciplinary approach that emphasised the interconnections between chronic pain, physical and emotional functioning, material resources and social aspects of the everyday lives of older adults, the project comprised five phases of research: (1) Investigation of the attitudes and approaches adopted by general practitioners, primary care teams, pain clinics and older adults towards pain management in older age; (2) Assessment of the acceptability, effectiveness and cost-effectiveness of self-management strategies; (3) Measurement of the economic consequences of pain in later life; (4) Development of working prototypes of new, innovative materials (e.g. written and audiovisual, including web-based resources) that help older adults to live with pain in the community; and (5) Exploration of effective and cost-effective ways to disseminate and deliver newly developed materials.	
Outcome and Translation:	The programme of work enhanced the evidence base on the beliefs, attitudes and economic consequences of pain in older populations, to allow improved service provision.	
Start Date:	February 2010	
Duration of Project:	54 months	

Publications:

Schofield, P., Clarke, A., Jones, D., Martin, D., **McNamee, P.** and Smith, B.H. (2011) 'Chronic pain in later life: a review of current issues and challenges', *Aging Health*, 7(4), 551-556.

Clarke, A., Anthony, G., Gray, D., Jones, D., **McNamee, P.**, Schofield, P., Smith, B.H. and Martin, D. (2012) "'I feel so stupid because I can't give a proper answer ...' How older adults describe chronic pain: a qualitative study', *BMC Geriatrics*, 12.

Boyers, D., McNamee, P., Clarke, A., Jones, D., Martin, D., Schofield, P. and Smith, B. H. (2013) 'Cost-effectiveness of self-management methods for the treatment of chronic pain in an aging adult population: a systematic review of the literature', *Clinical Journal of Pain*, 29(4), 366-375.

Schofield, P., Smith, B.H., Martin, D., Jones, D., Clarke, A., **McNamee, P.**, Marsh, R., Morrison, M., Morrison, R., Fowler, S., Anthony, G. and Stewart, C. (2014) 'Systematically searching for and assessing the literature for self-management of chronic pain: a lay users' perspective', *BMC Geriatrics*, 14(1), 86.

Clarke, A., Martin, D., Jones, D., Schofield, P., Anthony, G., **McNamee, P.**, Gray, D. and Smith, B.H. (2014) "'I try and smile, I try and be cheery, I try not to be pushy. I try to say 'I'm here for help' but I leave feeling... worried": a qualitative study of perceptions of interactions with health professionals by community-based older adults with chronic pain', *PLoS One*, 9(9), e105450.

McNamee, P. and Mendolia, S. (2014) 'The effect of chronic pain on life satisfaction: evidence from Australian data', *Social Science and Medicine*, 121c, 65-73.

Geneen, L.J., Martin, D.J., Adams, N., Clarke, C., Dunbar, M., Jones, D., **McNamee, P.**, Schofield, P. and Smith, B.H. (2015) 'Effects of education to facilitate knowledge about chronic pain for adults: a systematic review with meta-analysis', *Systematic Reviews*, 4, 132.

-
- Other Dissemination Activities:** **Boyers, D.** (on behalf of the EOPIC project team - Smith, B., Schofield, P., Gray, D., Clarke, A., **McNamee, P.**, Martin, D., Jones, D. and Roche, P.) (2010) 'EOPIC: Engaging with older people and their carers to develop interventions for the self-management of chronic pain' [Poster], *Life Long Health and Well Being Research Retreat*, Newcastle, October 2010.
- Boyers, D.** (on behalf of the EOPIC project team - Smith, B., Schofield, P., Gray, D., Clarke, A., **McNamee, P.**, Martin, D., Jones, D. and Roche, P.) (2010) 'Self-management interventions for older adults with chronic pain: a systematic review of the cost-effectiveness literature', *Life Long Health and Well Being Research Retreat*, Newcastle, October 2010.
- Boyers, D., McNamee, P.,** Schofield, P., Martin, D., Jones, D., Clarke, A. and Smith, B. (2011) 'Cost-effectiveness of self-management of chronic pain in older adults: a systematic review', *Life-Long Health & Well-Being Conference*, University of Newcastle, November 2011.
- McNamee, P.** (2012) 'Economic consequences of chronic pain in older age', *Monash University*, Melbourne, May 2012.
- Clarke, A., Jones, D., Martin, D., **McNamee, P.**, Schofield, P. and Smith, B. (2012) 'Engaging with older people and their carers to develop interventions for the self-management of chronic pain', *Life-Long Health & Well-Being Conference*, University of Edinburgh, December 2012.
- Ma, A., Skåtun, D., McNamee, P.,** Clarke, A., Jones, D., Martin, D., Schofield, P. and Smith, B. (2013) 'The labour market outcomes of chronic pain', *Scottish Pain Research Community (SPaRC) Annual Scientific Meeting, West Park Conference Centre*, Dundee, March 2013.
- McNamee, P.** (2013) 'Chronic pain in older age and compensating income variation: how important are psycho-social factors', *ARC Centre of Excellence in Population Ageing Research (CEPAR) International Conference*, University of New South Wales, Sydney, Australia, July 2013.
- McNamee, P.** and Mendolia, S. (2014) 'The effect of chronic pain on life satisfaction: evidence from Australia', *Health Economists' Study Group*, Sheffield, 8–10 January 2014.

Project No:	HBI1.6	Completed
Project Title:	Investigating the Glasgow effect.	
Grant Applicants / Principal Investigators (place of work):	Walsh, D., McLaughlin, R., Tannahill, C. (Glasgow Centre for Population Health); McCartney, G. (NHS Health Scotland); Hanlon, P. (University of Glasgow); Pol, M. van der (HERU).	
HERU Investigators:	Pol, M. van der., Gray, E.	
HERU Research Theme:	Health Behaviour and Inequality – Understanding Health Behaviour	
Source of Funding:	University of Aberdeen	
Objectives:	To gain an understanding of why communities in Glasgow experience profoundly different health outcomes compared to very similar communities in Liverpool and Manchester.	
Outline:	<p>The ‘Scottish Effect’ (and more recently, the ‘Glasgow Effect’) are terms that have been coined in recent years to describe the levels of poor health experienced in Scotland (and, particularly, Glasgow) in comparison to other parts of the UK <i>over and above those</i> explained by greater socio-economic deprivation. The causes of this ‘effect’ are unknown. The aim of the project was to carry out a population survey in three UK cities (Glasgow, Liverpool and Manchester) to gather new data on three potential explanations for Glasgow’s relatively poorer health profile. The three hypotheses were:</p> <ol style="list-style-type: none"> (1) that individual values in Glasgow are different from those in Liverpool and Manchester (e.g. Glaswegians have a different psychological outlook to others, in terms of their aspirations or ‘time preferences’ (and related levels of, and attitudes to, risk taking)); (2) that there are lower levels of social capital in Glasgow; or (3) that Glasgow’s poor health derives from particular Thatcherite policies of the late 1970s/1980s (the ‘political attack’ hypothesis). <p>The results showed that there are differences in some aspects of social capital (trust and reciprocity, and social participation) between Glasgow and the two English cities. However, it appears <i>less plausible</i> that Glasgow’s population suffers from a lower sense of coherence, from the effects of different childhood experiences, or that the population is more associated with other particular ‘values’ that might have adverse impacts on health, such as psychological outlook, hedonism and future orientation (‘time preferences’) (although there is some evidence that Glasgow’s population may be more risk-seeking).</p>	
Outcome and Translation:	It is crucial to understand what factors are associated with the poorer levels of health in Glasgow (after controlling for deprivation) so that effective policies can be formulated to address health inequalities.	

Start Date:	September 2010
Duration of Project:	40 months
Publications:	<p>Walsh, D., McCartney, G., McCullough, S., Pol, M. van der., Buchanan, D. and Jones, R. (2013) <i>Exploring potential reasons for Glasgow's 'excess' mortality: results of a three-city survey of Glasgow, Liverpool and Manchester</i>, Glasgow: Glasgow Centre for Population Health.</p> <p>Walsh, D., McCartney, G., McCullough, S., Pol, M. van der, Buchanan, D. and Jones, R. (2015) 'Comparing levels of social capital in three northern post-industrial UK cities', <i>Public Health</i>, 129(6), 629–638.</p> <p>Walsh, D., McCartney, G., McCullough, S., Pol, M. van der, Buchanan, D. and Jones, R. (2015) 'Always looking on the bright side of life? Exploring optimism and health in three UK post-industrial urban settings', <i>Journal of Public Health</i>, 37(3), 389–397.</p> <p>Pol, M. van der, Walsh, D. and McCartney, G. (2015) 'Comparing time and risk preferences across three post-industrial UK cities', <i>Social Science and Medicine</i>, 140(September), 54–61.</p>
Other Dissemination Activities:	<p>Walsh, W., McCartney, G., McCullough, S., Jones, R. and Pol, M. van der (2012) 'What explains different health outcomes in identically deprived post-industrial UK cities?', <i>Population Health: Methods and Challenges Conference</i>, Birmingham, April 2012.</p> <p>Pol, M. van der (2013) 'Can preference heterogeneity partly explain the Glasgow effect?', <i>Glasgow Health Economics Seminar Series (GhESS)</i>, Glasgow, January 2013.</p> <p>Pol, M. van der (2013) 'Can preference heterogeneity partly explain the Glasgow effect? Time and risk preferences and health behaviour', <i>School of Health and Related Research (SchARR) Seminar Series</i>, University of Sheffield, March 2013.</p> <p>Pol, M. van der and Walsh, D. (2013) 'Can preference heterogeneity partly explain the Glasgow effect?', <i>Health Economists' Study Group</i>, University of Warwick, 26-28 June 2013.</p> <p>Pol, M. van der (2014) 'Geographical preference heterogeneity: a plausible hypothesis for higher levels of mortality in Glasgow?', <i>Institute of Health Economics and Management (IEMS) Seminars in Health and Labor Economics</i>, University of Lausanne, 29 October 2014.</p> <p>Pol, M. van der (2015) 'Investigating the Glasgow effect on health', <i>Behavioural Science Seminar</i>, Behavioural Science Centre, University of Stirling, 14 October 2015.</p>

Project No:	HBI1.7	Completed
Project Title:	Socio-economic inequalities in health and behaviour: application of novel approaches to identify health inequalities in Scotland and England to inform policy.	
Grant Applicants / Principal Investigators (place of work):	Eberth, B., Ludbrook, A., Hernández, R. (HERU); Gerdtham, U-G. (Lund University).	
HERU Investigators:	Eberth, B., Ludbrook, A., Hernández, R.	
HERU Research Theme:	Health Behaviour and Inequality – Understanding Health Behaviour	
Source of Funding and Total Awarded:	Chief Scientist Office (CSO) Health Services Research Committee – £94,311 and CSO CORE	
Amount of HERU Funding:	£94,311	
Objectives:	To examine the causes of socio-economic inequalities in lifestyle-related health behaviour with the objective to provide information regarding reductions in population health inequality through the targeting of key policies improving health behaviour.	
Outline:	<p>Reducing health inequalities is a major focus of the Scottish Government. Understanding the mechanisms that generate health inequalities requires an in-depth understanding of the underlying determinants. Health behaviours and their associated socio-economic inequalities were viewed here as health inequality determinants. The project aimed to understand how and to what extent health behaviours and income-related inequalities (IRIs) in health behaviours are a mediating factor in health inequalities.</p> <p>The main factors contributing to IRIs were income itself, employment status, particularly economic inactivity, and no educational qualifications. However, health behaviours as health and health behaviour determinants were also found to make significant contributions to health and health behaviour inequalities. We further found that changes in IRIs are largely driven by changes in the responsiveness of health and health behaviours to indicators of socio-economic status rather than changes in the IRI in these indicators.</p>	

Outcome and Translation:	The relative scale of the impact of health determinants on health and health behaviours, compared with the effect of inequalities in the health determinants, suggests that, in the short term, reducing the impact of disadvantage on health and health behaviours has more effect on IRIs than changes in the underlying distribution of income, economic activity and education. This implies that health improvement interventions which reduce the impact of disadvantage on health have the potential to reduce IRIs in health more effectively, in the short term, than interventions which seek to reduce IRIs in education and economic circumstances, which would be longer-term and implemented largely outwith the NHS.
Start Date:	October 2010
Duration of Project:	36 months
Publications:	<p>Eberth, B., Ludbrook, A., Hernández, R. and Gertham, U.-G. (2014) <i>Socio-economic inequalities in health and behaviour: application of novel approaches to identify health inequalities in Scotland and England to inform policy. Final report</i>, Edinburgh: Scottish Government Chief Scientist Office.</p> <p>Eberth, B., Ludbrook, A., Gerdtham, U.-G. and Hernández, R. (2014) Socioeconomic inequalities in health and behaviour: application of novel approaches to identify health inequality in Scotland and England to inform policy, <i>CSO Focus on Research</i>, Edinburgh: Chief Scientist Office.</p> <p>Eberth, B., Ludbrook, A., Hernández, R. and Gerdtham, U.-G. (2014) <i>Identifying underlying causes of health inequality to inform policy</i>, HERU Briefing Paper, University of Aberdeen, September 2014.</p>
Other Dissemination Activities:	<p>Eberth, B. (2011) 'Novel approaches to identifying determinants of health inequality and effective policy responses', <i>Chief Scientist Office Workshop on Measuring, Understanding and Tackling Health Inequalities: New Insights from Scottish Research</i>, Edinburgh, February 2011.</p> <p>Eberth, B. (2013) 'An evaluation of health inequalities in Scotland using repeated cross-sectional survey data,' <i>Scottish Faculty of Public Health conference</i>, Dunblane, Scotland, November 2013.</p> <p>Eberth, B. (2014) 'Health behaviours and health inequalities in Scotland', <i>Scottish Institute for Research in Economics (SIRE) Policy Forum on Health Inequalities</i>, Edinburgh, 19 June 2014.</p> <p>Eberth, B. and Ludbrook, A. (2015) 'Socio-economic inequalities in health and behaviour: application of novel approaches to identify health inequality in Scotland and England to inform policy', <i>HERU Policy Workshop</i>, Edinburgh, January 2015.</p>

Project No:	HBI1.8	Completed
Project Title:	TOPS: Technologies to support Older People at home: maximising personal and Social interaction.	
Grant Applicants / Principal Investigators (place of work):	Wilson, P., Philip, L., Edwards, P., Farrington, J. (Other Applied Health Sciences, University of Aberdeen); Schofield, P. (University of Greenwich); Rodger, G. (UHIMI Centre for Rural Health); Williams, F. (Institute of Rural Health, Wales); Hanson, V. (University of Dundee); McNamee, P. (HERU) ; Oliver, P., Wright, P. (University of Newcastle).	
HERU Investigators:	McNamee, P.	
HERU Research Theme:	Health Behaviour and Inequality – Understanding Health Behaviour	
Source of Funding:	University of Aberdeen	
Objectives:	<p>To determine the extent and nature of personal and social interaction between health and social care professionals and older adults with chronic pain in their homes; to</p> <ul style="list-style-type: none"> • explore the impact of telecare and telehealth technologies on personal and social interaction for older adults experiencing chronic pain. • integrate our understanding of social and personal interactions into the design and application of technology. 	
Outline:	<p>The role of new technologies in health and social care for older people is attracting increasing interest as part of government agendas for modernising public services across the UK. However, there is concern that such technology, if used to substitute for social care provision, will lead to detrimental effects due to loss of personal and social interaction with nurses and other community-based service providers. This study determined the extent and nature of personal and social interaction between health and social care professionals and older adults with chronic pain, explored the impact of telecare and telehealth technologies on these personal and social interactions for older adults experiencing chronic pain, and integrated understanding of social and personal interactions into the design and application of technologies for the management of chronic pain. The economic analysis, using a discrete choice experiment study, indicated that there was a preference for having less waiting time, more than one in-person home visit and less telecare. The additional waiting time that respondents were prepared to accept in order to receive fewer video calls suggests that, relative to in-person home visits, this mode of delivery is less preferred. We also found that respondents with chronic pain had less negative perceptions of ICT than respondents living without chronic pain.</p>	
Outcome and Translation:	This study can inform the future development of telecare and telehealth technologies amongst people with chronic pain.	

Start Date: November 2010

Duration of Project: 54 months

Publications: –

Other Dissemination Activities: Mort, A., **McNamee, P.**, Philip, L., Schofield, P., Hanson, V. and Rodger, G. (2011) 'TOPS: designing digital tools for personal and social interaction', *Digital Engagement 2011 Conference*, Newcastle, 2011.

McNamee, P. (2015) 'Attitudes and preferences for telecare in remote and rural areas: a discrete choice experiment study', *Digital Health and Care Congress 2015*, King's Fund, London, 16–17 June 2015.

Project No:	HBI1.9	Completed
Project Title:	Analysis of choice behaviour and potential mechanisms of change.	
Grant Applicants / Principal Investigators (place of work):	Morgan, P. (Rowett Institute of Health and Nutrition (RINH)); Ludbrook, A. (HERU).	
HERU Investigators:	Ludbrook, A., Farrar, S., McKenzie, L., Olajide, D., Norwood, P., Krucien, N., Ryan, M.	
HERU Research Theme:	Health Behaviour and Inequality – Understanding Health Behaviour	
Source of Funding and Total Awarded:	Scottish Government (Rural and Environment Science and Analytical Services Division (RESAS)) via Rowett Institute of Nutrition and Health – £5,645,000 and Chief Scientist Office (CSO) CORE	
Amount of HERU Funding:	£234,725	
Objectives:	Improved understanding of the factors that affect food choice, both in purchasing patterns and consumption in all sectors of society, including deprived and vulnerable groups.	
Outline:	This project reviewed the relevant economic literature to map out theoretical approaches and empirical examples for further analysis. Econometric analysis was then carried out using secondary data to investigate children’s diets and adult fruit and vegetable consumption. A discrete choice experiment (DCE) was undertaken to investigate the effect of introducing colour coding of calorie information within a traffic light food labelling system. The DCE incorporated eye-tracking technology in the pilot stage to help understand the effect of the additional information. A full-scale study was then conducted using an online panel.	

Outcome and Translation:

The secondary data analysis of children's diets showed that household characteristics explain more of the variation than child characteristics, with adult healthy eating behaviour positively associated with children's behaviour. The inclusion of both child and household effects reduces the amount of unexplained variation in children's healthy eating although the unexplained variation remains substantial. The analysis of adult diet identified differences in determinants between fruit and vegetables and separate effects for income level and source of income.

In the food choice DCE, we found that saturated fat appears to be the attribute with largest impact on participants' choices, followed by fat, with salt consistently ranked as least influential attribute. The willingness-to-pay (WTP) values are largely influenced by the number of sandwiches presented to the participants, with lower levels of WTP for a four sandwich choice. We also found that deciding to colour-code for calorific value has an important effect on the valuation of this attribute. Our results confirm that colour coding the nutritional information can significantly influence food choices.

Start Date:

April 2011

Duration of Project:

5 years

Publications:

Bestwick, C.S., Douglas, F.C.G., Allan, J.L., Macdiarmid, J.I., **Ludbrook, A.** and Carlisle, S. (2013) 'A perspective on the strategic approach to the complexity and challenges of behaviour change in relation to dietary health', *Nutrition Bulletin*, 38(1), 50–56.

Other Dissemination Activities:

Olajide, D., McKenzie, L. and Ludbrook, A. (2014) 'The role of income status or household main-source of income in the determinants of dietary inequalities', *Health Economics in the Age of Longevity: a Joint iHEA & ECHE Congress*, Trinity College, Dublin, 13–16 July 2014.

Olajide, D., McKenzie, L. and Ludbrook, A. (2014) 'Censored household demand for fruits and vegetable: evidence from the UK's Living Costs and Food Survey', *35th Annual Nordic Health Economists' Study Group Meeting*, Reykjavik, Iceland, 20–22 August 2014.

Ludbrook, A. (2014) 'Prompting healthy food choices: what does economics tell us?', *Promoting behaviour change in food and drink consumption and production. Identifying future priorities: what does the evidence tell us? A workshop for Scottish Government*, Edinburgh, October 2014.

Norwood, P., Krucien, N., Ryan, M. and Ludbrook, A. (2014) 'Does calorie labelling need the green light? Findings from an eye-tracking experiment', [Poster presentation] *Annual Scottish Faculty of Public Health Conference – Health in a changing Scotland: the ball's in our court*, Aviemore, 6 November 2014.

Norwood, P. (2015) 'Does calorie labelling need the green light? Findings from an eye-tracking experiment', *PechaKucha Aberdeen (Public engagement)*, Belmont Filmhouse, Aberdeen, 26 May 2015.

Project No:	HBI1.10	Completed
Project Title:	The socio-economic status and integration of immigrants in the UK: the role of language skills and education.	
Grant Applicants / Principal Investigators (place of work):	Aoki, Y. (HERU); Santiago, L. (Office for National Statistics).	
HERU Investigators:	Aoki, Y.	
HERU Research Theme:	Health Behaviour and Inequality – Understanding Health Behaviour	
Source of Funding and amount funded:	University of Aberdeen, Carnegie Trust, and Scottish Institute for Research in Economics, Scottish Economic Society – £3,120	
Amount of HERU funding:	£3,120	
Objectives:	The project aims to analyse how English language skills and education affect the integration and the socio-economic outcomes of first- and second-generation immigrants in the United Kingdom (UK). The ultimate goal of the project is to explore the policies that might be effective in mitigating health and socio-economic disparities of immigrants by examining the role of a potential source of the disparities, English language proficiency and education.	
Outline:	To identify the causal effect of English language skills, the Instrumental Variable estimation technique is used where age at arrival in the UK is exploited to construct an instrument for English language proficiency.	
Outcome and translation:	Our results suggest that the education, fertility and extent of deprivation of immigrants are influenced by their ability to speak English. Precisely, better English language skills significantly raise the likelihood of having academic degrees and reduce that of having no qualifications. Regarding fertility and health outcomes, a better proficiency in English significantly delays the age at which an immigrant woman has her first child, lowers the likelihood of becoming a teenage mother, decreases the number of children a woman has, but has little effect on self-reported adult health and no effect on child health measured by birthweight. The results for deprivation outcomes indicate that better English skills lead immigrants to live in an area where residents are less deprived in terms of income, employment and health, although the effect on health deprivation is not statistically significant.	
Start Date:	February 2014	
Duration of Project:	36 months	

Publications:

Aoki, Y. and Santiago, L. (2015) 'Fertility, health and education of UK immigrants: the role of English language skills', CINCH Working Paper Series, Essen, Germany: CINCH.

Aoki, Y. and Santiago, L. (2015) Education, health and fertility of UK immigrants: the role of English language skills, Discussion Paper in Economics, 15–12, Aberdeen: University of Aberdeen Business School.

Aoki, Y. and Santiago, L. (2016) English language skills and socioeconomic segregation of UK immigrants, Discussion Paper in Economics, 16–7, Aberdeen: University of Aberdeen Business School.

Aoki, Y. (2016) 'Speak well, do well – English language proficiency and health and social outcomes of UK immigrants', HERU Policy Brief, University of Aberdeen, August 2016.

Other Dissemination Activities:

Santiago, L. and **Aoki, Y.** (2015) 'Fertility, health and education of UK immigrants: the role of English language skills', *Office for National Statistics (ONS) Social and Analysis Directorate Seminar: Research, Evidence and Impact for Policy – Examples of using the ONS Longitudinal Study*, Titchfield, 12 May 2015.

Aoki, Y. and Santiago, L. (2015) 'Fertility, health and education of UK immigrants: the role of English language skills', *Essen Health Conference. 'Health. Skills. Education'. New Economic Perspectives on the Health–Education Nexus*, Essen, Germany, 29–31 May 2015.

Aoki, Y. and Santiago, L. (2015) 'Fertility, health and education of UK immigrants: the role of English language skills', *CPB Netherlands Bureau for Economic Policy Analysis*, The Hague, Netherlands, 9 June 2015.

Aoki, Y. and Santiago, L. (2015) 'Fertility, health and education of UK immigrants: the role of English language skills', *6th International Workshop on Applied Economics of Education*, Catanzaro, Italy, 14–16 June 2015.

Santiago, L. and **Aoki, Y.** (2015) 'Fertility, health and education of UK immigrants: the role of English language skills', *European Society for Population Economics (ESPE) 29th Annual Conference*, Izmir, Turkey, 17–20 June 2015.

Aoki, Y. and Santiago, L. (2015) 'Fertility, health and education of UK immigrants: the role of English language skills', *4th SOLE-EALE (Society of Labor Economists/European Association of Labour Economists) World Conference*, Montreal, Canada, 26–28 June 2015.

Santiago, L. and **Aoki, Y.** (2015) 'Fertility, health and education of UK immigrants: the role of English language skills', *Understanding Society Scientific Conference 2015*, University of Essex, Colchester, 21–23 July 2015.

Santiago, L. and **Aoki, Y.** (2015) 'Fertility, health and education of UK immigrants: the role of English language skills', *British Society for Population Studies (BSPS) Annual Conference*, University of Leeds, Leeds, 7–9 September 2015.

Aoki, Y. (2015) 'Fertility, health and education of UK immigrants: the role of English language skills', *Theory & Applied Micro-Health Workshop*, Alicante University, Spain, 19–20 October 2015.

Aoki, Y. and Santiago, L. (2016) 'Education, health and fertility of UK immigrants: the role of language skills', *Institute for the Study of Labor (IZA) 13th Annual Migration Meeting*, Bonn, Germany, 27–28 May 2016.

Aoki, Y. and Santiago, L. (2016) 'Education, health and fertility of UK immigrants: the role of English language skills', *International Association for Applied Econometrics Annual Conference*, University of Milano-Bicocca, Milan, Italy, 22–25 June 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.

Project No:	HBI1.11	Completed
Project Title:	The nature and extent of food poverty/insecurity in Scotland.	
Grant Applicants / Principal Investigators (place of work):	Douglas, F. (Rowett Institute of Health and Nutrition (RINH), University of Aberdeen); McKenzie, L., Ludbrook, A. (HERU).	
HERU Investigators:	McKenzie, L., Ludbrook, A.	
HERU Research Theme:	Health Behaviour and Inequality – Understanding Health Behaviour	
Source of Funding and Total Awarded:	NHS Scotland/Community Food and Health (Scotland) – £25,000 and Chief Scientist Office (CSO) CORE	
Amount of HERU Funding:	£7,462	
Objectives:	Develop an understanding of the extent of food poverty/insecurity in Scotland.	
Outline:	Use existing sources of information to develop further the evidence base in relation to the experience of food poverty among particular vulnerable groups of the population (not covered by other studies) e.g. older people, people in rural and remote rural areas, those facing destitution. Consider ways in which community food initiatives are currently responding to this situation and what they could or might do to mitigate it.	
Outcome and translation:	This research has identified key recommendations that require policy, practitioner and research attention, including more research and information about household food insecurity (HFI), coming from the care sector itself. Medium- to longer-term policy interventions are recommended that address the root/basic causes of poverty, e.g. to generate/increase income sufficiency and bring more certainty of income to more households in Scotland is fundamentally required to address HFI in this country. There needs to be better understanding of the impact of short- and longer-term HFI on health, including the relationship with obesity and malnutrition (which can co-exist).	
Start Date:	August 2014	
Duration of Project:	7 months	
Publications:	Douglas, F., Ejebu, O.-Z. , Garcia, A., MacKenzie, F., Whybrow, S., McKenzie, L., Ludbrook, A. and Dowler, E. (2015) <i>The nature and extent of food poverty</i> . NHS Health Scotland.	

-
- Other Dissemination Activities:** Douglas, F., **Ejebu, O.-Z.**, Garcia, A.L., Whybrow, S., **McKenzie, L.**, MacKenzie, F., **Ludbrook, A.** and Dowler, E. (2015) 'The nature and extent of food poverty/insecurity in Scotland: a preliminary study', *British Sociological Association (BSA) Food Study Group – Sheffield Political Economy Research Institute (SPERI). Food, Poverty and Policy: Evidence Base and Knowledge Gap*, University of Sheffield, 30 June 2015.
- Ejebu, O.-Z.**, Douglas, F., Garcia, A., MacKenzie, F., Whybrow, S., **McKenzie, L.**, **Ludbrook, A.** and Dowler, E. (2015) 'The nature and extent of food poverty/insecurity in Scotland: preliminary results', *12th Federation of European Nutrition Societies (FENS) Congress*, Berlin, Germany, 20–23 October 2015.
- Ejebu, O.-Z.**, Douglas, F., Garcia, A., MacKenzie, F., Whybrow, S., **McKenzie, L.**, **Ludbrook, A.** and Dowler, E. (2015) 'Food poverty in Scotland: a preliminary study of prevalence and nature using secondary data', *Faculty of Public Health, Scottish Conference: Securing Scotland's Health*, Peebles Hydro, Peebles, 5–6 November 2015.
- Douglas, F., **Ejebu, O.-Z.**, Garcia, A., MacKenzie, F., Whybrow, S., **McKenzie, L.**, **Ludbrook, A.** and Dowler, E. (2015) 'Looking beyond food banks: a qualitative study of food poverty in Scotland', *Faculty of Public Health, Scottish Conference: Securing Scotland's Health*, Peebles Hydro, Peebles, 5–6 November 2015.

Project No:	HBI1.12	In Progress
Project Title:	PhD: Economic aspects of food choice and its association with health inequalities in Scotland and the UK.	
Grant Applicants / Principal Investigators (place of work):	Mc Morrow, L. (PhD Student); Ludbrook, A., Olajide, D. (HERU); Macdiarmid, J. (Rowett Institute of Nutrition and Health (RINH), University of Aberdeen).	
HERU Investigators:	Mc Morrow, L., Ludbrook, A., Olajide, D.	
HERU Research Theme:	Health Behaviour and Inequality – Understanding Health Behaviour	
Source of Funding and Total Awarded:	Scottish Government (Rural and Environment Science and Analytical Services Division (RESAS)) via University of Aberdeen Rowett Institute – £65,965 and Chief Scientist Office (CSO) CORE	
Amount of HERU Funding:	£65,965	
Objectives:	The objective of this thesis is to investigate non-price determinants of individual food choice.	
Outline:	This PhD project has focused on non-price determinants of food choices with the aim of improving individuals' diet. These non-price determinants include perceptions of food and time preference. Negative externalities provide an economic rationale for intervention as over-consumption of food results in additional costs to the health service. There are many factors affecting food choices. The first empirical chapter used the Scottish Health Survey to investigate how perceived barriers towards healthy eating influence food choices. Primary data collection has allowed the association between time preference and food choices to be explored. A discrete choice experiment has been undertaken to investigate whether the impact of a food tax is affected by displaying the tax rate.	
Start Date:	October 2012	
Duration of Project:	54 months	
Project Phase:	<input type="checkbox"/> <input type="checkbox"/> <input checked="" type="checkbox"/>	
Publications:	Mc Morrow, L., Ludbrook, A., Macdiarmid, J.I. and Olajide, D. (2016) 'Perceived barriers towards healthy eating and their association with fruit and vegetable consumption', <i>Journal of Public Health</i> , [Epub ahead of print].	

-
- Other Dissemination Activities:** **Mc Morrow, L., Ludbrook, A.,** Macdiarmid, J.I. and **Olajide, D.** (2013) 'Economic aspects of food choice and health inequalities', *SGPE Residential Methodology Conference*, Crieff, January 2013.
- Mc Morrow, L., Ludbrook, A.,** Macdiarmid, J.I. and **Olajide, D.** (2013) 'Determinants of fruit and vegetable consumption in Scotland', *Institute of Applied Health Sciences (IAHS) summer symposium*, University of Aberdeen, Aberdeen, 17 June 2013.
- Mc Morrow, L., Ludbrook, A.,** Macdiarmid, J.I. and **Olajide, D.** (2013) 'Determinants of fruit and vegetable consumption in Scotland', *Irish Society for New Economists*, Maynooth, Ireland, September 2013.
- Mc Morrow, L., Ludbrook, A.,** Macdiarmid, J.I. and **Olajide, D.** (2013) 'The determinants of fruit and vegetable consumption: a focus on individual attitudes', *Scottish Faculty of Public Health Conference*, Dunblane, 7-8 November 2013.
- Mc Morrow, L., Ludbrook, A.,** Macdiarmid, J.I. and **Olajide, D.** (2014) 'Attitudes towards healthy eating, fruit and vegetable consumption, and health outcomes in Scotland', *Health Economists' Study Group*, Sheffield, 8-10 January 2014.
- Mc Morrow, L., Ludbrook, A.,** Macdiarmid, J.I. and **Olajide, D.** (2014) 'The determinants of fruit and vegetable consumption: a focus on individual attitudes', *NHS Grampian CDP Session*, Aberdeen, January 2014.
- Mc Morrow, L., Ludbrook, A.,** Macdiarmid, J.I. and **Olajide, D.** (2014) 'Nudging consumers towards a healthy food choice: a pilot discrete choice experiment', *Aberdeen Centre for Energy Regulation and Obesity (ACERO) Symposium*, Rowett Institute of Nutrition and Health, Aberdeen, 24 April 2014.
- Mc Morrow, L., Ludbrook, A.,** Macdiarmid, J.I. and **Olajide, D.** (2014) 'The determinants of fruit and vegetable consumption: a focus on individual attitudes', *Health Surveys User Conference*, University College London, 15 July 2014.
- Mc Morrow, L., Ludbrook, A.,** Macdiarmid, J.I. and **Olajide, D.** (2014) 'Nudging consumers towards a healthy food choice: a pilot discrete choice experiment', *European Health Economics Association (EuHEA) PhD Student-Supervisor and Early Career Researcher Conference*, Manchester Centre for Health Economics, 1-3 September 2014.
- Mc Morrow, L., Ludbrook, A.,** Macdiarmid, J.I. and **Olajide, D.** (2015) 'The role of perceptions when taxing food', *Cuthbertson Prize Lecture*, [poster] *Rowett Institute for Nutrition and Health*, University of Aberdeen, 15 April 2015.

Mc Morrow, L., Ludbrook, A., Macdiarmid, J.I. and Olajide, D. (2015) 'The non-price determinants of food choice: a focus on the role of perceptions', *Cuthbertson Prize Lecture, Rowett Institute for Nutrition and Health*, University of Aberdeen, 15 April 2015.

Mc Morrow, L. (2015) 'Nudging people to make better decisions: is it ethical?' *PechaKucha Aberdeen (Public engagement)*, Belmont Filmhouse, Aberdeen, 17 November 2015.

Mc Morrow, L., Ludbrook, A. and Macdiarmid, J.I. (2016) 'Can time preference help explain variations in diet quality?', *Health Economists' Study Group (HESG) Meeting*, University of Manchester, Manchester, England, 6-8 January 2016.

Mc Morrow, L., Ludbrook, A. and Macdiarmid, J.I. (2016) 'Food taxes: is it possible to influence snack food choices by using tax as a signal?', *Scottish Faculty of Public Health Conference*, Dunblane Hydro Hotel, Dunblane, 27-28 October 2016.

Project No:	HBI1.13	In Progress
Project Title:	SanteMed: Measurement and determinants of inequalities in health and well-being in the Middle Eastern and North African region.	
Grant Applicants / Principal Investigators (place of work):	Abul Naga, R.H. (HERU); Arrighi, Y. (Lille); Abu-Zaineh, M., Ventelou, B., Woode, M.E. (Marseille); Ayadi, I. (University of Tunis); Boutayeb, A. (University Mohammed Premier, Morocco); Mataria, A. (World Health Organization, Regional Office for the Eastern Mediterranean); Abdulrahim, S. (American University of Beirut); Salti, N. (American University of Beirut).	
HERU Investigators:	Abul Naga, R.H.	
HERU Research Theme:	Health Behaviour and Inequality – Understanding Health Behaviour	
Source of Funding:	University of Aberdeen	
Objectives:	<p>This project seeks to improve the measurement and explanations of various aspects of inequality in health and healthcare within a broader perspective of well-being.</p> <p>Specifically, the project seeks to elaborate a compatible-to-context approach that can enable systematic inequalities in health and healthcare to be linked to their structural causes.</p> <p>Following the uprisings in several Middle Eastern and North African (MENA) countries (the so-called ‘Arab Spring’ that began in December 2010), several constitutional and institutional reforms have been initiated with issues related to social justice, well-being and inequalities in opportunities being at the heart of the current debates.</p>	
Outline:	<p>Recent empirical research, including that carried out by some of the research teams participating in this project (SESSTIM-UMR912 and GREQAM-UMR 7316), has shown that the conventional methods that have been used to assess inequalities in health and well-being in developed countries cannot straightforwardly be applied to developing countries owing to their underlying assumptions, which are far from being consistent with the realities in the developing countries. Consequently, more refined approaches to the measurement of inequalities are called for.</p>	

Building on previous experiences of the research teams involved and the lessons learned from a recently completed research project that was supported by the French National Agency of Research (**ANR-INEGSANTE 2010–2014**), this new project seeks to improve the measurement and explanations of various aspects of inequality in health and healthcare within a broader perspective of well-being. Thanks to previous collaboration, this project will benefit from micro-data sets, recently made available, providing detailed information on different aspects of health and well-being in 13 countries in the MENA region.

Start Date: October 2014

Duration of Project: 36 months

Project Phase: 

Publications: **Abul Naga, R.H.** and Stapenhurst, C. (2015) 'Estimation of inequality indices of the cumulative distribution function', *Economics Letters*, 130(May), 109–112.

Abul Naga, R.H., Shen, Y. and Yoo, H.I. (2016) 'Joint hypothesis tests for multidimensional inequality indices', *Economics Letters*, 141, 138–142.

Abul Naga, R.H., Shen, Y. and Yoo, H.I. (2016) 'Joint hypothesis tests for multidimensional inequality indices', *Discussion Paper in Economics*, 16–3, University of Aberdeen Business School.

Other Dissemination Activities: **Abul Naga, R.H.** and Shen, Y. (2014) 'Joint hypotheses tests for multidimensional inequality indices with application on income and health in the context of Egypt', *Socio-economic Inequality and Health in the Middle East and North African Countries: a Multidisciplinary Perspective*, Aix Marseille School of Economics – Sciences Economiques & Sociales de la Santé & Traitement de l'Information Médicale (AMSE-SESSTIM) 2nd Scientific Symposium on Health Economics, Marseille, France, 3 April 2014.

Abul Naga, R.H. and Shen, Y. (2015) 'Joint hypotheses tests for multidimensional inequality indices (with Egyptian data applications)', *Business School Seminar*, University of Durham, 11 March 2015.

Abul Naga, R.H. and Abu-Zaineh, M. (2016) 'Bread and social justice: measuring social welfare and inequality using anthropometrics', *Scottish Development Economics Workshop*, University of Edinburgh, Edinburgh, 26 May 2016.

Abu-Zaineh, M. and **Abul Naga, R.H.** (2016) 'Bread and social justice: measuring social welfare and inequality using anthropometrics', *Applied Health, Equity and Development Research Network, 3rd Scientific Symposium*, Marseille, France, 9–10 June 2016.

Project No:	HBI1.14	In Progress
Project Title:	PhD: The role of time preference in the medical decision making context.	
Grant Applicants / Principal Investigators (place of work):	Irvine, A. (PhD Student); Pol, M. van der (HERU); Phimister, E. (Economics, University of Aberdeen Business School (UABS)).	
HERU Investigators:	Irvine, A., Pol, M. van der	
HERU Research Theme:	Health Behaviour and Inequality – Understanding Health Behaviour	
Source of Funding and Total Awarded:	Institute of Applied Health Sciences (IAHS) – £49,800 and University of Aberdeen	
Amount of HERU Funding:	£49,800	
Objectives:	To investigate time preferences in relation to medical adherence and the potential interaction between patient and physician time preferences.	
Outline:	<p>The overall aim of the thesis is to examine both patient and physician time preferences and investigate how these relate to adherence to treatment. The existing health economics literature has focussed largely on time preference of individuals, especially in regard to health behaviours (smoking, alcohol consumption and obesity). Adherence to medical advice has only been explored in a few small studies, and more importantly, such research has largely ignored the role that the doctor plays in guiding the patient through the diagnosis and treatment choices and whether this process is affected by the preferences of the provider as well as those of the patient. This research investigates this link, and its interaction with patient time preferences. A key hypothesis is that, while doctors may prescribe treatments that exhibit exponential discounting and provide the best ‘whole-life’ outcome for the patient (pre-treatment), if the time preference embodied in treatment is sufficiently different from that of the patient adherence is likely to be low and lead to a poorer outcome (post-treatment) than if the doctor had initially prescribed a treatment more closely matching the patient’s time preference.</p> <p>The first paper is a survey comparing Scottish GPs’ professional time preferences (for the patient) and private time preferences (for the self). The survey has been completed and data is being analysed/written up. The second project is a theoretical model exploring predictions of time inconsistency with paternalistic doctors. This is being extended to an experimental study for the final project.</p>	
Start Date:	October 2014	
Duration of Project:	3 years	

Project Phase:



Publications:

–

Other Dissemination Activities:

Irvine, A. (2015) 'The role of time preference in the medical decision making context: a research plan', *Scottish Graduate Programme in Economics (SGPE) Residential Methodology Conference*, Crieff, 8–9 January 2015.

Irvine, A. (2015) 'The role of time preference in the medical decision making context', *Institute of Applied Health Sciences (IAHS) Summer Symposium*, Aberdeen University, 25 June 2015.

Irvine, A., Pol, M. van der and Phimister, E. (2016) 'Paternalistic patient–doctor interaction and time inconsistency', *Scottish Graduate Programme in Economics (SGPE) Residential Methodology Conference*, Crieff Hydro, Crieff, 6–7 January 2016.

Irvine, A., Pol, M. van der and Phimister, E. (2016) 'Professional and private time preferences of Scottish General Practitioners', *Stirling Behavioural Science Centre Annual PhD Student Conference in Behavioural Science*, Stirling University, Stirling, 9 June 2016.

Irvine, A., Phimister, E. and **Pol, M. van der** (2016) 'Professional and private time preferences of Scottish general practitioners', *European Health Economics Association Conference, 'Know the Ropes – Balancing Costs and Quality in Health Care'*, Universität Hamburg, Germany 13–16 July 2016.

Irvine, A., Phimister, E. and **Pol, M. van der** (2016) 'Paternalistic Patient–Doctor interaction and time inconsistency', *Nordic Health Economics Study Group*, University of Southern Denmark, Denmark, 17–19 August 2016.

Irvine, A., Pol, M. van der and Phimister, E. (2016) 'Paternalistic patient–doctor interaction and time inconsistency', *4th Workshop in Behavioral and Experimental Health Economics*, University of Cologne, Cologne, Germany, 8–9 December 2016.*

*denotes presented after end of Review period on 31 October 2016.

Project No:	HBI1.15	In Progress
Project Title:	PhD: Applying economic methods to optimise self-management.	
Grant Applicants / Principal Investigators (place of work):	Dysart, L. (PhD Student), McNamee, P., Pol, M. van der (HERU).	
HERU Investigators:	Dysart, L., McNamee, P., Pol, M. van der	
HERU Research Theme:	Health Behaviour and Inequality – Understanding Health Behaviour	
Source of Funding and Total Awarded:	College of Life Sciences and Medicine (CLSM), University of Aberdeen/HERU PhD Studentship and University of Aberdeen – £82,398	
Amount of HERU Funding:	£82,398	
Objectives:	Investigate the role of time and risk preference in self-management of chronic conditions.	
Outline:	<p>Chronic conditions are illnesses that have no cure and for which current care can only control symptoms. In Scotland, it is estimated that nearly 40% of the population lives with at least one chronic condition. Self-management of chronic conditions occurs when the patient acts as the primary decision-maker in the treatment of her/his condition. This PhD thesis uses econometric analysis of secondary data to investigate the effect of preferences and personality on self-management of chronic conditions. From an economic perspective, the decision to self-manage can be described as an investment in health because it incurs immediate costs to produce future health. A key economic factor that affects an individual's intertemporal decision-making is time preference, which describes an individual's propensity for immediate benefits over delayed ones. Furthermore, future health is inherently uncertain, and individuals' risk preference may also be an important factor affecting the type and quantity of self-management activities adopted. Beyond classic economic models, this thesis also explores the effect of health on individuals' time preference, which is often assumed to be exogenous. Changes in future health and life expectancy may significantly affect a person's time preference, resulting in changes in self-management behaviour.</p>	
Start Date:	February 2015	
Duration of Project:	3 years	
Project Phase:		
Publications:	–	

-
- Other Dissemination Activities:** **Dysart, L., McNamee, P. and Pol, M. van der** (2015) 'Exploration of the effect of time preference on change in self-management behaviours in older adults with at least one chronic health condition [poster]', *2nd European Health Economics Association (EuHEA) PhD Student – Supervisor Conference*, Paris-Dauphine University, Paris, France, 2–4 September 2015.
- Dysart, L., McNamee, P. and Pol, M. van der** (2016) 'The role of time preference on healthy lifestyle choices in older adults living with chronic health conditions', *European Health Economics Association Conference, 'Know the Ropes – Balancing Costs and Quality in Health Care'*, Universität Hamburg, Germany 13–16 July 2016.
- Dysart, L., McNamee, P. and Pol, M. van der** (2016) 'Health Shocks and Endogenous Time Discounting', *3rd EuHEA PhD Student–Supervisor Conference*, Universitat Internacional de Catalunya, Barcelona (Spain) 7–9 September 2016.

Project No:	HBI1.16	In Progress
Project Title:	PhD: Using insights into time preference and present bias to develop an intervention to improve adherence to exercise.	
Grant Applicants / Principal Investigators (place of work):	Thomas, U. (PhD Student), Pol, M. van der (HERU); Allan, J. (Health Psychology, University of Aberdeen).	
HERU Investigators:	Thomas, U., Pol, M. van der	
HERU Research Theme:	Health Behaviour and Inequality – Understanding Health Behaviour	
Source of Funding and Total Awarded:	Institute of Applied Health Sciences (IAHS) – £49,142 and University of Aberdeen	
Amount of HERU funding:	£49,142	
Objectives:	Develop and test an interactive web-based tool to improve an individual's adherence to exercise by taking into account that individual's time preference rate and present bias.	
Outline:	<p>Exercise is a potential 'miracle cure' for many health conditions. However adherence to exercise proves difficult for many people.</p> <p>Insights from behavioural economics and psychology can help improve the understanding of exercise behaviour to inform the development of effective interventions. Despite a correlative association between time preference (how present- or future-oriented an individual is), present bias (the enhanced significance an individual attaches to immediate outcomes) and a range of health behaviours including exercise, time preference and present bias have not, to date, been taken into account when designing interventions to enhance uptake of exercise.</p> <p>The overall aim of the PhD is to develop and test an interactive web-based tool to improve an individual's adherence to exercise by taking into account that individual's time preference rate and present bias. The tool draws on a study carried out by Hall and Fong in 2003 who showed that a 'time perspective intervention' (which helped the user explicitly make the connection between their current behaviour and their future health status) when used in Canada improved adherence to exercise. It also draws on the existing evidence around commitment contracts such as stickK.com (where money is deposited as a commitment to a behaviour change) to overcome present bias. The main research questions are:</p> <ol style="list-style-type: none"> (1) Does a 'time preference' intervention improve adherence to exercise? (2) Does adding a commitment contract improve adherence to exercise? (3) Does the effectiveness of these interventions depend on an individuals' time preference rate and present bias? 	

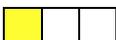
Start Date: October 2015

Duration of Project: 5 years

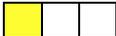
Project Phase: 

Publications: -

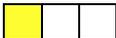
Other Dissemination Activities: -

Project No:	HBI1.17	In Progress
Project Title:	Food culture and dietary choice.	
Grant Applicants / Principal Investigators (place of work):	Morgan, P., Macdiarmid, J.I. ((The) University of Aberdeen Rowett Institute); Norwood, P., Ludbrook, A. (HERU).	
HERU Investigators:	Norwood, P. Ludbrook, A., Bitzios, M.	
HERU Research Theme:	Health Behaviour and Inequality – Understanding Health Behaviour	
Source of Funding and Total Awarded:	Scottish Government (Rural and Environment Science and Analytical Services Division RESAS) via (The) University of Aberdeen Rowett Institute – £7,779, 958 (Year 1 of a 5-year programme) and Chief Scientist Office (CSO) CORE	
Amount of HERU Funding:	£419,000	
Objectives:	This project contributes to a multidisciplinary investigation of food culture and dietary choice which aims to support consumers to achieve behaviour change towards a healthier diet.	
Outline:	The research has three components. The first is to examine the impact of dietary information using Q methodology. Providing nutritional information on pre-packaged foods does not necessarily lead to healthier choices. We will examine how consumers think about food and nutritional information. The Q method will generate detailed descriptions of different points of view which will enable the identification of target groups for messages to promote healthier choices. The second component will examine influences on children’s food choices using secondary data and will consider the feasibility of natural experiments to estimate the impact of non-household food providers, such as schools. The final component will use food purchasing data to analyse the strength of habitual behaviour for specific food categories using either traditional demand models or discrete choice models. Habit formation will be captured using past purchasing behaviour as a factor influencing current purchases, and accounting for key socio-economic characteristics including purchasing power. We will examine how habitual behaviour may impact on responses to interventions to promote healthier diets.	
Start Date:	April 2016	
Duration of Project:	5 years	
Project Phase:		
Publications:	–	
Other Dissemination Activities:	–	

Project No:	HBI1.18	In Progress
Project Title:	Modelling purchasing behaviour for alcohol.	
Grant Applicants / Principal Investigators (place of work):	Ludbrook, A., McKenzie, L., Ejebu, O-Z. (HERU).	
HERU Investigators:	Ludbrook, A., McKenzie, L., Ejebu, O-Z.	
HERU Research Theme:	Health Behaviour and Inequality – Understanding Health Behaviour	
Source of Funding:	Chief Scientist Office (CSO) CORE and University of Aberdeen	
Objectives:	To improve understanding of how different purchasing patterns affect responses to interventions in the alcohol market.	
Outline:	The project examines how factors such as consumers’ choice of alcohol type and brand, their previous purchases and frequency of purchase affect responses to price changes. Of particular interest is the response of frequent and heavy purchasers and the potential effect of habitual behaviour. The study will use household scanner data to provide repeat observations over time.	
Start Date:	April 2016	
Duration of Project:	2 years	
Project Phase:	<input type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/>	
Publications:	–	
Other Dissemination Activities:	–	

Project No:	HBI1.19	In progress
Project Title:	The effect of early-life health shocks on later-life outcomes.	
Grant Applicants / Principal Investigators (place of work):	Aoki, Y. (HERU).	
HERU Investigators:	Aoki, Y.	
HERU Research Theme:	Health Behaviour and Inequality – Understanding Health Behaviour	
Source of Funding:	University of Aberdeen	
Objectives:	The project aims to analyse the effect of early-life health shocks on later-life outcomes.	
Outline:	Using radiation exposure as a source of variation in health shocks, the causal effect of early-life health shocks on later-life outcomes is investigated.	
Start Date:	August 2016	
Duration of Project:	36 months	
Project Phase:		
Publications:	-	
Other Dissemination Activities:	-	

Project No:	HBI1.20	In progress
Project Title:	Mental health and the PATH midlife.	
Grant Applicants / Principal Investigators (place of work):	Butterworth, P., Antsey, K., Cherbiun, N., McKerin, R., Burns, R., Leach, L. (Australian National University); Slade, T. (University of South Wales); McNamee, P. (HERU) .	
HERU Investigators:	McNamee, P.	
HERU Research Theme:	Health Behaviour and Inequality – Understanding Health Behaviour	
Source of Funding:	Chief Scientist Office (CSO) CORE (Australian Government National Health and Medical Research Council)	
Objectives:	To characterise the natural history of mental health problems (stress, anxiety, depression) from early adulthood to midlife, and to estimate the costs, consequences and causal pathways of mental health problems at midlife.	
Outline:	Midlife is often described as a time of crisis and turbulence. From a life course perspective, adversity through life may compound over time, and inequalities may be starkest at midlife. This research builds on previous waves of data collection to consider the life course trajectory of mental health problems, in order to inform policy makers on strategies that help to promote mental health and well-being in midlife.	
Start Date:	October 2016	
Duration of Project:	36 months	
Project Phase:		
Publications:	–	
Other Dissemination Activities:	–	

Project No:	HBI1.21	In progress
Project Title:	Time preferences and health behaviours.	
Grant Applicants / Principal Investigators (place of work):	Pol, M. van der (HERU).	
HERU Investigators:	Pol, M. van der	
HERU Research Theme:	Health Behaviour and Inequality – Understanding Health Behaviour	
Source of Funding:	University of Aberdeen	
Objectives:	To examine the relationship between time preferences and health behaviours.	
Outline:	Time preferences are key parameters in economic models determining how much individuals invest in their health. Individuals with high rates of time preference (more present oriented) are less likely to invest in their health compared to individuals with low rates of time preference (more future oriented). This has been shown to hold with respect to a range of behaviours including smoking, alcohol, drug use and self-management behaviours such as medication adherence. This body of work explores a number of key research questions: (1) the role of present bias in health behaviours; (2) the role of time preference in the education–health relationship; and (3) the role of time preference in the intergenerational transfer of health behaviours.	
Start Date:	Ongoing	
Project Phase:		
Publications:	<p>Brown, H. and Pol, M. van der (2015) 'Intergenerational transfer of time and risk preferences', <i>Journal of Economic Psychology</i>, 49(August), 187–204.</p> <p>Galizzi, M.M., Miraldo, M., Stavropoulou, C. and Pol, M. van der (2016) 'Doctor–patient differences in risk and time preferences: a field experiment', <i>Journal of Health Economics</i>, 50, 171–182.</p>	
Other Dissemination Activities:	<p>Pol, M. van der (2010) 'Time and risk preferences and health investments', <i>University of Calgary</i>, Calgary, Canada, December 2010.</p> <p>Pol, M. van der (2011) 'Time preferences', <i>NICE Citizen Council</i>, London, England, November 2011.</p>	

Other Dissemination Activities: **Pol, M. van der** (2012) 'Socioeconomic status, time preferences and health', *SIRE Workshop on Value, Well-Being and Decisions*, Stirling, April 2012.

Eberth, B., **Pol, M. van der** and Kemenev, D. (2014) 'Time preference, quasi-hyperbolic discounting and physical activity', *Health Economists' Study Group (HESG) Meeting*, Glasgow Caledonian University, Glasgow, 23–25 June 2014.

Eberth, B., **Pol, M. van der** and Kemenev, D. (2014) 'Quasi-hyperbolic discounting and physical activity', *Health Economics in the Age of Longevity: a Joint iHEA & ECHE Congress*, Trinity College, Dublin, Ireland, 13–16 July 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, 21 October 2014.

Pol, M. van der (2014) 'Measuring time preferences: insights from the health context', *ESRC Behavioural Science Workshop: Preferences and Personality*, University of Stirling, 21 November 2014.

Pol, M. van der (2014) 'Time preference, present bias and physical activity', *Health Economics Group Seminar*, University of Exeter, 9 December 2014.

Pol, M. van der (2015) 'Present bias and physical activity', *Behavioural Science Seminar*, Behavioural Science Centre, Stirling University, 25 March 2015.

Eberth, B., **Pol, M. van der** and Kemenev, D. (2015) 'Quasi-hyperbolic discounting and physical activity participation', *Network for Integrated Behavioural Science (NIBS) Workshop*, University of Nottingham, Nottingham, England 21–23 April 2015.

Pol, M. van der (2015) 'Quasi-hyperbolic discounting and physical activity participation', *Seminar, Centre of Health Economics Research (COHERE)*, University of Southern Denmark, Odense, Denmark, 4 November 2015.

Pol, M. van der (2016) 'Improving the measurement of time preferences', *Workshop on Behavioural Science, Measurement and Policy*, Behavioural Science Centre, University of Stirling, 15 April 2016.

Pol, M. van der (2016) 'Can we improve the measurement of time preference to enhance predictive validity of health behaviours?', *European Health Economics Association Conference, 'Know the Ropes – Balancing Costs and Quality in Health Care'*, Universität Hamburg, Germany 13–16 July 2016.

Pol, M. van der (2016) 'Can we improve the measurement of time preference to enhance predictive validity of health behaviours?', *Erasmus School of Economics*, Erasmus University Rotterdam, Rotterdam, Netherlands, 20 October 2016.

Evaluating Health Behaviour Interventions



HBI2 Evaluating Health Behaviour Interventions

Project No:	HBI2.1	Completed
Project Title:	An economic evaluation of obesity prevention for UK adults.	
Grant Applicants / Principal Investigators (place of work):	Sutton, M. (University of Manchester); Vale, L., Ryan, M., Aucott, L., Avenell, A., van Teijlingen, E., Douglas, F. (Population Health, University of Aberdeen); Goode, A., Scott, A. (University of Melbourne); Mavromaras, K. (University of Adelaide).	
HERU Investigators:	Ryan, M., Olajide, D, Ludbrook, A., Yi, D.	
HERU Research Theme:	Health Behaviour and Inequality – Evaluating Health Behaviour Interventions	
Source of Funding and Total Awarded:	National Prevention Research Initiative (NPRI) £495,656 and Chief Scientist Office (CSO) CORE	
Amount of HERU Funding:	£272,273	
Objectives:	To perform an economic evaluation of interventions targeting obesity-related lifestyles in UK adults aimed at the reduction of the risk of cancer, CHD and diabetes.	
Outline:	<p>The prevalence of obesity has been rising continuously in the UK with a major impact on mortality, morbidity and well-being. Achieving and maintaining a lower weight significantly reduces the risk of developing many diseases, especially diabetes, coronary heart disease (CHD) and some cancers. The investigation of the acceptability, effectiveness and cost-effectiveness of alternative preventive interventions is necessary for the design and targeting of evidence-based policy.</p> <p>The study was based on six interlinked work packages: (i) systematic reviews of interventions' effectiveness and prognostic outcomes of obesity; (ii) qualitative research investigating the causes and possible preventative remedies for obesity-related conditions from the perspective of the public, healthcare practitioners and policy makers; (iii) a discrete choice experiment (DCE) to estimate preferences for alternative lifestyle interventions; (iv) and (v) used econometric techniques to estimate the effectiveness and costs of lifestyle changes and (vi), informed by previous packages, the cost-effectiveness of alternative interventions was assessed.</p>	

Outcome and Translation:

The systematic reviews showed that diet and exercise interventions providing support to individuals with BMI $\leq 35\text{kg/m}^2$ would lead to an average weight loss of more than 2kg persisting for at least for two years. Diet and exercise and/or behaviour therapy demonstrated significant reduction in hypertension and improvement in the risk of metabolic syndrome and diabetes compared with no treatment control. The qualitative research identified that stakeholders had different views of where responsibility lay – individuals focused on their own actions while health professionals and policy makers viewed obesity as a socio-ecologically-determined problem. Findings from these two work packages informed the DCE which found that there was a general preference for maintaining current lifestyles, together with a sensitivity to costs which suggests financial incentives could be used to help maximise up-take of healthy lifestyle interventions. Econometric analysis was used to inform the economic evaluation model. This model is now being used in early modelling of potential obesity prevention and treatment interventions to inform the design of new empirical evaluation studies.

Start Date:

July 2006

Duration of Project:

4 years

Publications:

Brown, T., Avenell, A., Edmunds, E., Moore, H., Whittaker, V., Avery, L., Summerbell, C. for the PROGRESS group (**Ryan, M.** and **Vale, L.** members of this group) (2009) 'Systematic review of long-term lifestyle interventions to prevent obesity in adults', *Obesity Reviews*, 10 (6), 627-638.

Aucott, L., Gray, D., Rothnie, H., Thapa, M., Waweru, C. for the PROGRESS group (**Ryan, M.** and **Vale, L.** are members of this group), (2011) 'Effects of lifestyle interventions and long-term weight loss on lipid outcomes – a systematic review', *Obesity Reviews*, 12(5), e412-e425.

Olajide, D. and **Ludbrook, A.** (2012) 'Diet, risk of obesity and socioeconomic circumstances of individuals in the UK: a seemingly unrelated approach', *Nordic Journal of Health Economics*, 1(2), 99-118.

Ryan, M., Yi, D., Avenell, A., Douglas, F., Aucott, L., van Teijlingen, E. and Vale, L. (2015) 'Gaining pounds by losing pounds: preferences for lifestyle interventions to reduce obesity', *Health Economics, Policy, and Law*, 10(2), 161–182.

Olajide, D. and **Ludbrook, A.** (2014) 'Effects of income, education and occupation status on diet and risk of obesity', HERU Briefing Paper, University of Aberdeen, December 2014.

Ryan, M., Yi, D., Avenell, A., Douglas, F., Aucott, L., Van Teijlingen, E. and Vale, L. (2015) 'Gaining pounds by losing pounds: research finds financial incentives could help reduce obesity', HERU Policy Brief, University of Aberdeen, March 2015.

-
- Other Dissemination Activities:** **Vale, L.** (2006) 'Economic evaluation of obesity prevention', *National Prevention Research Initiative*, Medical Research Council, London, England, February 2006.
- Vale, L.** (2006) 'Economic evaluation of obesity prevention', *Obesity Research Group*, University of Aberdeen, Aberdeen, February 2006.
- Ludbrook, A.** (2006) 'What really works?' *Childhood Obesity Conference*, Edinburgh, December 2006.
- Ludbrook, A.** (2007) 'Obesity: treatable condition or lifestyle choice?' *Northern Ireland Health Economics Group*, Belfast, Ireland, October 2007.
- Goode, A.J., Mavromaras, K.G. and **Smith, M.D.** (2008) 'Intergenerational transmission and healthy eating behaviour', *Scottish Economic Society Annual Conference*, Perth, April 2008.
- Olajide, D.** and Smith, MD. (2009) 'Obesity-related disease incidence modelling using hospitalisation records: correcting for sample selection bias', *Scottish Economic Society Annual Conference*, Perth, April 2009.
- Olajide, D.** and **Ludbrook, A.** (2010) 'A multilevel analysis of the influence of households on sedentary behaviour among children in Scotland', *European Conference on Health Economics (ECHE)*, Helsinki, Finland, July 2010.
- Ryan, M., Yi D., Avenell, A., Douglas, F., Aucott, L., van Teijlingen, E. and Vale, L.** (2010) 'Understanding preferences for lifestyle interventions to reduce obesity: should we pay people to live well?' *UK Society for Behavioural Medicine 6th Annual Scientific Meeting*, University of Leeds, England, December 2010.
- Ryan M.** (2012) 'Using Discrete Choice Experiments to understand preferences for lifestyle interventions: should we pay people to live well? Invited Plenary presentation', *British Psychological Society, Division of Health Psychology Annual Conference*, University of Glasgow, February 2012.
- Ryan M.** (2012) 'Discrete Choice Experiments in health economics: an application to lifestyle interventions', *Seminar, Community Health Sciences, Centre of Health Economics Research*, University of Southern Denmark, Denmark, April 2012.
- Ryan M.** (2012) 'Discrete choice experiments in health economics: an application to lifestyle interventions', *Seminar, Community Health Sciences*, University of Calgary, Canada, April 2012.
- Olajide, D., Ludbrook, A.** and Vale L. (2012) 'Variations in costs of hospital admissions for obesity-related diseases: a mixed effects mixed distribution approach', *European Conference on Health Economics*, Zurich, Switzerland, July 2012.

Pol, M. van der, Ludbrook A. and Ryan M. (2012) 'Incentives in health promotion: taxing people for unhealthy behaviours or paying people for healthy behaviours?' *British Science Festival*, Aberdeen, September 2012.

Vale, L., Yi, D. on behalf of the PROGRESS Group (**Ludbrook, A.** and **Ryan, M.** are members of group) (2014) 'In for £: an economic evaluation of obesity prevention for UK adults', *Health Economics and Health Technology Assessment (HEHTA) Seminar*, Glasgow University, Glasgow, 30 October 2014.

Ryan, M. (2016) 'Gaining pounds by losing pounds: preferences for lifestyle interventions to reduce obesity', *Scottish Economic Society Annual Conference*, Perth, 20 April 2016.

Vale, L., Yi, D., Lee, K. W. on behalf of the PROGRESS Group (**Ludbrook, A.** and **Ryan, M.** are members of group) (2016) 'In for £: an economic evaluation of obesity prevention for UK adults', *Institute of Applied Health Research*, Birmingham University, Birmingham, England, October 2016.

Project No:	HBI2.2	Completed
Project Title:	Local evaluation of Keep Well in Aberdeen City Community Health Partnership.	
Grant Applicants / Principal Investigators (place of work):	Ludbrook, A. (HERU); Douglas, F. (Population Health, University of Aberdeen).	
HERU Investigators:	Ludbrook, A.	
HERU Research Theme:	Health Behaviour and Inequality – Evaluating Health Behaviour Interventions	
Source of Funding and Total Awarded:	National Health Service (NHS) Grampian – £41,009 and Chief Scientist Office (CSO) CORE	
Amount of HERU Funding:	£41,009	
Objectives:	Assess the barriers/challenges, feasibility, effectiveness and cost-effectiveness of different approaches to service redesign in creating more time for primary care professionals to spend with the target patient group and improving quality of care.	
Outline:	The research involved qualitative and quantitative methods. Interviews were held with key informants to elicit information about resource use, staffing, activities not covered by routine data sources, and referral patterns, to support the analysis of costs and effects of delivery options, as well as identifying features of good practice and potential barriers to change within practices. A second aspect of the qualitative research was eliciting the views of practice patients. Quantitative data from practices was analysed to compare patterns of activity before/after Keep Well to detect changes (if any) affecting the Keep Well population and the rest of the practice.	
Outcome and Translation:	The results of this evaluation informed decision making about the future role and funding of Keep Well.	
Start Date:	August 2008	
Duration of Project:	21 months	
Publications:	Ludbrook, A. and Douglas, F. (2011) <i>Local evaluation of Keep Well in Aberdeen Community Health Partnership. NHS Grampian Final Report</i> , NHS Grampian.	
Other Dissemination Activities:	Ludbrook, A., Douglas F., Leighton Beck, L. and Ross Archer D. (2011) 'What works well with Keep Well? Initial providers' perspectives on anticipatory care', <i>Faculty of Public Health Conference, Aviemore</i> , November 2011.	

Project No:	HBI2.3	Completed
Project Title:	Economic appraisal of the choice and targeting of lifestyle interventions to prevent disease in deprived populations.	
Grant Applicants / Principal Investigators (place of work):	Ludbrook, A., Vale, L. (HERU); Boyle, P. (University of St. Andrews); Stockton, D. (Information Services Division (ISD)); Craig, P. (Scottish Government Health Directorates).	
HERU Investigators:	Eberth, B., Ludbrook, A., Olajide, D.	
HERU Research Theme:	Health Behaviour and Inequality – Evaluating Health Behaviour Interventions	
Source of Funding and Total Awarded:	Medical Research Council (MRC), National Prevention Research Initiative (NPRI) – £261,319 and Chief Scientist Office (CSO) CORE	
Amount of HERU Funding:	£237,370	
Objectives:	To provide information about the relative costs and benefits of interventions to change unhealthy behaviours, which will assist in making choices about the targeting of scarce resources for health improvement.	
Outline:	<p>The likelihood that conditions such as heart disease, cancers, diabetes and strokes will occur can be affected by the lifestyles that we adopt – such as smoking, over-eating, not taking enough exercise, etc. This study provides information for policy makers, the NHS and individuals about which interventions to change unhealthy behaviours are effective, as well as cost-effective. Such information will assist in making decisions about how best to use the limited resources available to improve the health of the nation. The consequences (in terms of ill health and costs) of different types of lifestyle are affected by an individual’s personal circumstances and the environment in which they live. It is these factors that either promote or provide barriers to an individual changing their behaviour.</p> <p>The main research questions addressed were: the contribution of different lifestyle factors to ill health and mortality that might be prevented; how this preventable ill health varies between different areas and different social groups who differ in the amount of deprivation they suffer; and the relative costs and benefits of alternative ways of changing behaviour and their impacts on health inequalities.</p>	
Outcome and Translation:	A novel approach was developed to addressing the role of lifestyles and life circumstances in preventable diseases using econometric analysis of linked survey and hospitalisation data and the results were integrated into an economic evaluation framework. This study developed information for policy makers, the NHS and individuals about which interventions to change unhealthy behaviours are effective, as well as cost-effective, and how these might be targeted to reduce health inequalities.	

Start Date:	November 2008
Duration of Project:	36 months
Publications:	<p>Eberth, B. and Smith, M.D. (2010) 'Modelling the participation decision and duration of sporting activity in Scotland', <i>Economic Modelling</i>, 27(4), 822-834.</p> <p>Eberth, B. and Smith, M.D. (2010) 'Modelling the participation decision and duration of sporting activity in Scotland', HERU Briefing Paper, University of Aberdeen, November 2010</p> <p>Eberth, B., Olajide, D., Craig, P. and Ludbrook, A. (2014) 'Smoking-related disease risk, area deprivation and health behaviours', <i>Journal of Public Health</i>, 36(1), 72–80.</p>
Other Dissemination Activities:	<p>Eberth, B. and Smith, M.D. (2008) 'Modelling sporting activity in Scotland', <i>Health Econometrics Workshop</i>, Milan, Italy, December 2008.</p> <p>Eberth, B. and Smith, M.D. (2009) 'Modelling the participation decision and the time spent on sporting activity in Scotland', <i>Scottish Economic Society Annual Conference</i>, Perth, April 2009.</p> <p>Olajide, D., Ludbrook, A., and Smith, M.D. (2010) 'Will quitting smoking and taking up a sport improve your diet? Investigating spillover effects of health behaviour interventions', <i>UK Society for Behavioural Medicine (NPRI)</i>, Leeds, England, December 2010.</p> <p>Ludbrook, A. (2011) 'Economic appraisal of the choice and targeting of lifestyle interventions to prevent disease in deprived populations', <i>Chief Scientist Office Workshop, Measuring, Understanding and Tackling Health Inequalities: New Insights from Scottish Research</i>, Edinburgh, February 2011.</p> <p>Olajide, D. and Eberth, B. (2011) 'Modelling time to incidence of smoking related diseases: a sample selection approach using linked hospitalisation data', <i>Scottish Economic Society Conference</i>, Perth, April 2011.</p> <p>Olajide, D. and Eberth, B. (2011) 'Modelling time to incidence of smoking related diseases: a sample selection approach using linked hospitalisation data', <i>Scottish Health Informatics Programme Conference, Exploiting Existing Data for Health Research</i>, St Andrews, September 2011.</p> <p>Eberth, B., Olajide, D. and Ludbrook, A. (2011) 'Smoking related disease risk and lifestyle behaviours,' <i>Faculty of Public Health Conference</i>, Aviemore, November 2011.</p>

Olajide, D., Ludbrook, A. and Eberth, B. (2011) 'Patterns of drinking behaviour and incidence of diseases amongst Scottish adults', *Faculty of Public Health Conference, Aviemore, November 2011.*

Ludbrook, A., Smith, M.D., Vale, L., Craig, P., Stockton, D., Popham, F., **Olajide, D., Eberth, B.** and **Yi, D.** (2011) 'Economic appraisal of the choice and targeting of lifestyle interventions to prevent disease in deprived populations', *UK Society for Behavioural Medicine/NPRI, Stirling, December 2011.*

Ludbrook, A. (2012) 'Health behaviours and health inequalities: what should be targeted?', *Institute of Health & Society Seminar, Newcastle, England, May 2012.*

Olajide, D., Ludbrook, A. and Eberth B. (2012) 'Analysis of multiple risky behaviours and associated disease outcomes using Scottish linked hospitalisation data', *NHESG, Kuopio, Finland, August 2012.*

Olajide, D. and Ludbrook, A. (2012) 'Patterns of multiple health behaviours and associated disease outcomes amongst Scottish adults: a latent class regression approach', *Faculty of Public Health Conference, Crieff, November 2012.*

Yi, D., Vale, L., **Ludbrook, A.** and **Olajide, D.** (2012) 'Cost effectiveness analysis of smoking intervention programmes in Scotland: impact of health behaviour and deprivation', [Poster] *UK Society for Behavioural Medicine Conference, Manchester, England, December 2012.*

Olajide, D. and Ludbrook, A. (2013) 'Modelling risk of smoking related disease linked to deprivation: comparison of two linked data sets', *Scottish Informatics Programme (SHIP) International Conference: Exploiting Existing Data for Health Research, St Andrews, August 2013.*

Project No:	HBI2.4	Completed
Project Title:	Smarter choices, smarter places programme.	
Grant Applicants / Principal Investigators (place of work):	Anable, J., Haldane, D., Nelson, J. (School of Geosciences, University of Aberdeen); Parker, J. (Integrated Transport Planning Ltd); Ludbrook, A. (HERU).	
HERU Investigators:	Ludbrook, A., Farrar S., Norwood P.	
HERU Research Theme:	Health Behaviour and Inequality – Evaluating Health Behaviour Interventions	
Source of Funding and Total Awarded:	Scottish Government (Sustainable Travel Demonstration Communities) – £738,863, Chief Scientist Office (CSO) CORE and University of Aberdeen	
Amount of HERU Funding:	£11,319	
Objectives:	To evaluate the health impacts of physical activity changes arising from the Smarter Choices, Smarter Places (SCSP) programme.	
Outline:	In August 2008 the Scottish Government announced a programme of ‘Sustainable Travel Demonstration Communities’ to showcase ways of saving people money, improving their health, building stronger communities and improving the environment. This project evaluated those impacts. The health economics component focused on changes in physical activity directly or indirectly associated with the programme and the impact of these on health. A difference-in-difference analysis was carried out on survey data and demonstrated that the SCSP programme had an effect on physical activity.	
Outcome and Translation:	The project results demonstrated effects of the programme on active travel and physical activity. Transport Scotland provided further funding to local authorities to build on the success of the SCSP Programme.	
Start Date:	November 2008	
Duration of Project:	48 months	
Publications:	Derek Halden Consultancy, University of Aberdeen and Integrated Transport Planning (2013) <i>Going Smarter: Final Report</i> . Report for Transport Scotland. March 2013.	
	Norwood, P., Eberth, B., Farrar, S., Anable, J. and Ludbrook, A. (2014) 'Active travel intervention and physical activity behaviour: an evaluation', <i>Social Science and Medicine</i> , 113, 50–58.	
Other Dissemination Activities:	Norwood, P., Eberth, B., Farrar, S., Anable, G. and Ludbrook, A. (2013) 'Active travel intervention and physical activity behaviour: an evaluation', <i>Scottish Faculty of Public Health Conference</i> , Dunblane, 7–8 November 2013.	

Project No:	HBI2.5	Completed
Project Title:	Weigh Well: MRC IES Platform Grant, scoping and feasibility preparation for an RCT on post-partum weight loss.	
Grant Applicants / Principal Investigators (place of work):	Anderson, A., Barbour, R., Kirk, A.F., Mires, G., Symon, A., Treweek, S., Williams, B. (University of Dundee); Fraser, R. (University of Sheffield); Thompson, J.M. (NHS Dundee); Ludbrook, A. (HERU).	
HERU Investigators:	Ludbrook, A., McKenzie, L.	
HERU Research Theme:	Health Behaviour and Inequality – Evaluating Health Behaviour Interventions	
Source of Funding and Total Awarded:	Medical Research Council (MRC) (via the University of Dundee) – £193,576 and Chief Scientist Office (CSO) CORE	
Amount of HERU Funding:	£28,860	
Objectives:	The scoping study established which costs and benefits should be collected in a full trial and allowed power calculations to be carried out for the economic analysis.	
Outline:	This project was a pre-trial feasibility study of a weight loss intervention. The economic component informed questions relating to the scale and significance of the difference in costs and benefits between intervention and control groups, including health service costs and benefits, other social costs and benefits, and costs and benefits to the women and their families. Alternative data collection methods were evaluated to establish which costs and benefits should be collected in a full trial and allow power calculations to be carried out for the economic analysis. Some pre-trial modelling was carried out.	
Outcome and Translation:	The results from this study helped to design better interventions with post-partum women and develop methods for data collection which will have wide application for public health interventions. The study showed that the intervention was potentially effective but identified issues of recruitment and retention as important areas to address in a full RCT.	
Start Date:	December 2008	
Duration of Project:	18 months	

Publications:

Craigie, A.M., Barbour, R.S., Anderson, A.S. and the WeighWell Team (**Ludbrook, A.** is a member of the WeighWell team) (2010) 'How can we help women lose weight after child birth? Formative findings from the WeighWell weight management study', (Abstract from Summer Meeting, 28 June – 1st July, 2010)', *Proceedings of the Nutrition Society*, 69(OCE6), E429.

Craigie, A.M., Barbour, R.S., Anderson, A.S. and and the Weigh Well team (**Ludbrook, A.** is a member of the WeighWell team) (2011) 'Findings from the WeighWell feasibility study of post-partum weight loss: challenges for a randomised controlled trial', (Abstract from Scottish Section Meeting, 5–6 April, 2011), *Proceedings of the Nutrition Society*, 70(OCE1), E15.

Other Dissemination Activities: –

Project No:	HBI2.6	Completed
Project Title:	An evaluation to assess the effectiveness of 'quit4U', a smoking cessation service in Dundee combining financial incentives and behavioural support.	
Grant Applicants / Principal Investigators (place of work):	Martin, C., Armstrong, R. (Scottish Centre for Social Research); Amos, A. (University of Edinburgh); Pol, M. van der., Ludbrook, A. (HERU).	
HERU Investigators:	Pol, M. van der, Ludbrook, A.	
HERU Research Theme:	Health Behaviour and Inequality – Evaluating Health Behaviour Interventions	
Source of Funding and Total Awarded:	National Health Service (NHS) Health Scotland – £135,000, University of Aberdeen and Chief Scientist Office (CSO) CORE	
Amount of HERU Funding:	£43,072	
Objectives:	To assess the effectiveness and cost-effectiveness of supplementing standard smoking cessation services with financial incentives.	
Outline:	The uptake of smoking cessation services by smokers living in relatively deprived areas tends to be low. NHS Tayside has introduced a new scheme (quit4u) in which participants are paid a financial incentive if verified as smoke-free. This study assessed the effectiveness and cost-effectiveness of supplementing standard smoking cessation services with financial incentives using the ISD minimum dataset on smoking cessation services. The results showed that quit rates were higher for quit4u compared to standard smoking cessation services. Quit4u was also shown to be a cost-effective use of NHS resources.	
Outcome and Translation:	Smoking remains a major public health concern. Devising (cost)-effective smoking cessation interventions is challenging, especially in relatively deprived areas. This study showed that quit4u was cost-effective. It should be considered whether similar schemes should be provided in other areas in Scotland thereby reducing smoking and its negative health effects in deprived areas throughout Scotland in a cost-effective manner.	
Start Date:	April 2009	
Duration of Project:	3 years	

Publications:

Ormston, R., McConville, S., **Pol, M. van der, Ludbrook, A.** and Amos, A. Evaluation of quit4u. *Report to NHS Health Scotland*. May 2012.

Ormston, R., **Pol, M. van der, Ludbrook, A.**, McConville, S. and Amos, A. (2014) 'quit4u: the effectiveness of combining behavioural support, pharmacotherapy and financial incentives to support smoking cessation', *Health Education Research*, 30(1), 121–133.

Other Dissemination Activities:

Pol, M. van der and **Ludbrook, A.** (2010) 'Quantitative analysis, implementation and evaluation: the learning to date', *Joint Seminar between NHS Tayside, NHS Health Scotland and the Scottish Centre for Social Research*, Dundee, June 2010.

Amos, A. and **Pol, M. van der** (2010) 'Lessons from quit4u: combining support, pharmacotherapy and financial incentives to support smoking cessation', *UK National Smoking Cessation Conference*, Birmingham, June 2012.

Ludbrook, A., Pol, M. van der, Ormston, R. and Amos, A. (2012) 'Innovation in smoking cessation: the impact of quit4u on take up and smoking quit rates in a deprived area', *Annual Public Health Conference*, Crieff, November 2012.

Ormston, R., Amos, A., **Ludbrook, A.**, McConville, S. and **Pol, M. van der** (2012) 'Getting the 'whole package' right: learning from the quit4u smoking cessation scheme', *Annual Public Health Conference*, Crieff, November 2012.

Project No:	HBI2.7	Completed
Project Title:	Avoidable cost of alcohol project.	
Grant Applicants / Principal Investigators (place of work):	Gerdtham, U-G., Lyttkens, C.H., Jarl, J. (Lund University); Lundborg, P. (Vrije Universiteit Amsterdam); Ludbrook, A. (HERU) ; Petrie, D. (University of Melbourne).	
HERU Investigators:	Ludbrook, A.	
HERU Research Theme:	Health Behaviour and Inequality – Evaluating Health Behaviour Interventions	
Source of Funding:	Swedish Research Council and Chief Scientist Office (CSO) CORE	
Objectives:	This project aimed to extend the social cost of alcohol methodology by examining those parts of the total cost which could be avoided given reductions in current and future risky alcohol use, labelled 'avoidable cost'.	
Outline:	Swedish data were used to estimate the avoidable costs associated with cessation of alcohol use. Meta-analyses were conducted where sufficient epidemiological data were available to estimate the reversibility of all alcohol-related diseases. These were later employed in calculating the avoidable healthcare and associated QALY losses of alcohol consumption in Sweden. The estimates considered impacts on different groups, for example by age and gender. In addition an alternative method has been used to estimate the avoidable cost of liver cirrhosis.	
Outcome and Translation:	<p>Identifying avoidable cost is important in order to prioritise between different social concerns and to accurately rank alcohol policies based on their cost-effectiveness. For some diseases, the lag time from drinking cessation to reduced mortality and morbidity was shown to be lengthy. However, the reviews identified areas where limited data suggested more research is required to improve the robustness of results. There were also issues related to heterogeneity in the population characteristics of current drinkers, abstainers and former drinkers which need to be accounted for.</p> <p>The results have been used in the Sheffield Alcohol Policy Model and have informed an application to the Swedish Research Council for a programme grant to model the effects of interventions.</p>	
Start Date:	January 2010	
Duration of Project:	36 months	
Publications:	Jarl, J., Gerdtham, U.-G., Ludbrook, A. and Petrie, D. (2010) 'On measurement of avoidable and unavoidable cost of alcohol: an application of method for estimating costs due to prior consumption', <i>International Journal of Environmental Research and Public Health</i> , 7(7), 2881-2895.	
Other Dissemination Activities:	-	

Project No:	HBI2.8	Completed
Project Title:	BeWel: the impact of a body-weight and physical activity intervention on adults at risk of developing colorectal adenomas.	
Grant Applicants / Principal Investigators (place of work):	Anderson, A., Belch, J., Daly, F., Steele, R., Treweek, S. (University of Dundee); Stead, M., Kirk, A. (University of Stirling); Wardle, J. (University College London); Thomson, J. (NHS Tayside); Ludbrook, A. (HERU).	
HERU Investigators:	Ludbrook, A., McKenzie, L., Norwood, P.	
HERU Research Theme:	Health Behaviour and Inequality – Evaluating Health Behaviour Interventions	
Source of Funding and Total Awarded:	Medical Research Council (MRC) National Prevention Research Initiative (NPRI) – £1,167,404 and Chief Scientist Office (CSO) CORE	
Amount of HERU Funding:	£36,958	
Objectives:	The study assessed the effectiveness and cost-effectiveness of the intervention in achieving diet change and weight loss with the longer-term aim of preventing colorectal cancer. The economic analysis took the form of a cost-consequence analysis (CCA) from both an NHS and a societal perspective.	
Outline:	For interventions that require individual behaviour change to be successful, it is particularly important to consider the costs and benefits from the perspective of individual participants and their families. These were explored in the context of the CCA and in more depth in the post-intervention interviews. CCA also allows for a very flexible presentation of results in contexts where more than one outcome is of interest.	
Outcome and Translation:	The intervention produced a significant weight loss for the intervention group. The intervention costs were relatively high as it was delivered in participants' own homes but this reduced the burden on them. Longer-term outcomes will require further follow up.	
Start Date:	January 2010	
Duration of Project:	48 months	

Publications:

Craigie, A.M., Caswell, S., Paterson, C., Treweek, S., Belch, J.F., Daly, F., Rodger, J., Thompson, J., Kirk, A., **Ludbrook, A.**, Stead, M., Wardle, J., Steele, R.J.C. and Anderson, A.S. (2011) 'Study protocol for BeWEL: the impact of a BodyWEight and physical activity intervention on adults at risk of developing colorectal adenomas [protocol],' *BMC Public Health*, 11(184).

Stead M., Caswell S., Craigie, A.M., Eadie, D., Anderson A.S. and the BeWEL team (**Ludbrook, A.** is a member of the BeWeL team) (2012) 'Understanding the potential and challenges of adenoma treatment as a prevention opportunity: insights from the BeWEL study,' *Preventive Medicine* 54; 95–101.

Anderson, A.S., Craigie, A.M., Caswell, S., Treweek, S., Stead, M., Macleod, M., Daly, F., Belch, J., Rodger, J., Kirk, A., **Ludbrook, A.**, Rauchhaus, P., **Norwood, P.**, Thompson, J., Wardle, J. and Steele, R.J.C. (2014) 'The impact of a bodyweight and physical activity intervention (BeWEL) initiated through a national colorectal cancer screening programme: randomised controlled trial', *BMJ*, 348, g1823.

Anderson, A.S., Caswell, S., Macleod, M., Craigie, A.M., Stead, M., Steele, R.J. and the BeWELTeam (**Ludbrook, A.** and **Norwood, P.** are on the BeWEL Team) (2015) 'Awareness of lifestyle and colorectal cancer risk: findings from the BeWEL study', *Biomed Research International*, 2015, Article ID: 871613.

Other Dissemination Activities –

Project No:	HBI2.9	Completed
Project Title:	Screening and brief interventions for alcohol misuse delivered in the community pharmacy setting: a pilot study.	
Grant Applicants / Principal Investigators (place of work):	Watson, M. (Other Applied Health Sciences, University of Aberdeen); Stewart, D. (Robert Gordon University); Ludbrook, A. (HERU) .	
HERU Investigators:	Ludbrook, A.	
HERU Research Theme:	Health Behaviour and Inequality – Evaluating Health Behaviour Interventions	
Source of Funding and Total Awarded:	Chief Scientist Office (CSO) (Health Services Research) – £49,782	
Amount of HERU Funding:	£5,957	
Objectives:	This study conducted a pilot study of a brief alcohol intervention delivered in community pharmacies, in terms of practical considerations, recruitment, uptake, potential effectiveness and acceptability to pharmacists and clients, in order to inform the development of a large-scale RCT.	
Outline:	The economic component of this study focussed on the identification of cost and resource issues that will be important in developing a full trial. The main factors are delivery costs in the pharmacy and the opportunity cost of pharmacist time. A value of information analysis was conducted to assess the potential value of conducting a full trial.	
Outcome and Translation:	Alcohol brief interventions have been shown to be cost-effective in other settings but have not been evaluated in pharmacy. Opportunistic delivery in this setting has the potential to reach a different population compared with delivery in healthcare settings.	
Start Date:	January 2010	
Duration of Project:	1 year	
Publications:	Ludbrook, A. Screening and brief interventions for alcohol misuse delivered in the community pharmacy setting: a pilot study. <i>Final report to Chief Scientist Office</i> . March 2011.	
Other Dissemination Activities:	Fitzgerald, N., Stewart, D., Jaffray, M., Inch, J., Duncan, E., Afolabi, E. and Ludbrook, A. (2011) 'A pilot study of alcohol screening and brief interventions in community pharmacies', <i>International Network on Brief Interventions for Alcohol and Other Drugs (INEBRIA) Meeting</i> , Boston, MA, USA, September 2011.	

Project No:	HBI2.10	Completed
Project Title:	Scoping study of the economic impact on the alcohol industry of pricing and non-price policies to regulate the affordability and availability of alcohol in Scotland.	
Grant Applicants / Principal Investigators (place of work):	Petrie, D. (University of Melbourne); Ludbrook, A. (HERU).	
HERU Investigators:	Ludbrook, A.	
HERU Research Theme:	Health Behaviour and Inequality – Evaluating Health Behaviour Interventions	
Source of Funding and Total Awarded:	NHS Health Scotland (via University of Dundee) – £15,941 and Chief Scientist Office (CSO) CORE	
Amount of HERU Funding:	£4,450	
Objectives:	This exploratory study sought to identify methods for identifying the effects of alcohol legislation in Scotland on the alcohol industry and for separating out the effects of pricing policies and other policies. It aimed to develop a range of options for a full study to quantify the likely impact of legislation on revenue, profitability and employment in different sectors.	
Outline:	A logic model was developed to identify where the impact of different policies was likely to be and the supply chains for the alcohol industry were mapped. A review of potential data sources was carried out, including consultation with industry sources. Four study options were explored in detail and an assessment was made of the likely outputs of each study in relation to the evaluation objectives and the risks associated with each option.	
Outcome and Translation:	The results were reported to NHS Health Scotland and informed their decision making in relation to commissioning further research.	
Start Date:	February 2010	
Duration of Project:	8 months	
Publications:	Petrie, D., Ludbrook, A. , Gobey, M., Dewhurst, J., Montagna, C. and Molana, H. (2010) <i>Scoping study of the economic impact on the alcohol industry of pricing and non-price policies to regulate the affordability and availability of alcohol in Scotland. Final Report to NHS Health Scotland</i> , NHS Health Scotland.	
Other Dissemination Activities:	–	

Project No:	HBI2.11	Completed
Project Title:	Economic aspects of alcohol policy.	
Grant Applicants / Principal Investigators (place of work):	Ludbrook, A. (HERU); Petrie, D. (University of Melbourne).	
HERU Investigators:	Ludbrook, A., Ejebu, O-Z., McKenzie, L.	
HERU Research Theme:	Health Behaviour and Inequality – Evaluating Health Behaviour Interventions	
Source of Funding:	Chief Scientist Office (CSO) CORE and University of Aberdeen	
Objectives:	This project aimed to examine the effects of fiscal and other policy interventions aimed at reducing alcohol-related harms.	
Outline:	Various approaches to alcohol pricing have been proposed, including minimum pricing per unit of alcohol, increases in current duty rates and restrictions on below cost selling. This project considered the economic impacts and equity effects of alternative approaches and also considered the comparative effectiveness of non-financial interventions.	
Outcome and Translation:	The use of pricing to affect alcohol consumption continues to be under active consideration as a policy intervention. Legislation on minimum pricing has been passed by the Scottish Parliament and is awaiting the outcome of a legal challenge before it can be implemented. Evidence relating to the effectiveness of minimum pricing was presented to the Health and Sport Committee of the Scottish Parliament during the legislative process and has been used in the Scottish Government's submission in the legal case.	
Start Date:	June 2010	
Duration of Project:	6 years	
Publications:	<p>Ludbrook, A. (2010) 'Asking the right questions about substitution and complementarity: a comment on Moore's paper', <i>Alcohol and Alcoholism</i>, 2010, 45(5), 412-413.</p> <p>Ludbrook, A., Petrie, D., McKenzie, L. and Farrar, S. (2012) 'Tackling alcohol misuse: purchasing patterns affected by minimum pricing for alcohol', <i>Applied Health Economics and Health Policy</i>, 10(1), 51-63.</p> <p>Johnston, M.C., Ludbrook, A. and Jaffray, M.A. (2012) 'Inequalities in the distribution of the costs of alcohol misuse in Scotland: a cost of illness study', <i>Alcohol and Alcoholism</i>, 47(6), 725-731.</p>	

Alcohol Health Alliance Strategy Group (2013) *Health first: an evidence-based alcohol strategy for the UK*, Stirling: University of Stirling. (Ludbrook, A. is a member of AHAS Group).

Ludbrook, A., Holmes, J. and Stockwell, T. (2014) 'Gender differences in alcohol demand: a systematic review of the role of prices and taxes. Comment on conclusions by Nelson', *Health Economics*, 23(10), 1281-1283.

Ludbrook, A. (2015) 'Special focus III: How does minimum unit pricing for alcohol affect different types of drinkers?', in Sassi, F. (ed.) *Tackling Harmful Alcohol Use*. Paris: OECD Publishing.

Ludbrook, A. and Griffith, R. (2015) *Drinkaware latest viewpoints series: should minimum unit pricing be introduced in the UK?* Drinkaware. [Webpage].

Ludbrook, A. (2016) 'Fairness and efficiency: addressing the harms of excessive drinking', HERU Policy Brief, University of Aberdeen, January 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].

Other Dissemination Activities: **Ludbrook, A.** (2012) 'Why is action on alcohol so needed? Round table discussion', *AMPHORA Conference*, Stockholm, October 2012.

Ejebu, O.-Z. (2014) 'Minimum Unit Pricing for alcohol and the 'moderate drinker of moderate means': an analysis of household scanner data', *Annual Scottish Faculty of Public Health Conference: Health in a Changing Scotland: the Ball's in Our Court*, Aviemore, 6 November 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.

Ludbrook, A. (2016) 'Today's student, tomorrow's heavy drinker', Café Variété (Public engagement), University of Aberdeen, Aberdeen, 3 November 2016.*

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

Project No:	HBI2.12	Completed
Project Title:	InegSante: Tackling inequalities in health and access to healthcare in African and Middle Eastern countries, challenges of measurement and explanation.	
Grant Applicants / Principal Investigators (place of work):	Abul Naga, R.H. (HERU); Abu-Zaineh M., Moatti J.P., Arrighi Y., Ventelou B., Woode, M.E. (Marseille); Boutayeb, A. (University Mohammed Premier, Morocco); Mataria, A. (World Health Organization, Regional Office for the Eastern Mediterranean).	
HERU Investigators:	Abul Naga, R.H.	
HERU Research Theme:	Health Behaviour and Inequality – Evaluating Health Behaviour Interventions	
Source of Funding:	University of Aberdeen	
Outline:	<p>INEGSANTE proposed to contribute to the scientific debate about equity in healthcare expenditures and in access to healthcare in developing countries in three related ways:</p> <ul style="list-style-type: none"> • To transfer to this field recent methodological advances in the measurement of inequality from the tax and public economics literature. • To re-examine the relationship between income and healthcare inequalities in the developing country context. • To perform econometric analysis applying, for the first time, these approaches to national household surveys including detailed data on healthcare expenditures and consumption in a large sample of 12 African and Middle Eastern countries. 	
Objectives:	<p>The INEGSANTE research project was directly related to themes 4 (Catastrophe, risks, vulnerabilities) and 1 (Demographic dynamics and future of societies in developing countries) of the call for proposals 'les Suds Aujourd'hui II'. It aimed at improving the scientific debate about equity in healthcare expenditures and in access to healthcare in developing countries in three related ways:</p> <ul style="list-style-type: none"> • Providing decomposition and microsimulation techniques that are appropriate for disentangling the respective roles of individual behaviours and preferences and of characteristics of healthcare delivery systems and financing schemes in the analysis of equity. • Re-examining the relationship between income and healthcare inequalities, notably with an attempt to operationalise in this field Sen's concepts of 'adaptive preferences and capability deprivation' and through measuring <i>ex post</i> re-ranking effects of healthcare expenditures on income distribution. 	

-
- Performing econometric analysis applying, for the first time, these approaches to national household surveys including detailed data on healthcare expenditures and consumption in a large sample of 12 African and Middle Eastern low-income (Burkina-Faso, Senegal, Zambia), lower middle-income (Cameroon, Côte d'Ivoire, Egypt, Jordan, Morocco, Palestine, Tunisia) and upper middle-income (Lebanon, South Africa) countries.

Outcome and Translation: This study has provided data analysts with an innovative methodology to compare distributions of health expenditure in terms of equity in the developing country context. Such methodology was largely underdeveloped, and it was the purpose of the research to seek to bridge this methodological gap. The findings of this project will substantially inform the development of policies aimed at tackling inequalities in healthcare expenditures.

Start Date: October 2010

Duration of Project: 4 years

Publications: Abu-Zaineh, M. and **Abul Naga, R.H.** (2013) 'Wealth, health, and the measurement of multidimensional inequality: evidence from the Middle East and North Africa', in Rosa Dias, P. and O'Donnell, O. (eds.) *Health & Inequality, Research on Economic Inequality*, Volume 21, Emerald Group Publishing, 421-439.

Other Dissemination Activities: –

Project No:	HBI2.13	Completed
Project Title:	ROMEO: Systematic reviews and integrated report on the quantitative and qualitative evidence base for the management of obesity in men.	
Grant Applicants / Principal Investigators (place of work):	Avenell, A. (HSRU, University of Aberdeen); Douglas, F. (Population Health, University of Aberdeen); Hoddinott, P. (University of Stirling); Boyers, D. (HERU).	
HERU Investigators:	Boyers, D.	
HERU Research Theme:	Health Behaviour and Inequality – Evaluating Health Behaviour Interventions	
Source of Funding and Total Awarded:	National Institute for Health Research (NIHR), Health Technology Assessment (HTA) Programme – £25,413 and Chief Scientist Office (CSO) CORE	
Amount of HERU Funding:	£2,775	
Objectives:	The objective of the ROMEO project was to summarise the quantitative, qualitative and economic evidence base for the management of obesity in men.	
Outline:	Simultaneous systematic reviews of the literature on evidence-based management strategies for treating and engaging men in obesity services, by integrating the quantitative, qualitative and health economic evidence base were undertaken. Interventions included in the reviews included lifestyle interventions (diet and physical activity) and drug treatment (Orlistat).	
Outcome and Translation:	<p>Based on all the literature reviewed, the study concluded that weight reduction for men is best achieved and maintained with the combination of a reducing diet, physical activity advice or a physical activity programme, and behaviour change techniques. Tailoring interventions and settings for men may enhance effectiveness, though further research is needed to better understand the influence of context and content.</p> <p>No studies set out to determine the cost-effectiveness of treatment exclusively for men. However five studies reported results for subgroups of men. Interventions were grouped into lifestyle interventions (three studies) and Orlistat (two studies). The retrieved studies showed promising evidence of cost-effectiveness, especially when interventions were targeted at high-risk groups, such as those with impaired glucose tolerance. There appears to be some sex-specific elements to cost-effectiveness, although there were no clear trends or indications of what may be contributing to this.</p>	

The economic evidence was highly uncertain, and limited by variable methodological quality of the included studies. Future studies are required to demonstrate the cost-effectiveness of interventions specifically targeted towards weight loss for men.

Start Date: January 2011

Duration of Project: 20 months

Publications: Robertson, C., Archibald, D., Avenell, A., Douglas, F., Hoddinott, P., Van Teijlingen, E., **Boyers, D.**, Stewart, F., Boachie, C., Fioratou, E., Wilkins, D., Street, T., Carroll, P. and Fowler, C. (2013) *Systematic reviews and integrated report on the quantitative, qualitative and economic evidence base for the management of obesity in men*, Report submitted to NIHR HTA Programme.

Robertson, C., **Archibald, D.**, Avenell, A., Douglas, F., Hoddinott, P., Van Teijlingen, E., **Boyers, D.**, Stewart, F., Boachie, C., Fioratou, E., Wilkins, D., Street, T. and Carroll, P. (2014) 'Systematic reviews of and integrated report on the quantitative, qualitative and economic evidence base for the management of obesity in men', *Health Technology Assessment*, 18(35).

Stewart, F., Fraser, C., Robertson, C., Avenell, A., Archibald, D., Douglas, F., Hoddinott, P., van Teijlingen, E. and **Boyers, D.** (2014) 'Are men difficult to find?: Identifying male-specific studies in MEDLINE and Embase', *Systematic Reviews*, 3(1), 78.

Boyers, D., Avenell, A., Stewart, F., Robertson, C., Archibald, D., Douglas, F., Hoddinott, P. and van Teijlingen, E. (2015) 'A systematic review of the cost-effectiveness of non-surgical obesity interventions in men', *Obesity Research & Clinical Practice*, [Epub ahead of print].

Robertson, C., Avenell, A., Boachie, C., Stewart, F., Archibald, D., Douglas, F., Hoddinott, P., van Teijlingen, E. and **Boyers, D.** (2015) 'Should weight loss and maintenance programmes be designed differently for men? A systematic review of long-term randomised controlled trials presenting data for men and women: the ROMEIO project', *Obesity Research & Clinical Practice*, 10(1), 70–84.

Robertson, C., Avenell, A., Stewart, F., Archibald, D., Douglas, F., Hoddinott, P., van Teijlingen, E. and **Boyers, D.** (2015) 'Clinical effectiveness of weight loss and weight maintenance interventions for men: a systematic review of men-only randomized controlled trials (The ROMEIO Project)', *American Journal of Men's Health*, [Epub ahead of print].

Archibald, D., Douglas, F., Hoddinott, P., van Teijlingen, E., Stewart, F., Robertson, C., **Boyers, D.** and Avenell, A. (2015) 'A qualitative evidence synthesis on the management of male obesity', *BMJ Open*, 5(10), e008372.

Avenell, A., Robertson, C., Stewart, F., **Boyers, D.**, Douglas, F., Archibald, D., van Teijlingen, E., Hoddinott, P. and Boachie, C. (2016) 'Sex can affect participation, engagement, and adherence in trials' (letter), *BMJ*, 355, i6754.*

Other dissemination Activities: **Boyers, D.**, Stewart, F. and Avenell, A. Evaluating the cost-effectiveness of new interventions in the management and treatment of obesity: lessons for good practice evaluations from the ROMEO project. *European Conference on Obesity (ECO)*, Liverpool, England, May 2013.

Robertson, C.F., **Archibald, D.**, Avenell, A., Douglas, F., Hoddinott, P., Van Teijlingen, E., **Boyers, D.**, Stewart, F., Boachie, C. and Fioratou, E. (2013) 'Using a combined realist and socio-ecological approach to integrating quantitative and qualitative systematic review evidence in a health technology assessment setting', *21st Cochrane Colloquium*, Quebec, Canada, 19–23 September 2013.

Archibald, D., Douglas, F., Hoddinott, P., Van Teijlingen, E., Robertson, C.F., Stewart, F., **Boyers, D.** and Avenell, A. (2013) 'A mixed-method evidence synthesis on the management of male obesity: the ROMEO (Review Of MEN and Obesity) Project', *Scottish Faculty of Public Health Conference*, Dunblane, 7–8 November 2013.

Boyers, D., Avenell, A., Stewart, F., Robertson, C., Archibald, D., Douglas, F., Hoddinott, P. and van Teijlingen, E. (2014) 'Evaluating the cost-effectiveness of interventions for the management and treatment of obesity in men – results from the ROMEO study' [poster], *Men's Health and Well-being: Critical Insights Conference*, Leeds, England, 7–8 July 2014.

Robertson, C., Avenell, A., Stewart, F., Archibald, D., Douglas, F., Hoddinott, P., van Teijlingen, E. and **Boyers, D.** (2014) 'Should weight loss programmes be designed differently for men? A systematic review of long-term weight loss randomised controlled trials: the Romeo project' [poster], *Men's Health and Wellbeing: Critical Insights Conference*, Leeds, England, 7–8 July 2014.

Hoddinott, P., Archibald, D., Robertson, C., Stewart, F., **Boyers, D.**, Douglas, F., van Teijlingen, E. and Avenell, A. (2014) 'Obesity in men: evidence synthesis findings and their implications for primary care. The ROMEO (Review of Men and Obesity) Project', *Society for Academic Primary Care*, Edinburgh, 9–12 July 2014.

Boyers, D., Avenell, A., Stewart, F., Robertson, C., Archibald, D., Douglas, F., Hoddinott, P. and van Teijlingen, E. (2014) 'A systematic review of the cost-effectiveness of non-surgical obesity interventions in men' [poster], *Association for the Study of Obesity, UK Congress on Obesity*, Birmingham, England, 16–17 September 2014.

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

Robertson, C., Avenell, A., Boachie, C., Stewart, F., Archibald, D., Douglas, F., Hoddinott, P., van Teijlingen, E. and **Boyers, D.** (2014) 'Should weight loss programmes be designed differently for men and women? The ROME0 (Review of Men and Obesity) project', *Association for the Study of Obesity, UK Congress on Obesity*, Birmingham, England, 16–17 September 2014.

Robertson, C., Avenell, A., Stewart, F., Archibald, D., Douglas, F., Hoddinott, P., van Teijlingen, E. and **Boyers, D.** (2014) 'A systematic review of long-term weight management randomised controlled trials for obese men: the ROME0 project [poster]', *Association for the Study of Obesity, UK Congress on Obesity*, Birmingham, England, 16–17 September 2014.

Robertson, C., Avenell, A., Stewart, F., Archibald, D., Douglas, F., Hoddinott, P., van Teijlingen, E. and **Boyers, D.** (2014) 'A systematic review of weight loss interventions for obese men in the UK: the ROME0 project' [poster], *Association for the Study of Obesity, UK Congress on Obesity*, Birmingham, England, 16–17 September 2014.

Project No:	HBI2.14	Completed
Project Title:	PhD: An economic perspective of the social determinants of health and health inequalities in Malawi.	
Grant Applicants / Principal Investigators (place of work):	Nkhoma, D. (PhD Student), Eberth, B., Abul Naga, R.H. (HERU).	
HERU Investigators:	Nkhoma, D., Eberth, B., Abul Naga, R.H.	
HERU Research Theme:	Health Behaviour and Inequality – Evaluating Health Behaviour Interventions	
Source of Funding and Total Awarded:	Wellcome Trust, the UK Department for International Development (DFID) Health Research Capacity Strengthening Initiative (HRCSI) for Malawi – £55,500, University of Aberdeen – £3,000 and Chief Scientist Office (CSO) CORE	
Amount of HERU Funding:	£3,000	
Objectives:	The project examined whether a socio-economic gradient exists in child health and healthcare utilisation in Malawi. It further examined whether income and education inequalities affect inequalities in child health in Malawi. In particular, the thesis addressed the following key questions, focusing on children aged five years and below: (1) Is there a socio-economic gradient in child malnutrition in Malawi? (2) Does the gradient vary as we move up the malnutrition distribution? (3) Is there a socio-economic gradient in infant mortality in Malawi? (4) Does socio-economic status determine outpatient utilisation for children in Malawi? And (5) What determines the socio-economic inequalities in child malnutrition in Malawi?	

Outline:	<p>The project, implemented as a PhD study, was organised as follows. The first chapter of the thesis outlined the research questions, rationale and background to the study. Chapter 2 examined two research hypotheses. Focusing on the effect of household and mother's education, it tested whether a socio-economic gradient in child malnutrition exists, focusing on stunting and under-weight in children aged below 5 years using a linear regression model. This chapter also tested whether the socio-economic determinants of child malnutrition have similar effects across the stunting and under-weight distributions using a quantile regression framework. Chapter 3 examined whether a socio-economic gradient in infant mortality exists. Using count regression models, chapter 4 examined whether a socio-economic gradient in healthcare utilisation exists, focussing on outpatient visits for children aged 5 years and below in Malawi. Chapter 5 revisited the hypothesis of the existence of a socio-economic gradient in child malnutrition addressed by decomposing the socio-economic inequalities in child stunting and under-weight.</p> <p>The results show evidence of a socio-economic gradient in child health in Malawi. The thesis also finds a positive and significant effect of wealth and a negative effect of mother's education on infant mortality. Furthermore, the findings show no significant effect of wealth but a positive effect of mother's education on outpatient utilisation.</p> <p>Additionally, the thesis finds significant and substantial effects of child-, household- and community-level factors on child health and outpatient care. Policy-wise, the results point to an urgent need for clearly specifying the distributional goals for the Malawi health sector in the next health sector strategic plan.</p>
Outcome and Translation:	<p>This research is of interest as its findings will substantially inform the development of policies aimed at tackling inequalities and which are based on a secure evidence base linking socio-economic factors to health, thus indicating where resources should be applied most effectively.</p>
Start Date:	March 2011
Duration of Project:	3 years
Publications:	Nkhoma, D. (2014) 'An economic perspective of the determinants of and inequalities in child health and health care in Malawi', <i>PhD Thesis</i> , University of Aberdeen.
Other Dissemination Activities:	–

Project No:	HBI2.15	Completed
Project Title:	Study to analyse and evaluate health, social and environmental impact of a possible EU intervention on the protection of workers' health from risks related to exposure of environmental tobacco smoke.	
Grant Applicants / Principal Investigators (place of work):	Ludbrook, A. (HERU).	
HERU Investigators:	Ludbrook, A.	
HERU Research Theme:	Health Behaviour and Inequality – Evaluating Health Behaviour Interventions	
Source of Funding and Total Awarded:	GHK Consulting Ltd – £6,000 and Chief Scientist Office (CSO) CORE	
Amount of HERU Funding:	£6,000	
Objectives:	To provide economic input to an assessment of the health, social, economic and environmental impact of a possible specific EU initiative to protect workers from the harm caused by environmental tobacco smoke (ETS).	
Outline:	Previous work on the health and economic impacts of ETS was updated and the most recent evidence identified. Consideration was given to a range of options from full ban on smoking in public places to lesser restrictions.	
Outcome and Translation:	The research was incorporated into a report to the European Union Directorate-General for Employment, Social Affairs and Inclusion. This report is intended for use by the Commission in its engagement with social partners.	
Start Date:	March 2011	
Duration of Project:	6 months	
Publications:	–	
Other Dissemination Activities:	–	

Project No:	HBI2.16	Completed
Project Title:	BIBS: Benefits of Incentives for Breastfeeding and Smoking cessation – a platform study for a trial.	
Grant Applicants / Principal Investigators (place of work):	Hoddinott, P. (University of Stirling); Campbell, M. (HSRU, University of Aberdeen); Ludbrook, A. (HERU); Bauld, L. (UK Centre for Tobacco Control Studies); Sniehotta, F. (Newcastle University); Dykes, F. (University of Central Lancashire); Tappin, D. (University of Glasgow).	
HERU Investigators:	Ludbrook, A., Farrar, S., Yi, D.	
HERU Research Theme:	Health Behaviour and Inequality – Evaluating Health Behaviour Interventions	
Source of Funding and Total Awarded:	National Institute for Health Research (NIHR) – £248,582 and Chief Scientist Office (CSO) CORE	
Amount of HERU Funding:	£22,842	
Objectives:	The aim of this research was to try to find out which incentives (financial or non-financial), if any, were most likely to help women to stop smoking in pregnancy (and not restart) and to breastfeed their babies until 6 months old, as recommended by the World Health Organization to benefit the health of both mothers and babies.	
Outline:	<p>Research objectives:</p> <ol style="list-style-type: none"> (1) To determine the evidence for the effectiveness of incentive interventions delivered within or outside the NHS, to (a) individuals, families or (b) organisations that aim to increase and sustain smoking cessation and breastfeeding during pregnancy. (2) To determine the acceptability and feasibility of a shortlist of promising incentive strategies and potential harms or adverse consequences. (3) To develop an incentive taxonomy. (4) To design a feasible trial. <p>There were three key stages to the research:</p> <p>Stage 1. Evidence synthesis to meet the knowledge gap on the use of incentives in this underdeveloped field and to integrate evidence on two behaviours; smoking in pregnancy and breastfeeding. It aimed to assess incentives at an individual recipient level as well as at provider and organisational levels.</p> <p>Stage 2. Primary qualitative research and web surveys to assess the acceptability and feasibility of a shortlist of candidate incentives.</p> <p>Stage 3. A discrete choice experiment (DCE) to inform the design of a trial.</p>	

Outcome and Translation: The research identified a range of potential interventions using different forms of incentives, to individuals or organisations, to encourage healthy behaviours. The feasibility and acceptability of promising interventions was assessed and the effect of different levels of incentive was assessed through the DCE.

The DCE identified the level of incentive required to increase the likelihood of quitting smoking. This will be used to inform intervention studies, including trials.

Start Date: February 2012

Duration of Project: 20 months

Publications: Hoddinott, P., Morgan, H., MacLennan, G., Sewel, K., Thomson, G., Bauld, L., Yi, D., **Ludbrook, A.** and Campbell, M.K. (2014) 'Public acceptability of financial incentives for smoking cessation in pregnancy and breast feeding: a survey of the British public', *BMJ Open*, 4(7), e005524.

Morgan, H., Hoddinott, P., Thomson, G., Crossland, N., **Farrar, S.**, Yi, D., Hislop, J., Moran, V.H., MacLennan, G., Dombrowski, S.U., Rothnie, K., Stewart, F., Bauld, L., **Ludbrook, A.**, Dykes, F., Sniehotta, F.F., Tappin, D. and Campbell, M. (2015) 'Benefits of Incentives for Breastfeeding and Smoking cessation in pregnancy (BIBS): a mixed-methods study to inform trial design', *Health Technology Assessment*, 19(30).

Farrar, S., Yi, D., Morgan, H., **Ludbrook, A.** and Hoddinott, P. (2016) 'Financial incentives to support smoking cessation in pregnant women – size matters', HERU Policy Brief, University of Aberdeen, May 2016.

Other Dissemination Activities: Morgan, H., Hislop, J., Rothnie, K., Stewart, F., Hoddinott, P. and **Farrar, S.** (2012) 'Incentives for smoking in pregnancy: are they the way forward?', *Health Challenge Wales*, Cardiff, Wales, June 2012.

Hoddinott, P., Hislop, J., Morgan, H., Stewart, F., Rothnie, K., Bauld, L., Thomson, G. and **Farrar, S.** (2012) 'BIBS: Benefits of Incentives for Breastfeeding and smoking cessation: a platform study for a trial', *Public Health Agency*, Belfast, Ireland, November 2012.

Hoddinott, P., Hislop, J., Morgan, H., Stewart, F., **Farrar, S.**, Rothnie, K., Bauld, L. and Thomson, G. (2012) 'A mixed methods evidence synthesis of incentive interventions for smoking cessation in pregnancy', *Faculty of Public Health Scotland*, Crieff, November 2012.

Morgan, H., Hoddinott, P., Hislop, J., Stewart, F., Rothnie, K., Bauld, L., Thomson, G. and **Farrar, S.** (2012) 'More questions than answers: the role of incentives around childbirth', *Faculty of Public Health Scotland*, Crieff, November 2012.

Hoddinott, P., Hislop, J., Morgan, H., Stewart, F., **Farrar, S.**, Rothnie, K., Bauld, L. and Thomson, G. (2012) 'A mixed methods evidence synthesis [poster]', *Royal Society of Medicine. Public Health Science: a National Conference Dedicated to New Research in Public Health*. London, England, November 2012.

Hoddinott, P., Morgan, H., Thomson, G., Crossland, N., Craig, L., Britten, J., **Farrar, S.**, Newlands, R., Kiezebrink, K. and Coyle, J. (2013), 'Intervention vignettes as a qualitative tool to refine complex intervention design', *2nd Clinical Trials Methodology Conference*, EICC, Edinburgh, 18–19 November 2013.

Hoddinott, P., Morgan, H., MacLennan, G., Sewel, K., Thomson, G., Bauld, L., Yi, D., **Ludbrook, A.** and Campbell, M.K. (2014) 'Public acceptability of financial incentives for smoking cessation in pregnancy and breastfeeding', *Scottish School of Primary Care (SSPC)*, Cumbernauld, 29–30 April 2014.

Hoddinott, P., Morgan, H., MacLennan, G., Sewel, K., Thomson, G., Bauld, L., Yi, D., **Ludbrook, A.** and Campbell, M.K. (2014) 'Public acceptability of financial incentives for smoking cessation in pregnancy and breastfeeding', *13th International Congress of Behavioral Medicine*, Groningen, Netherlands, 20–23 August 2014.

Hoddinott, P., Morgan, H., MacLennan, G., Sewel, K., Thomson, G., Bauld, L., Yi, D., **Ludbrook, A.** and Campbell, M. (2014) 'Public acceptability of financial incentives for smoking cessation in pregnancy and breastfeeding', *Society for Research on Nicotine and Tobacco (SRNT) Europe Annual Meeting*, Santiago de Compostela, Spain, 18–20 September 2014.

Hoddinott, P., Morgan, H., Thomson, G., Crossland, N., **Farrar, S.**, Yi, D., Hislop, J., Hall Moran, V., MacLennan, G., Dombrowski, S.U., Rothnie, K., Stewart, F., Bauld, L., **Ludbrook, A.**, Dykes, F., Sniehotta, F.F., Tappin, D. and Campbell, M. (2014) 'The 'push me-pull you' of financial incentives and health inequalities: a mixed methods study investigating smoking cessation in pregnancy and breastfeeding [Poster]', *Public Health Science: a National Conference Dedicated to New Research in UK Public Health*, Glasgow, 19–22 November 2014.

Morgan, H. 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' [Poster], *3rd Annual Healthcare Improvement Scotland Research Symposium: Bringing Evidence Together*, The Merchants' Hall, Edinburgh, 26 March 2015.

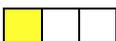
Hoddinott, P. on behalf of the BIBS Study Team (**Ludbrook, A.** and **Farrar, S.** are members of the BIBS Study Team) (2015) 'Benefits of Incentives for Breastfeeding and Smoking cessation in pregnancy (BIBS): a mixed-methods study to inform trial design', *Researching Complex Interventions in Health: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

Project No:	HBI2.17	Completed
Project Title:	Implementation of a psychosocial programme of support and training for people with dementia and their family caregivers.	
Grant Applicants / Principal Investigators (place of work):	Milders, M. (Heriot-Watt University); Lorimer, A., Bell, S. (NHS Grampian)	
HERU Investigators:	McNamee, P.	
HERU Research Theme:	Health Behaviour and Inequality – Evaluating Health Behaviour Interventions	
Source of Funding and Total Awarded:	NHS Grampian – £4,920 and University of Aberdeen	
Amount of HERU Funding:	£4,920	
Objectives:	To assess the feasibility and acceptability of implementing a psychosocial programme to improve the self-management skills of unpaid carers of people with dementia, and to quantify the change in health-related quality of life, well-being, and costs associated with the provision of the programme.	
Outline:	International research has shown that a psychosocial programme to improve self-management skills is effective at maintaining health-related quality of life and well-being amongst caregivers of people with dementia. There is however a lack of UK studies, and limited economic information. This study was conducted to build the evidence base in these areas, and to inform the design of a future, larger, controlled study.	
Outcome and Translation:	The programme was feasible to implement, and acceptable to participants. The data on health-related quality of life, well-being and costs were used to design a larger controlled study. There is also potential for the intervention to be rolled out and tested amongst other unpaid carers of people with dementia in other areas of Scotland.	
Start Date:	January 2014	
Duration of Project:	6 months	
Publications:	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', <i>Dementia</i> , [Epub ahead of print].	
Other Dissemination Activities:	–	

Project No:	HBI2.18	In Progress			
Project Title:	DEDIPAC: DEterminants of Diet and Physical ACTivity.				
Grant Applicants / Principal Investigators (place of work):	Ludbrook, A. (HERU); Allan, J. (Health Psychology, University of Aberdeen); Douglas, F., McNeill, G. ((The) University of Aberdeen Rowett Institute).				
HERU Investigators:	Ludbrook, A., Neilson, A.				
HERU Research Theme:	Health Behaviour and Inequality – Evaluating Health Behaviour Interventions				
Source of Funding and Total Awarded:	Medical Research Council (MRC) – £26,290 and Chief Scientist Office (CSO) CORE				
Amount of HERU Funding:	£26,290				
Objectives:	DEDIPAC is a Joint Programme Initiative Knowledge Hub to integrate and develop infrastructure for research across Europe.				
Outline:	HERU is coordinating the University of Aberdeen contribution within the Pathways to a Healthy Life strategic research theme. HERU staff will be involved in the development of a concept toolbox for evaluating policies addressing diet, physical activity and sedentary behaviours, with particular emphasis on economic evaluation.				
Start Date:	December 2013				
Duration of Project:	3 years				
Project Phase:	<table border="1" style="display: inline-table; vertical-align: middle;"> <tr> <td style="width: 20px; height: 15px;"></td> <td style="width: 20px; height: 15px;"></td> <td style="width: 20px; height: 15px; background-color: #0070C0;"></td> </tr> </table>				
Publications:	<p>Ludbrook, A., Campbell, J., Douglas, F., Michels, K., Müller, I., Furlong, B., De Craemer, M., Vuillemin, A. and Woods, C. (2015) <i>Report on policy monitoring and evaluation based on literature search and rapid review.</i>, 3.2.1. <i>DEDIPAC Consortium</i>.</p>				
Other Dissemination Activities:	<p>Ludbrook, A., Campbell, J., Douglas, F., Michels, K., Müller, I., Furlong, B., De Craemer, M., Vuillemin, A. and Woods, C. (2014) 'Rapid review on policy monitoring and evaluation', <i>DEDIPAC Consortium Meeting</i>, Amsterdam, Netherlands, 15 May 2014.</p> <p>Ludbrook, A., Campbell, J., Douglas, F., Michels, K., Müller, I., Furlong, B., De Craemer, M., Vuillemin, A. and Woods, C. (2014) 'Rapid review on policy monitoring and evaluation', <i>International Society for Behavioural Nutrition and Physical Activity (ISBNPA) 2015</i> Edinburgh, 3–6 June 2–15.</p>				

Design and Evaluation of Interventions



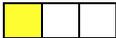
Project No:	HBI3.1	In Progress
Project Title:	MAMMOTH: MAintaining MuscuOskeleTal Health Study.	
Grant Applicants / Principal Investigators (place of work):	MacFarlane, G., Jones, G. (Other Applied Health Sciences, University of Aberdeen); McNamee, P. (HERU) ; Basu, N. (School of Medicine & Dentistry, University of Aberdeen); Artus, M., McBeth, J. (Keele University); Kean, S. (University of Glasgow); Lovell, K., Keeley, P. (University of Manchester); Hannaford, P. (Department of General Practice & Primary Care, University of Aberdeen); Prescott, G. (Medical Statistics Team, University of Aberdeen); Norrie, J. (CHART, University of Aberdeen).	
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) – £809,403 and University of Aberdeen	
Amount of HERU Funding:	£27,598	
Objectives:	To assess whether a short course of ‘talking therapy’, known as Cognitive Behaviour Therapy (CBT), prevents the development of chronic widespread pain amongst people considered to be at high risk, and to assess the cost-effectiveness of the intervention relative to usual care.	
Outline:	An Arthritis Research UK think-tank report in 2012 identified prevention of fibromyalgia as a research priority. We have previously shown short and long-term effectiveness (determined by patient global assessment of their condition) of CBT delivered by telephone (tCBT) for chronic widespread pain (CWP), the cardinal feature of fibromyalgia. We have now developed statistical models which predict the future development of CWP sufficiently well to make prevention studies possible. We therefore hypothesise that, amongst patients identified as being at high risk of developing CWP, a short course of tCBT will reduce the risk of its development. We plan a two-arm randomised controlled trial testing a short course of tCBT against usual care. Subjects will be eligible if they are evaluated as at ‘high risk’ of developing CWP, namely have had a primary care consultation with regional pain and at least two of: a maladaptive behavioural response to illness, a high number of somatic symptoms and/or sleep disturbance. If successful this study would provide general practitioners with an intervention option to reduce the risk of CWP development. This will be the first such trial of which we are aware, internationally, to attempt to prevent the onset of CWP.	
Start Date:	February 2015	
Duration of Project:	54 months	
Project Phase:		

Publications:

MacFarlane, G., Beasley, M., Prescott, G., **McNamee, P.**, Keeley, P., Artus, M., McBeth, J., Hannaford, P., Jones, G.T., Basu, N., Norrie, J. and Lovell, K. (2016) 'The Maintaining Musculoskeletal Health (MAMMOTH) Study' [protocol], *BMC Musculoskeletal Disorders*, 17(1), 179.

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:	–	

Project No:	HBI3.3	In Progress
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.



Technology Design Phase



Project No:	AOT1.1	Completed
Project Title:	Development of practice-based, pharmacist-led management of chronic pain in primary care for evaluation by a randomised controlled trial.	
Grant Applicants / Principal Investigators (place of work):	Bond, C., Smith, B., Watson, M., Elliott, A. (Academic Primary Care, University of Aberdeen); Hannaford, P. (Research & Knowledge Exchange, University of Aberdeen); McNamee, P. (HERU) ; Lee, A. (Population Health, University of Aberdeen); Holland, R., Wright, D. (University of East Anglia).	
HERU Investigators:	McNamee, P., Neilson, A.	
HERU Research Theme:	Assessment of Technologies – Technology Design Phase	
Source of Funding and Total Awarded:	Medical Research Council (MRC) (Strategic Grant) – £337,123 and University of Aberdeen	
Amount of HERU Funding:	£10,423	
Objectives:	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.	
Outline:	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.	
Outcome and Translation:	Findings from the work were used to redesign the intervention and outcomes measures for a future definitive Phase III RCT.	
Start Date:	June 2009	
Duration of Project:	4 years	
Publications:	<p>Bruhn, H., Bond, C.M., Elliott, A.M., Hannaford, P.C., Lee, A.J., McNamee, P., Smith, B.H., Watson, M.C., Holland, R. and Wright, D. (2013) 'Pharmacist-led management of chronic pain in primary care: results from a randomised controlled exploratory trial,' <i>BMJ Open</i>, 3(4); e002361.</p> <p>Neilson, A.R., Bruhn, H., Bond, C.M., Elliott, A.M., Smith, B.H., Hannaford, P.C., Holland, R., Lee, A.J., Watson, M., Wright, D. and McNamee, P. (2015) 'Pharmacist-led management of chronic pain in primary care: costs and benefits in a pilot randomised controlled trial', <i>BMJ Open</i>, 5(4), e006874.</p>	

-
- Other Dissemination Activities:** Bruhn, H., Bond, C., Elliott, A., Hannaford, P., Lee, A., **McNamee, P.**, Smith, B., Watson, M., Blyth, A., Holland, R. and Wright, D. (2010) 'Developing an RCT of general practice-based, pharmacist-led, management of chronic pain: the PIPPC study', [Poster], *Society for Academic Primary Care (SAPC) Annual Meeting*, Norwich, England, July 2010.
- Bruhn, H., Bond, C., Elliott, A., Hannaford, P., Lee, A., **McNamee, P.**, Smith, B., Watson, M., Blyth, A., Holland, R. and Wright, C. (2010) 'Developing a pharmacist-led chronic pain management service', *International Social Pharmacy Workshop*, Lisbon, Portugal, August 2010.
- Bruhn, H., **McNamee, P.**, Bond, C. and Holland, R. (2010) 'Is the combined WHOQOL-Bref and Pain and Discomfort Module a valuable outcome measure to use in assessing chronic pain?', [Poster], *International Society for Quality of Life Research (ISOQOL) Annual Meeting*, London, England, September 2010.
- Bond, C., Bruhn, H., Blyth, A., Elliott, A., Hannaford, P., Holland, R., Lee, A., **McNamee, P.**, Smith, B., Watson, M. and Wright, D. (2011) 'Pharmacist-led management of chronic pain in primary care: the experiences of patients, pharmacists and GPs', *Royal Pharmaceutical Society Conference*, London, England, September 2011.
- Neilson, A.R.**, Bruhn, H., Bond, C. and **McNamee, P.** (2014) 'Are socio-demographic variables associated with ICECAP-O values?', *3rd ICECAP Users' Group Workshop*, University of Birmingham, 27 February 2014.
- Neilson, A.R.**, Bruhn, H., Bond, C. and **McNamee, P.** (2014) 'Are socio-demographic variables associated with ICECAP-O values?', *15th Biennial European Meeting of the Society for Medical Decision Making*, Antwerp, Belgium, 8–10 June 2014.
- Neilson, A.R.**, Bruhn, H., Bond, C. and **McNamee, P.** (2015) 'Are socio-demographic and economic variables associated with ICECAP-O values?', *3rd Annual Healthcare Improvement Scotland Research Symposium: Bringing Evidence Together*, The Merchants' Hall, Edinburgh, 26 March 2015.
- Neilson, A.R.**, Bruhn, H., Bond, C. and **McNamee, P.** (2015) 'Are socio-demographic and economic variables associated with ICECAP values?', [Poster presentation] *NHS Research Scotland (NRD Annual Conference)*, Queen Elizabeth Teaching and Learning Centre, Glasgow, 28 October 2015.
- Neilson, A.R.**, Bruhn, H., Bond, C., Elliott, A., Smith, B.H., Hannaford, P., Holland, R., Lee, A., Watson, M., Wright, D. and **McNamee, P.** (2015) 'Pharmacist-led management of chronic pain in primary care: costs and benefits in a pilot randomised trial', [Poster presentation] *NHS Research Scotland (NRD Annual Conference)*, Queen Elizabeth Teaching and Learning Centre, Glasgow, 28 October 2015.

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):	Azura-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); Hernández, R. (HERU) .	
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:	<p>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).</p> <p>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.</p> <p>The project included the update of an economic model and a full cost-effectiveness analysis.</p>	
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

Publications: Burr, J.M., Campbell, M.K., Campbell, S.E., Francis, J.J., Greene, A., **Hernández, R.**, Hopkins, D., McCann, S.K., Vale, L.D. and Glaucoma Screening Platform Study Group (2011) 'Developing the clinical components of a complex intervention for a glaucoma screening trial: a mixed methods study', *BMC Medical Research Methodology*, 11, 54.

Burr, J., **Hernández, R.**, Ramsay, C., Prior, M., Campbell, S., Azuara-Blanco, A., Campbell, M., Francis, J. and Vale, L. (2014) 'Is it worthwhile to conduct a randomized controlled trial of glaucoma screening in the United Kingdom?', *Journal of Health Services Research and Policy*, 19(1), 42-51.

Other Dissemination Activities: **Vale, L.** and **Hernández, R.** (2010) 'Using economic evaluation to design and evaluate complex interventions', *University of Newcastle*, Newcastle, February 2010.

Burr, J. M., Azuara-Blanco, A., Campbell, M., Campbell, S., Francis, J., Greene, A., **Hernández, R.**, Hopkins, D., Prior, M., Ramsay, C. and **Vale, L.** (2010) 'Developing a population level complex intervention: Glaucoma Screening on Trial', *31st Meeting of the Society of Clinical Trials*, Baltimore, USA, 16-19 May 2010.

Hernández, R. and **Vale, L.** (2010) 'Review of glaucoma projects, their approaches and challenges', *International Glaucoma Association, Health Economics Special Interest Group*, Madrid, Spain, September 2010.

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:	<p>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.</p> <p>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.</p>	
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., Sherriff, D., McLennan, G., **Boyers, D.**, Vale, L., Arnold, K., McNicol, J., Humphrey, T. and Riach, J. (2011) *The FEST Study: feasibility study for a trial of proactive telephone support for breastfeeding women in disadvantaged areas provided by a specialised Feeding Support Team. Final report for NHS Grampian.* March 2011.

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:

Hoddinott, P. Craig, L., McLennan, G., **Boyers, D.**, Vale, L., McPherson, G. (2011) 'The FEeding Support Team (FEST) trail of proactive telephone support for breastfeeding women living in disadvantaged areas', *HSR/SDO Conference*, Liverpool, England, June 2011.

Hoddinott, P. Craig, L., McLennan, G., **Boyers, D.**, Vale, L., McPherson, G. (2011) 'The FEeding Support Team (FEST) trail of proactive telephone support for breastfeeding women living in disadvantaged areas', *Maternal and Infant Nutrition and Nurture Conference*, Cumbria, England, June/July 2011.

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: Lee, A. J., **Porteous, T.**, Bond, C., Francis, J., Lowrie, R., **Scotland, G.**, Sheikh, A., Smith, L., Smith, S., Thomas, M. and Wyke, S. (2013) The Help for Hay Fever study: can a goal-focussed intervention delivered in Scottish community pharmacies improve outcomes for people with intermittent allergic rhinitis? *Focus on Research, (CZH/4/746)*, Edinburgh: Chief Scientists Office.

Lee, A., **Porteous, T.**, Bond, C., Francis, J., Lowrie, R., **Scotland, G.**, Sheikh, A., Smith, L., Thomas, M. and Wyke, S. (2013) *Can a goal-focussed intervention delivered in Scottish community pharmacies improve outcomes for people with intermittent allergic rhinitis? A pilot randomised controlled trial. Final Report submitted the Chief Scientist Office*, Edinburgh: Chief Scientist Office.

Porteous, T., Wyke, S., Smith, S., Bond, C., Francis, J., Lee, A.J., Lowrie, R., **Scotland, G.**, Sheikh, A., Thomas, M. and Smith, L. (2013) 'Help for Hay Fever', a goal-focused intervention for people with intermittent allergic rhinitis, delivered in Scottish community pharmacies: study protocol for a pilot cluster randomized controlled trial' [protocol], *Trials*, 14(1), 217.

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: Hoskins, G., Abhyankar, P., Taylor, A.D., Duncan, E., Sheikh, A., Pinnock, H., **Pol, M. van der**, Donnan, P.T. and Williams, B. (2013) 'Goal-setting intervention in patients with active asthma: protocol for a pilot cluster-randomised controlled trial' [protocol], *Trials*, 14(1), 289.

Hoskins, G., Williams, B., Duncan, E., Sheikh, A., Pinnock, H., Donnan, P.T. and **Pol, M. van der** (2014) *Can eliciting and addressing health-related goals improve asthma control and asthma-related quality of life? Feasibility Phase II pilot randomised controlled trial. Final report submitted to Chief Scientist Office.*

Hoskins, G., Williams, B., Abhyankar, P., Donnan, P., Duncan, E., Pinnock, H., **Pol, M. van der**, Rauchhaus, P., Taylor, A. and Sheikh, A. (2016) 'Achieving Good Outcomes for Asthma Living (GOAL): mixed methods feasibility and pilot cluster randomised controlled trial of a practical intervention for eliciting, setting and achieving goals for adults with asthma', *Trials*, 17(1), 584.*

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:	<p>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.</p> <p>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.</p>	
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	
Publications:	Humphrey, T., Lau, A., Hoddinott, P., Penman, K., Bellizzi, M., Chick, C. and Boyers, D. (2013) <i>Proactive telephone care for breastfeeding women delivered by a dedicated feeding support team in a rural community. Final report submitted to NHS Grampian.</i>	
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	
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:	–	
Other Dissemination Activities:	Radley, A., Pol, M. van der and Dillon, J. (2015) 'Preferences for hepatitis C testing: a discrete choice experiment with methadone users in Tayside, Scotland', [Poster], <i>2nd Digestive Disorders Federation Meeting</i> , ExCel, London, England, 22–25 June 2015.	

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):	Neilson, A., Scotland, G., Tassie, E. (HERU).	
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:	Tassie, E., Scotland, G. and Neilson, A.R. (2016) <i>A model based cost-effectiveness analysis of opportunistic screening for identifying atrial fibrillation with a single lead handheld electrocardiogram monitor in general practices in Scotland, Final report.</i> HERU, University of Aberdeen.	
Other Dissemination Activities:	–	

Project No:	AOT1.9	In Progress
Project Title:	Vitamin K supplementation to reduce falls in older people – a multicentre trial.	
Grant Applicants / Principal Investigators (place of work):	Witham, M., McMurdo, M., Donnan, P. (Ninewells Hospital); McNamee, P. (HERU) ; Soiza, R. (Applied Medicine, University of Aberdeen); Cvorov, 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:	<p>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.</p> <p>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.</p>	
Start Date:	January 2016	
Duration of Project:	32 months	
Project Phase:		
Publications:	–	
Other Dissemination Activities:	–	

Technology Adoption Phase



Project No:	AOT2.1	Completed
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:	<p>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.</p> <p>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.</p>	
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:	<p>Hislop, J., Quayyum, Z., Elders, A., Fraser, C., Jenkinson, D., Mowatt, G., Sharma, P., Vale, L. and Petty, R. (2011) 'Clinical effectiveness and cost-effectiveness of imatinib dose escalation for the treatment of unresectable and/or metastatic gastrointestinal stromal tumours that have progressed on treatment at a dose of 400mg/day: a systematic review and economic evaluation,' <i>Health Technology Assessment</i>, 15 (25).</p> <p>Hislop, J., Mowatt, G., Sharma, P., Fraser, C., Elders, A., Jenkinson, D., Vale, L. and Petty, R. (2012) 'Systematic review of escalated imatinib doses compared with sunitinib or best supportive care, for the treatment of people with unresectable/metastatic gastrointestinal stromal tumours whose disease has progressed on the standard imatinib dose', <i>Journal of Gastrointestinal Cancer</i>, 43(2), 168–176.</p>
Other Dissemination Activities:	–

Project No:	AOT2.3	Completed
Project Title:	STA: Eltrombopag for the treatment of chronic idiopathic (immune) thrombocytopenic purpura (ITP): a single technology appraisal.	
Grant Applicants / Principal Investigators (place of work):	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).	
HERU Investigators:	Boyers, D., Vale, L.	
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 eltrombopag within its licensed indication for the treatment of refractory chronic idiopathic (immune) thrombocytopenic purpura (ITP).	
Outline:	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.	
Outcome and Translation:	<p>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.</p> <p>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:</p> <ul style="list-style-type: none"> (a) Their condition is refractory to standard active treatments and rescue therapies or (b) They have severe disease and a high risk of bleeding that needs frequent courses of rescue therapies. 	

Start Date:	October 2009
Duration of Project:	10 months
Publications:	<p>Boyers, D., Jia, X., Crowther, M., Jenkinson, D., Fraser, C. and Mowatt, G. (2011) 'Eltrombopag for the treatment of chronic idiopathic (immune) thrombocytopenic purpura (ITP)', <i>Health Technology Assessment</i>, 15(Suppl 1), 23-32.</p> <p>Boyers, D., Jia, X., Jenkinson, D. and Mowatt, G. (2012) 'Eltrombopag for the treatment of chronic immune or idiopathic thrombocytopenic purpura: a NICE Single Technology Appraisal,' <i>Pharmacoeconomics</i>, 30(6); 483–495.</p> <p>Boyers, D., Jia, X., Jenkinson, D. and Mowatt, G. (2013) 'Eltrombopag for the treatment of chronic immune or idiopathic thrombocytopenic purpura—a NICE single technology appraisal', <i>PharmacoEconomics Italian Research Articles</i>, 15(3), 143–152.</p>
Other Dissemination Activities:	<p>Boyers, D., Jia, X., Crowther, M., Jenkinson, D., Fraser, C. and Mowatt, G. (2010) 'Eltrombopag for the treatment of chronic immune (idiopathic) purpura, a single technology appraisal,' <i>NICE Appraisal Committee Meeting</i>, Manchester, England, January 2010.</p> <p>Boyers, D., Hernández, R., Vale, L., MacLennan, G., Crowther, M. and Mowatt, G. (2012) 'NICE Single Technology Appraisal (STA) process: a case study of chronic idiopathic (immune) thrombocytopenic purpura,' <i>HTAi</i>. Bilbao, Spain, June 2012.</p>

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:

Scotland, G., Royle, P., Henderson, R., Hollick, R., **McNamee, P.** and Waugh, N. (2010) Evidence Review Group: denosumab for the prevention of osteoporotic fractures in post-menopausal women. *Final report submitted to the National Institute for Health and Clinical Excellence*, National Institute for Health and Clinical Excellence.

Scotland, G., Waugh, N., Royle, P., **McNamee, P.,** Henderson, R. and Hollick, R. (2011) 'Denosumab for the prevention of osteoporotic fractures in post-menopausal women: a NICE single technology appraisal', *Pharmacoeconomics*, 29(11), 951-961.

Waugh, N., Royle, P., **Scotland, G.,** Henderson, R., Hollick, R. and **McNamee, P.** (2011) 'Denosumab for the prevention of osteoporotic fractures in postmenopausal women', *Health Technology Assessment*, 15(Suppl 1), 51-9.

Scotland, G., Waugh, N., Royle, P., **McNamee, P.,** Henderson, R. and Hollick, R. (2012) 'Denosumab per la prevenzione delle fratture osteoporotiche in donne in post-menopausa', *PharmacoEconomics – Italian Research Articles*, 14(2), 131–142.

Other Dissemination Activities:

Scotland, G., Royle, P., Hendersen, R., Hollick, R., **McNamee, P.** and Waugh, N. (2010) 'Denosumab for the prevention of osteoporotic fractures in post-menopausal women: a single technology appraisal', *NICE Appraisal Committee Meeting*, Manchester, England, April 2010.

Project No:	AOT2.5	Completed
Project Title:	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:

Kilonzo, M., Hislop, J., Elders, A., Fraser, C., Bissett, D., McClinton, S., Mowatt, G. and **Vale, L.** *Pazopanib for the first line treatment of patients with advanced and/or metastatic renal cell carcinoma: a single technology appraisal. Report submitted to NICE, 2010.*

Kilonzo, M., Hislop, J., Elders, A., Fraser, C., Bissett, D., McClinton, S., Mowatt, G. and Vale, L. (2012) *Pazopanib for the first line treatment of patients with advanced and/or metastatic renal cell carcinoma: a single technology appraisal*, Aberdeen: Aberdeen Health Technology Assessment Group.

Kilonzo, M., Hislop, J., Elders, A., Fraser, C., Bissett, D., McClinton, S., Mowatt, G. and Vale, L. (2013) 'Pazopanib for the first-line treatment of patients with advanced and/or metastatic renal cell carcinoma : a NICE single technology appraisal', *Pharmacoeconomics*, 31(1), 15-24.

Other Dissemination Activities: –

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:	<p>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.</p> <p>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.</p>	

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:	<p>Sharma, P., Boyers, D., Boachie, C., Stewart, F., Miedzybrodzka, Z., Simpson, W., Kilonzo, M., McNamee, P. and Mowatt, G. (2011) <i>Elucigene FH20 and LIPOchip for the diagnosis of familial hypercholesterolemia. Final report to NICE Diagnostic Review Committee.</i></p> <p>Sharma, P., Boyers, D., Boachie, C., Stewart, F., Miedzybrodzka, Z., Simpson, W., Kilonzo, M., McNamee, P. and Mowatt, G. (2012) 'Elucigene FH20 and LIPOchip for the diagnosis of familial hypercholesterolaemia: a systematic review and economic evaluation,' <i>Health Technology Assessment</i>, 16 (17), 1–266.</p> <p>Miedzybrodzka, Z., Bell, C., Boyers, D., Brown, C., Kelly, K., Tennant, S., Walker, S., Finnie, R., van Mourik, M., Pearson, P., Slater, S., Berg, J., Hailey, H., Gregory, H. and Simpson, W. (2012) 'A nationwide screening programme for familial hypercholesterolaemia in Scotland using existing services', (Abstract from British Human Genetics Conference, 17–19 September 2012), <i>Journal of Medical Genetics</i>, 49(Supplement 1), S115.</p>
Other Dissemination Activities:	<p>Sharma, P., Boyers, D., Boachie, C., Stewart, F., Miedzybrodzka, Z., Simpson, W., Kilonzo, M., McNamee, P. and Mowatt, G. (2011) 'Elucigene FH20 and LIPOchip for the diagnosis of familial hypercholesterolemia', <i>NICE Diagnostic Review Committee</i>, Manchester, England, June 2011.</p> <p>Sharma, P., Boyers, D., Boachie, C., Stewart, F., Miedzybrodzka, Z., Simpson, W., Kilonzo, M., McNamee, P. and Mowatt, G. (2012) 'Elucigene FH20 and LIPOchip for the diagnosis of familial hypercholesterolemia - NICE diagnostic appraisal process', <i>Scottish Lipids Forum</i>, Dunkeld, November 2012.</p> <p>Sharma, P., Boyers, D., Boachie, C., Miedzybrodzka, Z., Simpson, W., Kilonzo, M., McNamee, P., Stewart, F. and Mowatt, G. (2012) 'Elucigene and LIPOchip for the diagnosis of familial hypercholesterolemia', <i>Health Technology Assessment International (HTAi)</i>, Bilbao, Spain, 25th-27th June 2012.</p> <p>Sharma, P., Mowatt, G., Stewart, F., Boachie, C., Miedzybrodzka, Z., Simpson, W., Boyers, D., Kilonzo, M. and McNamee, P. (2013) 'Challenges in conducting a systematic review of diagnostic test accuracy of genetic test: an example of the genetic diagnosis of familial hypercholesterolaemia', <i>21st Cochrane Colloquium</i>, Quebec, Canada, 19-23 September 2013.</p>

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	
Start Date:	November 2011	
Duration of Project:	9 months	

Publications:

Mowatt, G., **Scotland, G.**, Boachie, C., Cruickshank, M., Ford, J.A., Fraser, C., Kurban, L., Lam, T.B., Padhani, A.R., Royle, J., Scheenen, T.W. and **Tassie, E.** (2012) *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. Final grant report submitted to the NIHR HTA programme*, Aberdeen: University of Aberdeen HTA Group.

Mowatt, G., **Scotland, G.**, Boachie, C., Cruickshank, M., Ford, J.A., Fraser, C., Kurban, L., Lam, T.B., Padhani, A.R., Royle, J., Scheenen, T.W. and **Tassie, E.** (2013) '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', *Health Technology Assessment*, 17(20).

Other Dissemination Activities:

Cruickshank, M., Mowatt, G., **Scotland, G.**, Boachie, C., Ford, J., Fraser, C., Kurban, L., Lam, T., Padhani, A., Royle, J., Scheenen, T. and **Tassie, E.** (2012) 'Systematic review of the diagnostic accuracy of MRS and enhanced MRI techniques in aiding the localisation of prostate abnormalities for biopsy' [Poster], *Improving Quality in Health Care: Translating Evidence into Practice*, Edinburgh, November 2012.

Scotland, G., Tassie, E., Mowatt, G., Boachie, C., Cruickshank, M., Ford, J., Fraser, C., Kurban, L., Lam, T., Padhani, A., Royle, J. and Scheenen, T. (2013) 'Modelling the cost-effectiveness of using different MRI techniques to localise prostate abnormalities for biopsy in patients with a previous negative biopsy' [Poster], *Methods for Evaluating Medical Tests and Biomarkers Symposium* Birmingham, England, 15-16 July 2013.

Tassie, E., Mowatt, G., Boachie, C., Cruickshank, M., Ford, J., Fraser, C., Kurban, L., Lam, T., Padhani, A., Royle, J., Scheenen, T. and **Scotland, G.** (2013) 'Modelling the cost-effectiveness of using different MRI techniques to localise prostate abnormalities for biopsy in patients with previous negative biopsy: the challenge of identifying the optimal strategy' *Health Technology Assessment International (HTAi)*. Seoul, South Korea, June 2013.

Project No:	AOT2.8	Completed
Project Title:	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):	Sharma, P., Scotland, G. , Cruickshank, M., Tassie, E. , Fraser, C., Burton, C., Ramsay, C.R., Brazzelli, M. (for the Aberdeen Health Technology Assessment Group).	
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:

Sharma, P., **Scotland, G.**, Cruickshank, M., **Tassie, E.**, Cynthia, F., Burton, C., Croal, B., Ramsay, C.R. and Brazzelli, M. (2013) *Clinical and cost-effectiveness of point-of-care tests (CoaguChek system, INRatio2 PT/INR monitor and ProTime Microcoagulation system) for the self-monitoring of the coagulation status of people receiving long-term vitamin K antagonist therapy compared with standard UK practice: systematic review and economic evaluation. Diagnostic Assessment Report submitted in support of the NICE Diagnostic Assessments Programme, NICE Diagnostic Assessments Programme.*

Sharma, P., **Scotland, G.**, Cruickshank, M., **Tassie, E.**, Fraser, C., Burton, C., Croal, B., Ramsay, C.R. and Brazzelli, M. (2015) 'Is self-monitoring an effective option for people receiving long-term vitamin K antagonist therapy? A systematic review and economic evaluation', *BMJ Open*, 5(6), e007758.

Sharma, P., **Scotland, G.**, Cruickshank, M., **Tassie, E.**, Fraser, C., Burton, C., Croal, B., Ramsay, C.R. and Brazzelli, M. (2015) 'The clinical effectiveness and cost-effectiveness of point-of-care tests (CoaguChek system, INRatio2 PT/INR monitor and ProTime Microcoagulation system) for the self-monitoring of the coagulation status of people receiving long-term vitamin K antagonist therapy, compared with standard UK practice: systematic review and economic evaluation', *Health Technology Assessment*, 19(48).

Scotland, G. (2015) 'Is self-monitoring a cost-effective option for people receiving long-term vitamin K antagonist (Warfarin) therapy?', HERU Policy Brief, University of Aberdeen, September 2015.

Other Dissemination Activities:

Sharma, P., **Scotland, G.**, Cruickshank, M., **Tassie, E.**, Fraser, C., Burton, C., Croal, B., Ramsay, C.R. and Brazzelli, M. (2015) 'Assessment of diagnostic tests and the impact on decision making: the example of self-monitoring of oral anticoagulation therapy', *HTAi 2015. Global Efforts in Knowledge Transfer: HTA to Health Policy and Practice*, Oslo, Norway, 15–17 June 2015.

Project No:	AOT2.9	Completed
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:	<p>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 metacarpophalangeal 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.</p>	

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
Publications:	Brazzelli, M., Cruickshank, M., Tassie, E., McNamee, P. , Robertson, C., Elders, A., Fraser, C., Hernández, R. , Lawrie, D. and Ramsay, C. (2015) 'Collagenase clostridium histolyticum for the treatment of Dupuytren's contracture: systematic review and economic evaluation', <i>Health Technology Assessment</i> , 19(90).
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 <i>de novo</i> 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:	<p>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.</p> <p>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 <i>de novo</i> 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.</p>	

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

Publications:

Sharma, P., **Boyers, D.**, Scott, N., **Hernández, R.**, Fraser, C., Cruickshank, M., Ahmed, I., Ramsay, C. and Brazzelli, M. (2015) 'The clinical effectiveness and cost-effectiveness of open mesh repairs in adults presenting with a clinically diagnosed primary unilateral inguinal hernia who are operated in an elective setting: systematic review and economic evaluation', *Health Technology Assessment*, 19(92).

Other Dissemination Activities:

Boyers, D., Hernández, R., Sharma, P., Scott, N., Fraser, C., Cruickshank, M., Ahmed, I., Ramsay, C. and Brazzelli, M. (2016) 'Cost-effectiveness of open mesh surgery for primary unilateral inguinal hernia', [poster] *NHS Research Scotland Conference*, Queen Elizabeth University Hospital Campus, Glasgow, 26 October 2016.

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:	<p>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.</p> <p>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.</p>	
Outcome and Translation:	<p>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.</p>	

Start Date:	October 2015
Duration of Project:	3 months
Publications:	Scotland, G., Neilson, A.R., Javanbakht, M., Fielding, S., Cruickshank, M., Sharma, P., Fraser, C., Simpson, W. and Brazzelli, M. (2015) <i>Alirocumab for treating primary hypercholesterolaemia and mixed dyslipidaemia. Report from Aberdeen Health Technology Assessment Group to NICE Single Technology Appraisal Programme.</i>
Other Dissemination Activities:	Scotland, G., Javanbakht, M. and Brazzelli, M. (2016) 'Report of the Evidence Review Group on Technology Appraisal TA393: alirocumab for treating primary hypercholesterolaemia and mixed dyslipidaemia', <i>NICE Appraisal Committee Meeting</i> , Manchester, England, 13 January 2016. Scotland, G., Javanbakht, M. and Brazzelli, M. (2016) 'Report of the Evidence Review Group on Technology Appraisal TA393: alirocumab for treating primary hypercholesterolaemia and mixed dyslipidaemia', <i>NICE Appraisal Committee Meeting</i> , Manchester, England, 9 March 2016.

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:	<p>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.</p> <p>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.</p> <p>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.</p>	

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) <i>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.</i>
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)', <i>National Institute for Health and Care Excellence (NICE) Appraisal Committee Meeting</i> , 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 Investigators:	Scotland, G. , Boyers, D. , Hernández, R. , Javanbakht, M. (HERU), Kilonzo, M. , McNamee, P. , Neilson, A. , Tassie, E. , Jacobsen, E.	
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:	<p>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.</p> <p>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).</p>	
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:	<p>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.</p>	
Start Date:	June 2016	
Duration of Project:	6 months	
Project Phase:		
Publications:	–	
Other Dissemination Activities:	–	

Project No:	AOT2.15	Completed
Project Title:	The Catheter Trial: Types of urethral catheter for reducing symptomatic urinary tract infections in hospitalised adults requiring short-term catheterisation: multicentre randomised controlled trial of antibiotic- and antiseptic-impregnated urethral catheters.	
Grant Applicants / Principal Investigators (place of work):	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).	
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 – £1,173,470 and Chief Scientist Office (CSO) CORE	
Amount of HERU Funding:	£50,630	
Objectives:	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.	
Outline:	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.	
Outcome and Translation:	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.	
Start Date:	July 2007	
Duration of Project:	33 months	

Publications:

Pickard, R., Lam, T., MacLennan, G., Starr, K., **Kilonzo, M.**, McPherson, G., Gillies, K., McDonald, A., Walton, K., Buckley, B., Glazener, C., Boachie, C., J Burr, J., Norrie, N., Vale, L., Grant, A. and N'Dow, J. (2011) *Types of urethral catheter for reducing symptomatic urinary tract infections in hospitalised adults requiring short term catheterisation: a randomised controlled trial. Final report submitted to NIHR Health Technology Assessment Programme*, National Institute for Health Research (NIHR).

Pickard, R., Lam, T., MacLennan, G., Starr, K., **Kilonzo, M.**, McPherson, G., Gillies, K., McDonald, A., Walton, K., Buckley, B., Glazener, C., Boachie, C., Burr, J., Norrie, N., Vale, L., Grant, A. and N'Dow, J. (2012) 'Antimicrobial catheters for reduction of symptomatic urinary tract infection in adults requiring short-term catheterisation in hospital: a multicentre randomised controlled trial,' *Lancet*, 380 (9857); 1927–1935.

Pickard, R., Lam, T., MacLennan, G., Starr, K., **Kilonzo, M.**, McPherson, G., Gillies, K., McDonald, A., Walton, K., Buckley, B., Glazener, C., Boachie, C., Burr, J., Norrie, J., Vale, L., Grant, A. and N'Dow, J. (2012) 'Types of urethral catheter for reducing symptomatic urinary tract infections in hospitalised adults requiring short-term catheterisation: multicentre randomised controlled trial and economic evaluation of antimicrobial- and antiseptic-impregnated urethral catheters (the CATHETER trial)', *Health Technology Assessment*, 16(47).

Kilonzo, M., Vale, L., Pickard, R., Lam, T. and N'Dow, J. (2014) 'Cost effectiveness of antimicrobial catheters for adults requiring short-term catheterisation in hospital', *European Urology*, 66(4), 615–618.

Kilonzo, M. (2015) 'Reducing hospital infections: which catheter?' HERU Policy Brief, University of Aberdeen, December 2015.

Other Dissemination Activities: –

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:

Olson, J., Sharp, P., Goatman, K., Prescott, G., **Scotland, G.**, Fleming, A., Philip, A., Santiago, C., Boroah, S., Broadbent, D., Chong, V., Dodson, P., Harding, S., Leese, G., Styles, C., Swa, K. and Wharton, H. (2012) *Improving the economic value of photographic screening for optical coherence tomography-detectable macular oedema - a prospective, multi-centre, United Kingdom study. Final report submitted to the NIHR HTA Programme, NIHR HTA.*

Olson, J., Sharp, P., Goatman, K., Prescott, G., **Scotland, G.**, Fleming, A., Philip, S., Santiago, C., Boroah, S., Broadbent, D., Chong, V., Dodson, P., Harding, S., Leese, G., Styles, C., Swa, K. and Wharton, H. (2013) 'Improving the economic value of photographic screening for optical coherence tomography-detectable macular oedema: a prospective, multicentre, UK study', *Health Technology Assessment*, 17(51).

Prescott, G., Sharp, P., Goatman, K., **Scotland, G.**, Fleming, A., Philip, S., Staff, R., Santiago, C., Boroah, S., Broadbent, D., Chong, V., Dodson, P., Harding, S., Leese, G., Megaw, R., Styles, C., Swa, K., Wharton, H. and Olson, J. (2014) 'Improving the cost-effectiveness of photographic screening for diabetic macular oedema: a prospective, multi-centre, UK study', *British Journal of Ophthalmology*, 98(8), 1042–1049

Other Dissemination Activities:

Megaw, R., Boroah, S., Goatman, K., **Scotland, G.**, Prescott, G., Sharp, P. and Olson, J. (2014) 'The use of OCT in retinal screening: results from the Improving Screening for Macular Oedema (ISMO) Study [poster]', *Royal College of Ophthalmologists Annual Congress*, Birmingham, England, 20-22 May 2014.

Boroah, S., Megaw, R., Goatman, K., **Scotland, G.**, Prescott, G., Sharp, P. and Olson, J. (2014) 'Multi-centre, prospective, observational, cohort study to assess the cost-effectiveness of English, Scottish and a hybrid grading schemes for diabetic macular oedema screening: improving screening for macular oedema (ISMO) study [poster]', *Royal College of Ophthalmologists Annual Congress* Birmingham, England, 20-22 May 2014.

Project No:	AOT2.17	Completed
Project Title:	Cost-effectiveness of exercise training in older patients with heart failure.	
Grant Applicants / Principal Investigators (place of work):	McMurdo, M., Witham, M., Struthers, A.D. (Ninewells Hospital & University of Dundee); Johnston, D. (University of Aberdeen); Lang, C. (Ninewells Hospital & University of Dundee); Pol, M. van der (HERU).	
HERU Investigators:	Pol, M. van der, Boyers, D.	
HERU Research Theme:	Assessment of Technologies – Technology Adoption Phase	
Source of Funding and Total Awarded:	Health Services Research Committee, Chief Scientist Office (CSO) – £213,465 and University of Aberdeen	
Amount of HERU Funding:	£12,518	
Objectives:	To assess the cost-effectiveness of exercise training in older patients with heart failure.	
Outline:	<p>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.</p>	
Outcome and Translation:	<p>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.</p>	
Start Date:	September 2007	
Duration of Project:	3 years	

Publications:

McMurdo, M.E., Witham, M., Struthers, A., **Boyers, D., Pol, M. van der** and et al (2011) *A randomised controlled trial of the effect of exercise training on exercise capacity in older patients with heart failure. Final Report to the Chief Scientist Office (CZH/4/4260)*, Scottish Government Chief Scientist Office (CSO).

Witham, M.D., Fulton, R.L., Greig, C.A., Johnston, D.W., Lang, C.C., **Pol, M. van der, Boyers, D.**, Struthers, A.D. and McMurdo, M.E.T. (2012) 'Efficacy and cost of an exercise program for functionally impaired older patients with heart failure: a randomized controlled trial', *Circulation-Heart Failure*, 5(2), 209-216.

Other Dissemination Activities:

Fulton, R., Witham, M., Creig, C., Johnston, D., Lang, C., **Pol, M. van der, Boyers, D.**, Struthers, A. and McMurdo, M. (2011) 'A randomised controlled trial of exercise training for older heart failure patients', *British Geriatric Society*, Liverpool, England, May 2011.

Project No:	AOT2.18	Completed
Project Title:	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.	
Grant Applicants / Principal Investigators (place of work):	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).	
HERU Investigators:	Hernández, R., Boyers, D.	
HERU Research Theme:	Assessment of Technologies – Technology Adoption Phase	
Source of Funding and Total Awarded:	Chief Scientist Office (CSO) Health Services Research Committee – £225,817 and Chief Scientist Office (CSO) CORE	
Amount of HERU Funding:	£8,707	
Objectives:	This study was designed to assess the effectiveness and cost-effectiveness of the level of early post-operative dependency in high-risk surgical patients.	
Outline:	<p>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.</p> <p>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.</p>	

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:

Cuthbertson, B., Campbell, M., Stott, S., Vale, L., Norrie, N., Kinsella, J., Cook, J., Brittenden, J., Grant, A. and the FOCCUS Study Group (2010) 'Pragmatic multi-centre randomised controlled trial of fluid loading and level of dependency in high-risk surgical patients undergoing major elective surgery: trial protocol,' *Trials*, 11, 41.

Cuthbertson, B., Stott, S., Campbell, M., Vale, L., Cook, J., Norrie, J., Brittenden, J., Kinsella, J., Grant, A., Alcorn, D., Serpell, M., McColl, A., Rae, D., Shepherd, K., Addison, J., McPherson, G., McDonald, A., Cotton, S., Elders, A., MacLennan, G., **Boyers, D.** and **Hernández, R.** *Pragmatic multi-centre randomised trial of (1) routine postoperative ICU care and/or (2) pre-operative fluid loading in high-risk surgical patients undergoing major elective and urgent surgery. Final report submitted to CSO.* April 2010.

Cuthbertson, B.C., Campbell, M.K., Stott, S.A., Elders, A., **Hernández, R., Boyers, D.**, Norrie, J., Kinsella, J., Brittenden, J., Cook, J., Rae, D., Cotton, S.C., Alcorn, D., Addison, J. and Grant, A. on behalf of the FOCCUS Study Group. (2011) 'Pragmatic multi-centre randomised controlled trial of fluid loading and level of dependency in high-risk surgical patients undergoing major elective surgery: FOCCUS study,' *Critical Care*. 15(6), R296.

Other Dissemination Activities: **Boyers, D., Hernández, R.,** Vale, L., Elders, A. and Cuthbertson, B. (2011) 'Pragmatic multi-centre randomised trial of pre-operative fluid loading in high-risk surgical patients undergoing major elective surgery: a cost effectiveness analysis', *Health Technology Assessment international (HTAi)*, Rio de Janeiro, Brazil, June 2011.

Boyers, D., Hernández, R., Vale, L., Elders, A. and Cuthbertson, B.H. (2014) 'The value of future research to determine the cost-effectiveness of fluid loading prior to high risk major elective surgery: the use of expected value of sample information', *Society for Medical Decision Making, 15th Biennial European Meeting, Special Focus on Clinical Decision Making in the Era of Personalized Medicine*, Antwerp, Belgium, 8–10 June 2014.

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:

McBeth, J., Prescott, G., **Scotland, G.**, Lovell, K., Keeley, P., Hannaford, P., **McNamee, P.**, Symmons, D., Woby, S., Gkazinou, C., Beasley, M. and Macfarlane, G. (2012) 'Cognitive behaviour therapy, exercise or both for treating chronic widespread pain,' *Archives of Internal Medicine*, 172(1), 48–57.

Coretti, S., Ruggeri, M. and **McNamee, P.** (2014) 'The minimum clinically important difference for EQ-5D index: a critical review', *Expert Review of Pharmacoeconomics & Outcomes Research*, 14(2), 221–233.

Beasley, M., Prescott, G.J., **Scotland, G.**, McBeth, J., Lovell, K., Keeley, P., Hannaford, P.C., Symmons, D.P.M., MacDonald, R.I.R., Woby, S. and Macfarlane, G.J. (2015) 'Patient-reported improvements in health are maintained 2 years after completing a short course of cognitive behaviour therapy, exercise or both treatments for chronic widespread pain: long-term results from the MUSICIAN randomised controlled trial', *RMD Open*, 1, e000026.

Other Dissemination Activities:

Beasley, M., Prescott, G., McBeth, J., **Scotland, G.**, Lovell, K., Keeley, P., Hannaford, P., **McNamee, P.**, Symmons, D.P.M., Woby, S., Gkazinou, C. and Macfarlane, G.J. (2013) 'Long-term effects of cognitive behaviour therapy and exercise for chronic widespread pain', *EULAR (European League Against Rheumatism)*, Madrid, 12–15 June 2013.

Coretti, S. and **McNamee, P.** (2014) 'What size of difference matters in EQ-5D? Comparison of methods to estimate the minimum clinically important difference', *Society for Medical Decision Making, 15th Biennial European Meeting, Special Focus on Clinical Decision Making in the Era of Personalized Medicine*, Antwerp, Belgium, 8–10 June 2014.

Beasley, M., Prescott, G., McBeth, J., **Scotland, G.**, Lovell, K., Keeley, P., Hannaford, P., **McNamee, P.**, Symmons, D.P.M., Woby, S., Gkazinou, C. and Macfarlane, G.J. (2014) 'Long-term results from a randomised controlled trial of cognitive behaviour therapy and exercise for chronic widespread pain,' *British Pain Society Annual Scientific Meeting*, Manchester, England, 2014.

Project No:	AOT2.20	Completed
Project Title:	Improving maternal, neonatal and child survival: a partnership approach to achieve Millennium Development Goals in Bangladesh.	
Grant Applicants / Principal Investigators (place of work):	Hussein, J., Cumming, A. (IMMPACT, University of Aberdeen); Quayyum, Z. (HERU); Byass, P. (Umea University, Sweden); Nicholls, P. (Southampton University); Ensor, T. (Oxford Policy Unit/IMMPACT); Leppard, M. (Queen Margaret University).	
HERU Investigators:	Quayyum, Z. (HERU)	
HERU Research Theme:	Assessment of Technologies – Technology Adoption Phase	
Source of Funding and Total Awarded:	Department for International Development (DFID) and Australian Government Overseas Aid Program (AusAID) – 746,600 US\$	
Amount of HERU Funding:	£63,830	
Objectives:	This study measured the impact of interventions designed to improve maternal, neonatal and child health in Bangladesh, and to develop research capacity in Bangladesh.	
Outline:	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.	
Outcome and Translation:	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.	
Start Date:	July 2008	
Duration of Project:	5 years	

Publications:

Khan, M.N.U., **Quayyum, Z.**, Nasreen, H., Ensor, T. and Salahuddin, S. (2009) 'Household costs of obtaining maternal and newborn care in rural Bangladesh: baseline survey,' *Research Monograph Series No. 43*. BRAC & University of Aberdeen.

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.

Quayyum, Z., Khan, M.N.U., Quayyum, T., Nasreen, H., Chowdhury, M. and Ensor, T. (2013) 'Can community level interventions have an impact on equity and utilization of maternal health care: evidence from rural Bangladesh', *International Journal for Equity in Health*, 12(22).

Other Dissemination Activities:

Khan, M.N.U., **Quayyum, Z.**, Nasreen, H., Ensor, T. and Salahuddin, S. (2010) 'Household costs of obtaining maternal and newborn care in rural Bangladesh', *International Conferences on War Against Chronic Poverty, hosted by the Brooks World Poverty Institute (BWPI) and Chronic Poverty Research Centre*, University of Manchester, September 2010.

Quayyum, Z., Khan, N., Nasreen, H., Nicholls, P., Leppard, M. and Salahuddin, S. (2011) 'Utilisation of and expenditure for maternal and new born care and poverty impact in rural Bangladesh: role of community level intervention', *ESRC Funded Seminar: Addressing the Links Between Poverty and the Off-target Health MDG: Maternal, Newborn and Child Survival*, Aberdeen, January 2011.

Khan, N., **Quayyum, Z.**, Quayyum, T., Nasreen, H., Chowdhury, M. and Ensor, T. (2012) 'Can community level intervention have impact on equity and utilization of maternal health care: evidence from rural Bangladesh' [poster], *Second Global Symposium on Health Systems Research*, Beijing, 31 October-3 November 2012.

Khan, N., **Quayyum, Z.**, Quayyum, T., Nasreen, H., Chowdhury, M. and Ensor, T. (2012) 'Costs of abortion care to mothers in rural Bangladesh: are all these costs avoidable?' [poster], *Second Global Symposium on Health Systems Research*, Beijing, 31 October-3 November 2012.

Quayyum, T., **Quayyum, Z.**, Khan, N., Nasreen, H. and Ensor, T. (2012) 'Retention of community health workers for maternal and new born care in rural Bangladesh: level and determinants [poster]', *Second Global Symposium on Health Systems Research*, Beijing, November 2012.

Quayyum, Z., Khan, MNU., Quayyum, T., Nasreen, H., Chowdhury, M. and Ensor, T. (2013) 'Can community level intervention have impact on equity and utilization of maternal health care? Evidence from rural Bangladesh [poster]', *Global Maternal Health Conferences*, Tanzania, January 2013.

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 <i>de novo</i> 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:	<p>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.</p> <p>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.</p>	
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:

Azuara-Blanco, A., Burr, J.M., Cochran, C., Ramsay, C., Vale, L., Foster, P., Friedman, D., **Quayyum, Z.**, Lai, J., Nolan, W., Aung, T., Chew, P., McPherson, G., McDonald, A., Norrie, J. and Effectiveness In Angle-closure Glaucoma of Lens Extraction (EAGLE) Study Group (2011) 'The effectiveness of early lens extraction with intraocular lens implantation for the treatment of primary angle-closure glaucoma (EAGLE): study protocol for a randomized controlled trial' [protocol], *Trials*, 12, 133.

Azuara-Blanco, A., Burr, J., Ramsay, C., Cooper, D., Foster, P. J., Friedman, D.S., **Scotland, G.**, Javanbakht, M., Cochrane, C. and Norrie, J. (2016) 'Effectiveness of early lens extraction for the treatment of primary angle-closure glaucoma (EAGLE): a randomised controlled trial', *Lancet*, 388(10052), 1389-1397.

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); Montgomery, I.B.G. (Aberdeen).	
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:	<p>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.</p> <p>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.</p>	

Outcome and Translation:

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, F., Smith, A., Hagen, S., Montgomery, I., **Kilonzo, M., Boyers, D.**, McDonald, A., McPherson, G., MacLennan, G. and Norrie, J. (2015) *Clinical 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. Final report submitted to the National Institute for Health Research (NIHR) Health Technology Assessment Programme.*

Glazener, C.M.A., Breeman, S., Elders, A., Hemming, C., Cooper, K. G., Freeman, R.M., Smith, A.R.B., Reid, F., Hagen, S., Montgomery, I., **Kilonzo, M., Boyers, D.**, McDonald, A., McPherson, G., MacLennan, G. and Norrie, J. (2016) '[Mesh, graft, or standard repair for women having primary transvaginal anterior or posterior compartment prolapse surgery: two parallel-group, multicentre, randomised, controlled trials \(PROSPECT\)](#)', *Lancet*, [Epub ahead of print].

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).*

Other Dissemination Activities: –

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

Project No:	AOT2.24	Completed
Project Title:	GATE: Glaucoma Automated Tests Evaluation: comparative study of new imaging technologies for the diagnosis of glaucoma.	
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. (Hinchingsbrooke 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.	

Outcome and Translation:

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:

Azuara-Blanco, A., Banister, K., Boachie, C., McMeekin, P., Gray, J., Burr, J., Bourne, R., Garway-Heath, D., Batterbury, M., **Hernández, R.**, McPherson, G., Ramsay, C. and Cook, J. (2014) *Comparative study of automated imaging technologies for the diagnosis of glaucoma (GATE study). Diagnostic accuracy, performance as triage tests, and cost-effectiveness. Report submitted to the NIHR Evaluation, Trials and Studies Coordinating Centre (NETSCC)*, Aberdeen: University of Aberdeen.

Azuara-Blanco, A., Banister, K., Boachie, C., McMeekin, P., Gray, J., Burr, J., Bourne, R., Garway-Heath, D., Batterbury, M., **Hernández, R.**, McPherson, G., Ramsay, C. and Cook, J. (2016) 'Automated imaging technologies for the diagnosis of glaucoma: a comparative diagnostic study for the evaluation of the diagnostic accuracy, performance as triage tests and cost-effectiveness (GATE study)', *Health Technology Assessment*, 20(8).

Banister, K., Boachie, C., Bourne, R., Cook, J., Burr, J.M., Ramsay, C., Garway-Heath, D., Gray, J., McMeekin, P., **Hernández, R.** and Azuara-Blanco, A. (2016) 'Can automated imaging for optic disc and retinal nerve fiber layer analysis aid glaucoma detection?', *Ophthalmology*, 123(5). 930–938.

-
- Other Dissemination Activities:** Banister, K., Cook, J., Burr, J., **Hernández, R.**, McCormack, K., Bourne, R., Batterbury, M., Garway-Heath, D. and Azuara-Blanco, A. (2012) 'Comparative study of new imaging technologies for the diagnosis of glaucoma (GATE): design and conduct of a multicentre diagnostic study', *European Glaucoma Society Meeting*, Copenhagen, Denmark, 17-22 June 2012.
- Banister, K., Cook, J., Ramsay, C.R., Burr, J.M., **Hernández, R.**, McCormack, K., Bourne, R., Batterbury, M., Garway-Heath, D. and Azuara-Blanco, A. (2013) 'Comparative study of new imaging technologies for the diagnosis of glaucoma: design and conduct of a multi-centre diagnostic accuracy study (the GATE study)' [Poster Presentation], *SINAPSE (Scottish Imaging Network: a Platform for Scientific Excellence), 5th Annual Scientific Meeting*, Aberdeen, 15 May 2013.
- Banister, K., Cook, J., Ramsay, C.R., Burr, J.M., **Hernández, R.**, McCormack, K., Bourne, R., Batterbury, M., Garway-Heath, D. and Azuara-Blanco, A. (2013) 'Comparative study of new imaging technologies for the diagnosis of glaucoma: design and conduct of a multi-centre diagnostic accuracy study', *2nd UK Clinical Trials Methodology Conference*, Edinburgh, 18–19 November 2013.
- Azuara-Blanco, A., Banister, K., Boachie, C., Batterbury, M., Burr, J.M., Bourne, R., Garway-Heath, D., **Hernández, R.**, McPherson, G., Ramsay, C. and Cook, J. (2014) 'Patterns of glaucoma referrals from the community to hospital eye services in the UK. Description of participants of the GATE study [poster]', *European Glaucoma Society Annual Congress*, NICE, France, 7-11 June 2014.
- Banister, K., Boachie, C., Cook, J., Batterbury, M., Burr, J.M., Bourne, R., Garway-Heath, D., **Hernández, R.**, McPherson, G., Ramsay, C. and Azuara-Blanco, A. (2014) 'The diagnostic accuracy of new imaging technologies for the diagnosis of glaucoma: results from the GATE study [poster]', *European Glaucoma Society Annual Congress*, Nice, France, 7-11 June 2014.
- Banister, K., McMeekin, P., Gray, J., **Hernández, R.**, Boachie, C., Cook, C., Burr, J.M., McCormack, K., McPherson, G., Ramsay, C., Bourne, R., Garway-Heath, D., Batterbury, M. and Azuara-Blanco, A. (2014) 'Cost-effectiveness evaluation of novel care pathways in glaucoma diagnosis using imaging technologies', *11th Annual Meeting of Health Technology Assessment International Society (HTAi)*, Washington DC, USA, 15-18 June 2014.

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:

McClinton, S., Starr, K., Thomas, R., McLennan, G., McPherson, G., McDonald, A., Lam, T., N'Dow, J., **Kilonzo, M.**, Pickard, R., Anson, K. and Burr, J. (2014) 'Use of drug therapy in the management of symptomatic ureteric stones in hospitalized adults (SUSPEND), a multicentre, placebo-controlled, randomized trial of a calcium-channel blocker (nifedipine) and an alpha-blocker (tamsulosin): study protocol for a randomized controlled trial [protocol]', *Trials*, 15(1), 238.

Pickard, R., Starr, K., MacLennan, G., **Kilonzo, M.**, Lam, T., Thomas, R., Burr, J., McClinton, S. and the SUSPEND Trial Group (2014) *Group use of drug therapy in the management of symptomatic ureteric stones in hospitalised adults: a multicentre placebo controlled trial of a calcium channel blocker (nifedipine) and an α -blocker (tamsulosin). The SUSPEND Trial final report.*, Aberdeen: University of Aberdeen HTA Group.

Pickard, R., Starr, K., MacLennan, G., Lam, T., Thomas, R., Burr, J., McPherson, G., McDonald, A., Anson, K., N'Dow, J., Burgess, N., Clark, T., **Kilonzo, M.**, Gillies, K., Shearer, K., Boachie, C., Cameron, S., Norrie, J. and McClinton, S. (2015) 'Medical expulsive therapy in adults with ureteric colic: a multicentre, randomised, placebo-controlled trial', *Lancet*, 386(9991), 341–349.

Pickard, R., Starr, K., MacLennan, G., **Kilonzo, M.**, Lam, T., Thomas, R., Burr, J., Norrie, J., McPherson, G., McDonald, A., Shearer, K., Gillies, K., Anson, K., Boachie, C., N'Dow, J., Burgess, N., Clark, T., Cameron, S. and McClinton, S. (2015) 'Use of drug therapy in the management of symptomatic ureteric stones in hospitalised adults: a multicentre, placebo-controlled, randomised controlled trial and cost-effectiveness analysis of a calcium channel blocker (nifedipine) and an alpha-blocker (tamsulosin) (the SUSPEND trial)', *Health Technology Assessment*, 19(63).

Other Dissemination Activities: –

Project No:	AOT2.26	Completed
Project Title:	eTHoS: eiTher Haemorrhoidectomy or Stapled haemorrhoidopexy for haemorrhoidal 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:	<p>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.</p> <p>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</p>	

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:

Watson, A., **Bruhn, H.**, MacLeod, K., McDonald, A., McPherson, G., **Kilonzo, M.**, Norrie, J., Loudon, M., McCormack, K., Buckley, B., Brown, S., Curran, F., Jayne, D., Rajagopal, R. and Cook, J. (2014) 'A pragmatic, multicentre, randomised controlled trial comparing stapled haemorrhoidopexy to traditional excisional surgery for haemorrhoidal disease (eTHoS): study protocol for a randomised controlled trial' [Protocol], *Trials*, 15, 439.

Watson, A. J., Hudson, J., Wood, J., **Kilonzo, M.**, Brown, S.R., McDonald, A., Norrie, J., Bruhn, H. and Cook, J.A. (2016) 'Comparison of stapled haemorrhoidopexy with traditional excisional surgery for haemorrhoidal disease (eTHoS): a pragmatic, multicentre, randomised controlled trial', *Lancet*, 388(10058), 2375-2385.

Watson, A.J., Cook, J., Hudson, J., **Kilonzo, M.**, Wood, J., Bruhn, H., Brown, S., Buckley, B., Curran, F., Jayne, D., Loudon, M., Rajagopal, R., McDonald, A. and Norrie, J. (2016) *A pragmatic, multicentre, randomised controlled trial comparing stapled haemorrhoidopexy to traditional excisional surgery for haemorrhoidal disease: the eTHoS Study. Final report submitted to the National Institute for Health Research (NIHR) Health Technology Assessment Programme.*

Other Dissemination Activities: –

Project No:	AOT2.27	Completed
Project Title:	STITCH: Surgical Trial In Traumatic interCerebral Haemorrhage.	
Grant Applicants / Principal Investigators (place of work):	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).	
HERU Investigators:	Boyers, D., McNamee, P.	
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 via University of Newcastle – £2,328,920, Chief Scientist Office (CSO) CORE and University of Aberdeen	
Amount of HERU Funding:	£97,784	
Objectives:	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.	
Outline:	<p>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.</p> <p>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.</p>	

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: Gregson, B.A., Rowan, E.N., Mitchell, P.M., Unterberg, A., McColl, E.M., Chambers, I.R., **McNamee, P.** and Mendelow, A.D. (2012) 'Surgical trial in traumatic intracerebral hemorrhage (STITCH Trauma): study protocol for a randomized controlled trial,' [protocol], *Trials*, 13; 193.

Mendelow, A.D., Gregson, B.A., Rowan, E.N., Francis, R., McColl, E., **McNamee, P.**, Chambers, I., Unterberg, A.W., **Boyers, D.** and Mitchell, P. (2015) 'Early surgery versus initial conservative treatment in patients with traumatic intracerebral haemorrhage [STITCH (Trauma)]: the first randomised trial', *Journal of Neurotrauma*, 32(17), 1312–1323.

Gregson, B.A., Rowan, E.N., Francis, R., **McNamee, P.**, **Boyers, D.**, Mitchell, P., McColl, E., Chambers, I.R., Unterberg, A. and Mendelow, A.D. (2015) 'Surgical Trial In Traumatic intraCerebral Haemorrhage (STITCH): a randomised controlled trial of early surgery compared with initial conservative treatment', *Health Technology Assessment*, 19(70).

Other Dissemination Activities: **Boyers, D.**, **McNamee, P.**, Gregson, B.A. and Mendelow, A.D. (2015) 'The cost-effectiveness of early surgery for Intra-Cerebral Haemorrhage, issues for consideration in a multi-national, high mortality study', *Academic Unit of Health Economics, Leeds Institute of Health Sciences*, University of Leeds, Leeds, England, 12 May 2015.

Boyers, D., **McNamee, P.**, Gregson, B.A. and Mendelow, A.D. (2015) 'Issues in the estimation of QALYs for high mortality studies: an application to the cost-effectiveness of early surgery for intra-cerebral haemorrhage.', *HTAi 2015. Global Efforts in Knowledge Transfer: HTA to Health Policy and Practice*, Oslo, Norway, 15–17 June 2015.

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:	<p>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.</p> <p>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.</p>	
Outline:	<p>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.</p>	
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:

Jones, G., Mertens, K., Macfarlane, G., Palmer, K., Coggon, D., Walker-Bone, K., Burton, K., Heine, P., McCabe, C., **McNamee, P.** and McConnachie, A. (2014) 'Maintained physical activity and physiotherapy in the management of distal upper limb pain – a protocol for a randomised controlled trial (the arm pain trial) [protocol]', *BMC Musculoskeletal Disorders*, 15(1), 71.

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:	<p>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.</p> <p>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.</p>	

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

Publications:

Boyers, D., Kilonzo, M., Mostafa, A. and Abdel-Fattah, M. (2013) 'Comparison of an adjustable anchored single-incision mini-sling, Ajust®, with a standard mid-urethral sling, TVT-O™: a health economic evaluation,' *BJU International*, 112(8), 1169–1177.

Other Dissemination Activities:

Boyers, D., Kilonzo, M., Mostafa, A., Abdel-Fattah, M. (2012) 'Single Incision Mini Slings versus standard mid-urethral slings in surgical management of female stress urinary incontinence: a cost-effectiveness analysis alongside a randomised controlled trial,' *International Continence Society Conference*, Beijing, China, September 2012.

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:	<p>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.</p> <p>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.</p>	
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):	Brittenden, 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:		

Publications:

Brittenden, J., Cotton, S.C., Elders, A., **Tassie, E., Scotland, G.**, Ramsay, C., Norrie, J., Burr, J.M., Francis, J., Wileman, S., Campbell, B., Bachoo, P., Chetter, I., Gough, M., Earnshaw, J., Lees, T., Scott, J., Baker, S.A., MacLennan, G., Prior, M., Bolsover, D. and Campbell, M.K. (2013) *Clinical and cost-effectiveness of foam sclerotherapy, endovenous laser ablation and surgery for varicose veins: results from the CLASS trial. Final grant report submitted to the NIHR HTA Programme*, University of Aberdeen: Health Services Research Unit.

Brittenden, J., Cotton, S.C., Elders, A., Ramsay, C.R., Norrie, J., Burr, J., Campbell, B., Bachoo, P., Chetter, I., Gough, M., Earnshaw, J., Lees, T., Scott, J., Baker, S.A., Francis, J., **Tassie, E., Scotland, G.**, Wileman, S. and Campbell, M.K. (2014) 'A randomized trial comparing treatments for varicose veins', *New England Journal of Medicine*, 371(13), 1218–1227.

Tassie, E., Scotland, G., Brittenden, J., Cotton, S.C., Elders, A., Campbell, M.K., Campbell, B., Gough, M., Burr, J.M., Ramsay, C.R. on behalf of the CLASS study team (2014) 'Cost-effectiveness of ultrasound-guided foam sclerotherapy, endovenous laser ablation or surgery as treatment for primary varicose veins from the randomized CLASS trial', *British Journal of Surgery*, 101(12), 1532–1540.

Brittenden, J., Cotton, S.C., Elders, A., **Tassie, E., Scotland, G.**, Ramsay, C.R., Norrie, J., Burr, J., Francis, J., Wileman, S., Campbell, B., Bachoo, P., Chetter, I., Gough, M., Earnshaw, J., Lees, T., Scott, J., Baker, S.A., MacLennan, G., Prior, M., Bolsover, D. and Campbell, M.K. (2015) 'Clinical effectiveness and cost-effectiveness of foam sclerotherapy, endovenous laser ablation and surgery for varicose veins: results from the Comparison of LAser, Surgery and foam Sclerotherapy (CLASS) randomised controlled trial', *Health Technology Assessment*, 19(27).

Scotland, G. and **Tassie, E.** (2015) 'Cost-effectiveness of treatments for varicose veins', HERU Policy Brief, University of Aberdeen, April 2015.

Other Dissemination Activities:

Tassie, E. and **Scotland, G.** (2015) 'Characterising structural uncertainty arising from the use of a Markov model to extrapolate longer-term estimates of cost-effectiveness from short-term randomised data: a case study in the treatment of varicose veins', *HTAi 2015. Global Efforts in Knowledge Transfer: HTA to Health Policy and Practice*, Oslo, Norway, 15-17 June 2015.

Project No:	AOT2.32	In Progress
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:	<p>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.</p> <p>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.</p>	
Start Date:	April 2012	
Duration of Project:	68 months	
Project Phase:		

Publications:

Macfarlane, G.J., Barnish, M.S., Jones, E.A., Kay, L., Keat, A., Meldrum, K.T., Pathan, E., Sturrock, R.D., Zabke, C., **McNamee, P.** and Jones, G.T. (2015) 'The British Society for Rheumatology Biologics Registers in Ankylosing Spondylitis (BSRBR-AS) study: protocol for a prospective cohort study of the long-term safety and quality of life outcomes of biologic treatment', *BMC Musculoskeletal Disorders*, 16(1), 347.

Other Dissemination Activities: –

Project No:	AOT2.33	In Progress
Project Title:	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.	
Grant Applicants / Principal Investigators (place of work):	Witham, M. (University of Dundee); Avenell, A. (HSRU, University of Aberdeen); Soiza, R. (School of Medicine & Dentistry, University of Aberdeen); McNamee, P. (HERU) .	
HERU Investigators:	McNamee, P.	
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 – £136,108 and University of Aberdeen	
Amount of HERU Funding:	£57,713	
Objectives:	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.	
Outline:	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.	
Start Date:	October 2012	
Duration of Project:	90 months	
Project Phase:		

Publications:

Witham, M.D., Band, M.M., Littleford, R.C., Avenell, A., Soiza, R.L., McMurdo, M.E., Sumukadas, D., Ogston, S.A., Lamb, E.J., Hampson, G. and **McNamee, P.** (2015) 'Does oral sodium bicarbonate therapy improve function and quality of life in older patients with chronic kidney disease and low-grade acidosis (the BiCARB trial)? Study protocol for a randomized controlled trial [protocol]', *Trials*, 16(1), 326.

Other Dissemination Activities: –

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

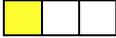
Duration of Project: 7 years

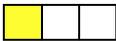
Project Phase: 

Publications: Glazener, C., Constable, L., Hemming, C., Breeman, S., Elders, A., Cooper, K., Freeman, R., Smith, A. R., Hagen, S., McDonald, A., McPherson, G., Montgomery, I., **Kilonzo, M., Boyers, D.**, Goulao, B. and Norrie, J. (2016) 'Two parallel, pragmatic, UK multicentre, randomised controlled trials comparing surgical options for upper compartment (vault or uterine) pelvic organ prolapse (the VUE Study): study protocol for a randomised controlled trial' [Protocol], *Trials*, 17(1), 441.

Other Dissemination Activities: –

Project No:	AOT2.35	In Progress
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.	

Start Date: April 2013
Duration of Project: 4 years, 8 months
Project Phase: 
Publications: -
Other Dissemination Activities: -

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:	<p>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?</p>	
Outline:	<p>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.</p>	
Start Date:	July 2013	
Duration of Project:	6 years	
Project Phase:		
Publications:	–	
Other Dissemination Activities:	–	

Project No:	AOT2.37	In Progress
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:	<p>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.</p> <p>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).</p>	

Start Date: October 2013

Duration of Project: 42 months

Project Phase: 

Publications: –

Other Dissemination Activities: –

Project No:	AOT2.38	In Progress
Project Title:	Got-it-trial: A pragmatic, adaptive, sequential, placebo controlled randomised trial to determine the effectiveness of glycerine triturate for retained placenta.	
Grant Applicants / Principal Investigators (place of work):	Denison, F., Lawton, J. (University of Edinburgh); Scotland, G. (HERU/HSRU); Norrie, J., McPherson, G. (HSRU, University of Aberdeen); Brook-Smith, S. (NHS Lothian).	
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 – £1,679,448 and Chief Scientist Office (CSO) CORE	
Amount of HERU Funding:	£18,765	
Objectives:	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).	
Outline:	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.	
Start Date:	1 October 2013	
Duration of Project:	42 months	
Project Phase:		
Publications:	–	
Other Dissemination Activities:	–	

Project No:	AOT2.39	In Progress
Project Title:	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	In Progress
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:	<p>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:</p> <ul style="list-style-type: none"> • 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: <ul style="list-style-type: none"> ○ The acceptability, feasibility and appropriateness for adults with BMI 35kg/m² or more ○ The feasibility of delivering services ○ 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.

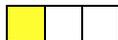
We will conduct five concurrent systematic reviews examining quantitative, qualitative and economic evidence to see if weight loss programmes should be designed differently for people who are much heavier (and more likely to have medical problems related to their weight). We will particularly examine 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:

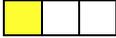
-

Project No:	AOT2.41	In Progress
Project Title:	LENS: Lowering Events in Non-proliferative retinopathy in Scotland.	
Grant Applicants / Principal Investigators (place of work):	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).	
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) – £1,789,595 and Chief Scientist Office (CSO) CORE	
Amount of HERU Funding:	£80,728	
Objectives:	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-vitreous injection of medication owing to DR. Assessment of cost-effectiveness is a secondary outcome.	
Outline:	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-vitreous 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.	
Start Date:	October 2016	
Duration of Project:	6 years	
Project Phase:		
Publications:	–	
Other Dissemination Activities:	–	

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:	<ol style="list-style-type: none"> (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:	<p>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?</p>	

Start Date: October 2016

Duration of Project: 48 months

Project Phase: 

Publications: –

Other Dissemination Activities: –

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) <i>Prospective collaborative study of patients with intestinal segments transposed into urinary tract following surgery for bladder cancer or benign end-stage bladder disease (OTIS)</i> . Final report submitted to BUPA.	
Other Dissemination Activities:	–	

Project No:	AOT3.2	Completed
Project Title:	Prognosis and management of intracranial vascular malformations and non-traumatic intracerebral haemorrhage in adults.	
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 <i>directly</i> costly to the NHS (prolonged and repeated inpatient stays in acute and rehabilitation sectors) and <i>indirectly</i> 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	
Publications:	Miller, C.E., Quayyum, Z. , McNamee, P. and Salman, R.A-S. (2009) 'Economic burden of intracranial vascular malformations in adults: prospective, population-based study,' <i>Stroke</i> , 40, 1973–1979.	
Other Dissemination Activities:	Miller C.E., McNamee, P. and Salman, R.A-S. (2007) 'Economic burden of intracranial vascular malformations in adults: prospective, population-based study,' <i>European Stroke Conference</i> , Glasgow, 2007.	

Project No:	AOT3.3	Completed
Project Title:	The clinical effectiveness and cost-effectiveness of different surveillance mammography regimes after the treatment of primary breast cancer.	
Grant Applicants / Principal Investigators (place of work):	Gilbert, F. (Clinical Services, University of Aberdeen); Vale, L. (HERU/HSRU); Dixon, J.M. (Western General Hospital); Pinder, S.E., Wilson, A.R.M. (King's College London); MacLennan, G.S., Thomas, R., Fraser, C., Burr, J. (HSRU, University of Aberdeen); Blamey, R.W. (Nottingham City Hospital); Heys, S.D. (Division of Applied Medicine, University of Aberdeen).	
HERU Investigators:	Vale, L., Ternent L., 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 – £241,532 and University of Aberdeen	
Amount of HERU Funding:	£69,101	
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:	<p>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.</p> <p>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.</p>	

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:

Robertson, C., Boachie, C., Dixon, M., Fraser, C., **Hernández, R.**, Heys, S., Jack, W., Kerr, G., Ragupathy, S., Lawrence, G., MacLennan, G., Maxwell, A., McGregor, J., Mowatt, G., Pinder, S., **Ternent, L.**, Thomas, R., **Vale, L.**, Wilson, R., Zhu, S. and Gilbert, F. (2010) *The clinical effectiveness and cost-effectiveness of different surveillance mammography regimes after the treatment of primary breast cancer. Final Report Submitted to NIHR HTA Programme*, National Institute of Health Research.

Robertson, C., Ragupathy, S.K.A., Boachie, C., Dixon, J.M., Fraser, C., **Hernández, R.**, Heys, S., Jack, W., Kerr, G.R., Lawrence, G., MacLennan, G., Maxwell, A., McGregor, J., Mowatt, G., Pinder, S., **Ternent, L.**, Thomas, R.E., Vale, L., Wilson, R., Zhu, S. and Gilbert, F.J. (2011) 'The clinical effectiveness and cost effectiveness of different surveillance mammography regimens after the treatment for primary breast cancer: systematic reviews, registry database analyses and economic evaluation', *Health Technology Assessment*, 15(34).

Other Dissemination Activities:

Vale, L. (2008) 'HTA of Surveillance Mammography after treatment for Primary Breast Cancer,' *Scottish Breast Cancer Research Group Meeting*, Dundee, October 2008.

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:	<p>Burr, J.M., Botello-Pinzon, P., Takwoingi, Y., Hernández, R., Vazquez-Montes, M., Elders, A., Asaoka, R., Banister, K., van der Schoot, J., Fraser, C., King, A., Lemij, H., Sanders, R., Vernon, S., Tuulonen, A., Kotecha, A., Glasziou, P., Garway-Heath, D., Crabb, D., Vale, L., Azuara-Blanco, A., Perera, R., Ryan, M., Deeks, J. and Cook, J. (2011) <i>Surveillance for ocular hypertension: an evidence synthesis and economic evaluation. Final report submitted to NIHR HTA Programme (project number 07/46/02)</i>, Health Technology Assessment.</p> <p>Burr, J.M., Botello-Pinzon, P., Takwoingi, Y., Hernández, R., Vazquez-Montes, M., Elders, A., Asaoka, R., Banister, K., van der Schoot, J., Fraser, C., King, A., Lemij, H., Sanders, R., Vernon, S., Tuulonen, A., Kotecha, A., Glasziou, P., Garway-Heath, D., Crabb, D., Vale, L., Azuara-Blanco, A., Perera, R., Ryan, M., Deeks, J. and Cook, J. (2012) 'Surveillance for ocular hypertension: an evidence synthesis and economic evaluation', <i>Health Technology Assessment</i>, 16(29).</p> <p>Hernández, R., Burr, J.M., Vale, L., Azuara-Blanco, A., Cook, J.A., Banister, K., Tuulonen, A. and Ryan, M. (2016) 'Monitoring ocular hypertension, how much and how often? A cost-effectiveness perspective,' <i>British Journal of Ophthalmology</i>, 100, 1263-1268.</p> <p>Hernández, R., Burr, J.M., Vale, L., Azuara-Blanco, A., Cook, J.A., Banister, K., Tuulonen, A., Ryan, M. and Surveillance of Ocular Hypertension Study Group (2016.) 'Treatment or monitoring for people with ocular hypertension?', HERU Policy Brief, University of Aberdeen, May 2016.</p>
Other Dissemination Activities:	<p>Hernández, R., Vale, L., Ryan, M., Burr J., for the Surveillance of Ocular Hypertension Project Group. (2011) 'Incorporating results from a discrete choice experiment into a discrete event simulation model: the case of monitoring individuals with ocular hypertension' [Poster], <i>8th Annual Meeting of Health Technology Assessment International Society</i>, Rio de Janeiro, Brazil, 26 – 29 June 2011.</p> <p>Hernández, R., Vale, L., Ryan, M. and Burr, J. M. (2014) 'Incorporating results from a discrete choice experiment into a discrete event simulation model', <i>1st Meeting of the International Academy of Health Preference Research</i>, Amsterdam, Netherlands, 8 November 2014.</p>

Project No:	AOT3.5	Completed
Project Title:	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.	
Grant Applicants / Principal Investigators (place of work):	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) .	
HERU Investigators:	Neilson, A.	
HERU Research Theme:	Assessment of Technologies – In-use Technology Phase	
Source of Funding and Total Awarded:	Chief Scientist Office (CSO) Health Services and Population Health Research Committee – £450,000	
Amount of HERU funding:	£8,550	
Objectives:	To determine the cost-effectiveness of the Scottish HPV vaccination programme.	
Outline:	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.	

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
Publications:	Cruickshank, M., Campbell, C., Choi, Y., Cubie, H., Cuschieri, K., Donaghy, M., Robertson, C., Smart, L., Sullivan, F. and Weller, D. (Neilson, A.R. is on the project team and contributed to Appendix 3) (2016) <i>The Scottish Cervical Cancer Prevention Programme: assessing and modelling the impact of HPV 16/18 immunisation on the performance of current cervical screening performance and the effectiveness of alternative cervical screening strategies to optimise cancer prevention in the HPV immunisation era. Final report submitted to the Chief Scientist Office (CZG/4/528).</i>
Other Dissemination Activities:	<p>Kavanagh, K., Neilson, A.R., Cruickshank, M., Cotton, S. and Robertson, C. (2016) 'Clinical and economic impact of alternative screening policies in the post-HPV vaccination era in Scotland' [poster presentation], <i>British Society for Colposcopy and Cervical Pathology, Annual Scientific Meeting, Life Science Events, Bradford, England, 13–15 April 2016.</i></p> <p>Neilson, A.R. (2016) 'Clinical and economic impact of alternative screening policies in the post-HPV vaccination era in Scotland', <i>Obstetrics and Gynaecology Postgraduate Seminar Series, Aberdeen Maternity Hospital, Aberdeen, 25 May 2016.</i></p> <p>Kavanagh, K., Neilson, A.R., Cruickshank, M., Cotton, S. and Robertson, C. (2016) 'Modelling the impact of vaccination on alternative screening policies in Scotland', <i>European Research Organisation on Genital Infection and Neoplasia (EUROGIN) 2016, Salzburg, Austria, 15–18 June 2016.</i></p>

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:

Denison, F.C., Lee, A., Norman, J., Bhattacharya, S., **Scotland, G.**, Morris, C. and Mahmood, T. (2011) *The clinical and short-term NHS costs of maternal obesity for maternity services in Scotland. Final report submitted to the Chief Scientist Office (CZG/2/471)*, Edinburgh: CSO.

Norwood, P., Scotland, G., Denison, F., Bhattacharya, S., Duffy, A., Mahmood, T., Morris, C., Raja, E., Norman, J. and Lee, A. (2014) 'Maternal obesity is independently associated with increased antenatal admissions and health service costs: a population based study', HERU Briefing Paper, University of Aberdeen, February 2014.

Denison, F.C., **Norwood, P.**, Bhattacharya, S., Duffy, A., Mahmood, T., Morris, C., Raja, E.A., Norman, J.E., Lee, A.J. and **Scotland, G.** (2014) 'Association between maternal body mass index during pregnancy, short-term morbidity, and increased health service costs: a population-based study', *BJOG: An International Journal of Obstetrics & Gynaecology*, 121(1), 72–82.

Other Dissemination Activities:

Denison, F.C., Raja, A., **Scotland, G.**, Bhattacharya, S., Mahmood, T., Morris, C., Norman, J.E. and Lee A. (2012) 'Maternal obesity is associated with increased maternal and offspring morbidity in both primiparous and multiparous women' [poster], *59th Annual Scientific Meeting of the Society for Gynecologic Investigation*, San Diego, USA, March 2012.

Denison, F.C., **Norwood, P.F.**, Bhattacharya, S., Mahmood, T., Morris, C., Norman, J.E., Lee, A. and **Scotland, G.** (2012) 'Maternal obesity is independently associated with increased antenatal admissions and health service costs' [poster], *59th Annual Scientific Meeting of the Society for Gynecologic Investigation*, San Diego, USA, March 2012.

Denison, F.C., **Norwood, P.F.**, Bhattacharya, S., Mahmood, T., Morris, C., Norman, J.E., Lee, A. and **Scotland, G.** (2012) 'Maternal obesity is independently associated with increased antenatal admissions and health service costs' [poster], *British Maternal and Fetal Medicine Society's 15th Annual Conference*, Dublin, Ireland, April 2012.

Denison, F.C., Raja, A., **Scotland, G.**, Bhattacharya, S., Mahmood, T., Morris, C., Norman, J.E. and Lee A. (2012) 'Maternal obesity is associated with increased maternal and offspring morbidity in both primiparous and multiparous women', [poster], *British Maternal and Fetal Medicine Society's 15th Annual Conference*, Dublin, Ireland, April 2012.

Project No:	AOT3.7	Completed
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:

Brazzelli, M., Shuler, K., **Quayyum, Z.**, Hadley, D., Muir, K., **McNamee, P.**, De Wilde, J., Dennis, M., Sandercock, P. and Wardlaw, J.M. (2013) 'Clinical and imaging services for TIA and minor stroke: results of two surveys of practice across the UK', *BMJ Open*, 3(8).

Wardlaw, J., Brazzelli, M., Miranda, H., Chappell, F., **McNamee, P.**, **Scotland, G.**, **Quayyum, Z.**, Martin, D., Shuler, K., Sandercock, P. and Dennis, M. (2014) 'An assessment of the cost-effectiveness of magnetic resonance, including diffusion-weighted imaging, in patients with transient ischaemic attack and minor stroke: a systematic review, meta-analysis and economic evaluation', *Health Technology Assessment*, 18(27).

Other Dissemination Activities:

Brazzelli, M., Dennis, M., **McNamee, P.**, **Quayyum, Z.**, Shuler, K. and Wardlaw, J. (2012) 'Clinical and imaging services for secondary stroke prevention after suspected TIA or minor stroke in the UK', *XXI European Stroke Conference*, Lisbon, Portugal, 22-25 May 2012.

Brazzelli, M., Dennis, M., **McNamee, P.**, Miranda, H., **Quayyum, Z.**, Shuler, K. and Wardlaw, J. (2012) 'Are imaging and clinical services for secondary stroke prevention after TIA or minor stroke adequate in the UK?', *36th European Society of Neuroradiology Annual Meeting*, Edinburgh, 21-23 September 2012.

Project No:	AOT3.8	Completed
Project Title:	Frequency of visual field testing when monitoring patients newly diagnosed with glaucoma.	
Grant Applicants / Principal Investigators (place of work):	Crabb, D. (City University); Garway-Heath, D. (Moorfields Eye Hospital); Bronze, C., Lemer, C. (North Middlesex University Hospital Trust); 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 Services Research (HSR) Programme – £295,082 and Research Council UK (RCUK)	
Amount of HERU Funding:	£2,597	
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:	<p>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.</p> <p>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.</p> <p>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.</p>	

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:

Crabb, D., Russell, R., Malik, R., Anand, N., Baker, H., Boodhna, T., Bronze, C., Fung, S., Garway-Heath, D., Glen, F., **Hernández, R.**, Kirwan, J., Lemer, C., McNaught, A. and Viswanathan, A. (2013) *Frequency of visual field testing when monitoring patients newly diagnosed with glaucoma. Final report submitted to NIHR Health Services and Delivery Research Program (Project number 10/2000/68).*

Crabb, D., Russell, R., Malik, R., Anand, N., Baker, H., Boodhna, T., Bronze, C., Fung, S., Garway-Heath, D., Glen, F., **Hernández, R.**, Kirwan, J., Lemer, C., McNaught, A. and Viswanathan, A. (2014) 'Frequency of visual field testing when monitoring patients newly diagnosed with glaucoma: mixed methods and modelling', *Health Services and Delivery Research*, 2(27).

Other Dissemination Activities: –

Project No:	AOT3.9	Completed
Project Title:	nAMD: systematic review and economic modelling of optical coherence tomography (OCT) for the diagnosis, monitoring and guiding of treatment for neovascular Age-related Macular Degeneration.	
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:	<p>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.</p> <p>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.</p> <p>This project included systematic reviews of the literature and a model based economic evaluation.</p>	

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:

Mowatt, G., **Hernández, R.**, Castillo, M., Lois, N., Fraser, C., Aremu, O., Amoaku, W., Burr, J. M., Lotery, A., Ramsay, C. and Azuara-Blanco, A. (2014) *Optical coherence tomography for the diagnosis, monitoring, and guiding of treatment for neovascular age-related macular degeneration: a systematic review and economic evaluation. Final grant report submitted to the NIHR HTA programme*, Aberdeen: HERU.

Mowatt, G., **Hernández, R.**, Castillo, M., Lois, N., Elders, A., Fraser, C., Aremu, O., Amoaku, W., Burr, J., Lotery, A., Ramsay, C. and Azuara-Blanco, A. (2014) 'Optical coherence tomography for the diagnosis, monitoring and guiding of treatment for neovascular age-related macular degeneration: a systematic review and economic evaluation', *Health Technology Assessment*, 18(69).

Castillo, M., Mowatt, G., Elders, A., Lois, N., Fraser, C., **Hernández, R.**, Amoaku, W., Burr, J. M., Lotery, A., Ramsay, C. R. and Azuara-Blanco, A. (2015) 'Optical Coherence Tomography for the monitoring of neovascular age-related macular degeneration: a systematic review', *Ophthalmology*, 122(2), 399-406.

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:	Pandey, S., McLernon, D.J., Scotland, G. , Mollison, J., Wordsworth, S. and Bhattacharya, S. (2014) 'Cost of fertility treatment and live birth outcome in women of different ages and BMI', <i>Human Reproduction</i> , 29(10), 2199–2211.	
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:	<p>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 <i>de novo</i> decision modelling to determine which management option is likely to offer the most cost-effective use of NHS resources.</p>	

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:	<p>Brazzelli, M., Cruickshank, M., Kilonzo, M., Ahmed, I., Stewart, F., McNamee, P., Elders, A., Fraser, C., Avenell, A. and Ramsay, C. (2014) 'Clinical effectiveness and cost-effectiveness of cholecystectomy compared with observation/conservative management for preventing recurrent symptoms and complications in adults presenting with uncomplicated symptomatic gallstones or cholecystitis: a systematic review and economic evaluation', <i>Health Technology Assessment</i>, 18(55).</p> <p>Brazzelli, M., Cruickshank, M., Kilonzo, M., Ahmed, I., Stewart, F., McNamee, P., Elders, A., Fraser, C., Avenell, A. and Ramsay, C. (2015) 'Systematic review of the clinical and cost effectiveness of cholecystectomy versus observation/conservative management for uncomplicated symptomatic gallstones or cholecystitis', <i>Surgical Endoscopy</i>, 29(3), 637–647.</p> <p>Kilonzo, M. (2016) 'Gallstones: wait and see or treat?', HERU Policy Brief, University of Aberdeen, April 2016.</p>
Other Dissemination Activities:	–

Project No:	AOT3.12	Completed
Project Title:	Modelling the cost-effectiveness of adopting risk stratified screening intervals within the national diabetic retinopathy screening programme in Scotland.	
Grant Applicants / Principal Investigators (place of work):	Scotland, G. (HERU/HSRU); Locker, H., Colhoun, H. (University of Dundee); Leese, G. (NHS Tayside); McKeigue, P. (University of Edinburgh); Olson, J., Philip, S. (NHS Grampian).	
HERU Investigators:	Scotland, G.	
HERU Research Theme:	Assessment of Technologies – In-use Technology Phase	
Source of Funding and Total Awarded:	Chief Scientist Office (CSO) – £81,657 and Chief Scientist Office (CSO) CORE	
Amount of HERU Funding:	£55,489	
Objectives:	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.	
Outline:	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 micro-simulation 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.	
Outcome and Translation:	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.	

Start Date:	October 2013
Duration of Project:	12 months
Publications:	<p>Scotland, G., Philip, S., McKeigue, P., Leese, G., Olson, J., Looker, H., Colhoun, H. (2015) <i>Modelling the cost-effectiveness of adopting risk stratified screening intervals within the national diabetic retinopathy screening programme in Scotland. Final Report to the CSO.</i></p> <p>Scotland, G., McKeigue, P., Philip, S., Leese, G. P., Olson, J. A., Looker, H. C., Colhoun, H. M. and Javanbakht, M. (2016) 'Modelling the cost-effectiveness of adopting risk-stratified approaches to extended screening intervals in the national diabetic retinopathy screening programme in Scotland ', <i>Diabetic Medicine</i>, 33(7), 886-895.</p>
Other Dissemination Activities:	<p>Scotland, G., McKeigue, P., Philip, S., Leese, G. P., Olson, J. A., Looker, H. C., Colhoun, H. M. and Javanbakht, M. (2016) 'Modelling the cost-effectiveness of adopting risk-stratified approaches to extended screening intervals in the national diabetic retinopathy screening programme in Scotland' [poster], <i>NHS Research Scotland Conference</i>, Queen Elizabeth University Hospital Campus, Glasgow, 26 October 2016.</p>

Project No:	AOT3.13	Completed
Project Title:	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:	<p>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.</p> <p>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.</p>	
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 .	

Start Date: June 2015

Duration of Project: 3 months

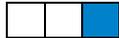
Publications: **Scotland, G., Javanbakht, M.,** Scott, N., Cruickshank, M., Sharma, P., Fraser, C., Simpson, W. and Brazzelli, M. (2015) *Ezetimibe for treating primary (heterozygous-familial and non-familial) hypercholesterolaemia. Report from Aberdeen Health Technology Assessment Group to NICE Appraisal Committee.*

Other Dissemination Activities: **Scotland, G., Javanbakht, M.,** Brazzelli, M. and Simpson, W. (2015) 'Report of the Evidence Review Group on Technology Appraisal TA385: ezetimibe for treating primary heterozygous-familial and non-familial hypercholesterolaemia', *National Institute for Health and Care Excellence (NICE) Appraisal Committee Meeting*, Manchester, England, 22 September 2015.

Scotland, G., Javanbakht, M., Brazzelli, M. and Simpson, W. (2015) 'Report of the Evidence Review Group on Technology Appraisal TA385: ezetimibe for treating primary heterozygous-familial and non-familial hypercholesterolaemia', *National Institute for Health and Care Excellence (NICE) Appraisal Committee Meeting*, Manchester, England, 18 November 2015.

Project No:	AOT3.14	In Progress
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:

Clarkson, J.E., Ramsay, C.R., Averely, P., Bonetti, D., **Boyers, D.**, Campbell, L., Chadwick, G.R., Duncan, A., Elders, A., Gouick, J., Hall, A.F., Heasman, L., Heasman, P.A., Hodge, P.J., Jones, C., Laird, M., Lamont, T.J., Lovelock, L.A., Madden, I., McCombes, W., McCracken, G.I., McDonald, A.M., McPherson, G., Macpherson, L.E., Mitchell, F.E., Norrie, J.D., Pitts, N.B., **Pol, M. van der**, Ricketts, D.N., Ross, M.K., Steele, J.G., Swan, M., Tickle, M., Watt, P.D., Worthington, H.V. and Young, L. (2013) 'IQuaD dental trial; improving the quality of dentistry: a multicentre 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 [protocol]', *BMC Oral Health*, 13(1), 58.

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 dental 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:	<p>‘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.</p> <p>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.</p> <p>http://www.nets.nihr.ac.uk/projects/hta/1214207.</p>	
Start Date:	January 2015	
Duration of Project:	66 months	
Project Phase:		
Publications:	–	
Other Dissemination Activities:	–	

Project No:	AOT3.18	In Progress
Project Title:	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 .	